

CHAPTER

49

**AUXILIARY
POWER UNIT**



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 49
AUXILIARY POWER UNIT**

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49-EFFECTIVE PAGES			49-10 TASKS (cont)			49-10 TASK SUPPORT		
1 thru 12	Oct 15/2023		213	Oct 15/2021		301	Oct 15/2021	
49-HOW TO USE THE FIM			214	Oct 15/2021		302	Oct 15/2021	
1	Oct 15/2021		215	Oct 15/2021		303	Oct 15/2021	
2	Oct 15/2021		216	Oct 15/2021		304	Oct 15/2021	
3	Oct 15/2021		217	Oct 15/2021		305	Oct 15/2021	
4	Oct 15/2021		218	Oct 15/2021		306	BLANK	
5	Oct 15/2021		219	Oct 15/2021		49-15 TASKS		
6	Oct 15/2021		220	Oct 15/2021		201	Oct 15/2021	
49-FAULT CODE INDEX			221	Oct 15/2021		202	Oct 15/2021	
101	Jun 15/2023		222	Oct 15/2021		203	Oct 15/2021	
102	Jun 15/2023		223	Oct 15/2021		204	Oct 15/2021	
49-MAINT MSG INDEX			224	Oct 15/2021		205	Oct 15/2021	
101	Oct 15/2021		225	Oct 15/2021		206	Oct 15/2021	
102	Oct 15/2021		226	Oct 15/2021		207	Feb 15/2023	
103	Oct 15/2021		227	Oct 15/2021		208	Feb 15/2023	
104	Oct 15/2021		228	Oct 15/2021		209	Feb 15/2023	
105	Oct 15/2021		229	Oct 15/2021		210	Feb 15/2023	
106	Oct 15/2021		230	Oct 15/2021		211	Feb 15/2023	
107	Oct 15/2021		231	Oct 15/2021		212	Feb 15/2023	
108	Oct 15/2021		232	Oct 15/2021		213	Feb 15/2023	
109	Oct 15/2021		233	Oct 15/2021		214	Feb 15/2023	
110	Oct 15/2021		234	Oct 15/2021		215	Oct 15/2021	
111	Oct 15/2021		235	Oct 15/2021		216	Oct 15/2021	
112	Oct 15/2021		236	Oct 15/2021		217	Oct 15/2021	
49-10 TASKS			237	Oct 15/2021		218	Oct 15/2021	
201	Oct 15/2021		238	Oct 15/2021		219	Oct 15/2021	
202	Oct 15/2021		239	Oct 15/2021		220	Oct 15/2021	
203	Oct 15/2021		240	Oct 15/2021		221	Oct 15/2021	
204	Oct 15/2021		241	Oct 15/2021		222	Oct 15/2021	
205	Oct 15/2021		242	Oct 15/2021		223	Oct 15/2021	
206	Oct 15/2021		243	Oct 15/2021		224	Oct 15/2021	
207	Oct 15/2021		244	Oct 15/2021		225	Oct 15/2021	
208	Oct 15/2021		245	Oct 15/2021		226	Oct 15/2021	
209	Oct 15/2021		246	Oct 15/2021		227	Oct 15/2021	
210	Oct 15/2021					228	Oct 15/2021	
211	Oct 15/2021					229	Oct 15/2021	
212	Oct 15/2021							

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

49-EFFECTIVE PAGES



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Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
49-15 TASKS (cont)			49-20 TASK SUPPORT			49-30 TASK SUPPORT (cont)		
230	Oct 15/2021		301	Oct 15/2021		304	Feb 15/2023	
231	Oct 15/2021		302	Oct 15/2021		49-31 TASKS		
232	Oct 15/2021		303	Oct 15/2021		201	Oct 15/2021	
233	Oct 15/2021		304	BLANK		202	Oct 15/2021	
234	Oct 15/2021		49-30 TASKS			203	Oct 15/2021	
235	Oct 15/2021		201	Oct 15/2021		204	Oct 15/2021	
236	Oct 15/2021		202	Oct 15/2021		205	Oct 15/2021	
237	Oct 15/2021		203	Oct 15/2021		206	Oct 15/2021	
238	Oct 15/2021		204	Oct 15/2021		207	Oct 15/2021	
239	Oct 15/2021		205	Oct 15/2021		208	Oct 15/2021	
240	Oct 15/2021		206	Oct 15/2021		209	Oct 15/2021	
241	Oct 15/2021		207	Oct 15/2021		210	Oct 15/2021	
242	Oct 15/2021		208	Oct 15/2021		211	Oct 15/2021	
243	Oct 15/2021		209	Oct 15/2021		212	Oct 15/2021	
244	Oct 15/2021		210	Oct 15/2021		213	Oct 15/2021	
49-15 TASK SUPPORT			211	Oct 15/2021		214	Oct 15/2021	
301	Oct 15/2021		212	Oct 15/2021		215	Oct 15/2021	
302	Oct 15/2021		213	Oct 15/2021		216	Oct 15/2021	
303	Oct 15/2021		214	Oct 15/2021		217	Oct 15/2021	
304	Oct 15/2021		215	Oct 15/2021		218	Oct 15/2021	
305	Oct 15/2021		216	Oct 15/2021		219	Feb 15/2023	
306	BLANK		217	Oct 15/2021		220	Feb 15/2023	
49-20 TASKS			218	Oct 15/2021		221	Feb 15/2023	
201	Oct 15/2021		219	Oct 15/2021		222	Feb 15/2023	
202	Oct 15/2021		220	Oct 15/2021		223	Feb 15/2023	
203	Oct 15/2021		221	Oct 15/2021		224	Feb 15/2023	
204	Oct 15/2021		222	Oct 15/2021		225	Feb 15/2023	
205	Oct 15/2021		223	Oct 15/2021		226	Feb 15/2023	
206	Oct 15/2021		224	Oct 15/2021		227	Feb 15/2023	
207	Oct 15/2021		225	Oct 15/2021		228	Feb 15/2023	
208	Oct 15/2021		226	Oct 15/2021		229	Feb 15/2023	
209	Oct 15/2021		227	Oct 15/2021		230	Feb 15/2023	
210	Oct 15/2021		228	Oct 15/2021		231	Feb 15/2023	
211	Oct 15/2021		49-30 TASK SUPPORT			232	Feb 15/2023	
212	Oct 15/2021		301	Oct 15/2021		233	Feb 15/2023	
213	Oct 15/2021		302	Oct 15/2021		234	Feb 15/2023	
214	Oct 15/2021		303	Oct 15/2021				

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49-31 TASKS (cont)			49-32 TASKS (cont)			49-33 TASKS (cont)		
235	Feb 15/2023		204	Feb 15/2023		209	Oct 15/2021	
236	Feb 15/2023		205	Feb 15/2023		210	Oct 15/2021	
237	Feb 15/2023		206	Feb 15/2023		211	Oct 15/2021	
238	Feb 15/2023		207	Feb 15/2023		212	Oct 15/2021	
239	Feb 15/2023		208	Feb 15/2023		213	Oct 15/2021	
240	Feb 15/2023		209	Feb 15/2023		214	Oct 15/2021	
241	Feb 15/2023		210	Feb 15/2023		215	Oct 15/2021	
242	Feb 15/2023		211	Feb 15/2023		216	Oct 15/2021	
243	Feb 15/2023		212	Feb 15/2023		217	Oct 15/2021	
244	Feb 15/2023		213	Feb 15/2023		218	Oct 15/2021	
245	Feb 15/2023		214	Feb 15/2023		49-40 TASKS		
246	Feb 15/2023		215	Feb 15/2023		201	Oct 15/2021	
247	Feb 15/2023		216	Feb 15/2023		202	Oct 15/2021	
248	Feb 15/2023		217	Feb 15/2023		203	Oct 15/2021	
249	Feb 15/2023		218	Feb 15/2023		204	Oct 15/2021	
250	Feb 15/2023		219	Feb 15/2023		205	Oct 15/2021	
251	Feb 15/2023		220	Feb 15/2023		206	Oct 15/2021	
252	Feb 15/2023		221	Feb 15/2023		207	Oct 15/2021	
253	Feb 15/2023		222	Feb 15/2023		208	Oct 15/2021	
254	Feb 15/2023		223	Feb 15/2023		209	Oct 15/2021	
255	Feb 15/2023		224	Feb 15/2023		210	Oct 15/2021	
256	Feb 15/2023		225	Feb 15/2023		211	Oct 15/2021	
257	Feb 15/2023		226	Feb 15/2023		212	Oct 15/2021	
258	Feb 15/2023		227	Feb 15/2023		213	Oct 15/2021	
259	Feb 15/2023		228	Feb 15/2023		214	Oct 15/2021	
260	Feb 15/2023		229	Feb 15/2023		215	Oct 15/2021	
261	Feb 15/2023		230	BLANK		216	Oct 15/2021	
262	Feb 15/2023		49-33 TASKS			217	Oct 15/2021	
263	Feb 15/2023		201	Oct 15/2021		218	Oct 15/2021	
264	Feb 15/2023		202	Oct 15/2021		219	Oct 15/2021	
265	Feb 15/2023		203	Oct 15/2021		220	Oct 15/2021	
266	BLANK		204	Oct 15/2021		221	Oct 15/2021	
49-32 TASKS			205	Oct 15/2021		222	Oct 15/2021	
201	Feb 15/2023		206	Oct 15/2021		223	Oct 15/2021	
202	Feb 15/2023		207	Oct 15/2021		224	Oct 15/2021	
203	Feb 15/2023		208	Oct 15/2021		225	Oct 15/2021	

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49-40 TASKS (cont)			49-40 TASKS (cont)			49-40 TASKS (cont)		
226	Oct 15/2021		262	Oct 15/2022		298	Oct 15/2022	
227	Oct 15/2021		263	Oct 15/2022		298.1	Oct 15/2022	
228	Oct 15/2021		264	Oct 15/2022		298.2	Oct 15/2022	
229	Oct 15/2021		265	Oct 15/2022		298.3	Oct 15/2022	
230	Oct 15/2021		266	Oct 15/2022		298.4	Oct 15/2022	
231	Oct 15/2021		267	Oct 15/2022		298.5	Oct 15/2022	
232	Oct 15/2021		268	Oct 15/2022		298.6	Oct 15/2022	
233	Oct 15/2021		269	Oct 15/2022		298.7	Oct 15/2022	
234	Oct 15/2021		270	Oct 15/2022		298.8	Oct 15/2022	
235	Oct 15/2021		271	Oct 15/2022		298.9	Oct 15/2022	
236	Oct 15/2021		272	Oct 15/2022		298.10	Oct 15/2022	
237	Oct 15/2021		273	Oct 15/2022		298.11	Oct 15/2022	
238	Oct 15/2021		274	Oct 15/2022		298.12	Oct 15/2022	
239	Oct 15/2021		275	Oct 15/2022		298.13	Oct 15/2022	
240	Oct 15/2021		276	Oct 15/2022		298.14	Oct 15/2022	
241	Oct 15/2021		277	Oct 15/2022		298.15	Oct 15/2022	
242	Oct 15/2021		278	Oct 15/2022		298.16	Oct 15/2022	
243	Oct 15/2021		279	Oct 15/2022		298.17	Oct 15/2022	
244	Oct 15/2021		280	Oct 15/2022		298.18	Oct 15/2022	
245	Oct 15/2021		281	Oct 15/2022		298.19	Oct 15/2022	
246	Oct 15/2021		282	Oct 15/2022		298.20	Oct 15/2022	
247	Oct 15/2021		283	Oct 15/2022		298.21	Oct 15/2022	
248	Oct 15/2021		284	Oct 15/2022		298.22	Oct 15/2022	
249	Oct 15/2021		285	Oct 15/2022		298.23	Oct 15/2022	
250	Oct 15/2021		286	Oct 15/2022		298.24	Oct 15/2022	
251	Oct 15/2021		287	Oct 15/2022		298.25	Oct 15/2022	
252	Oct 15/2021		288	Oct 15/2022		298.26	Oct 15/2022	
253	Oct 15/2021		289	Oct 15/2022		298.27	Oct 15/2022	
254	Oct 15/2021		290	Oct 15/2022		298.28	Oct 15/2022	
255	Oct 15/2021		291	Oct 15/2022		298.29	Oct 15/2022	
256	Oct 15/2021		292	Oct 15/2022		298.30	Oct 15/2022	
257	Oct 15/2021		293	Oct 15/2022		298.31	Oct 15/2022	
258	Oct 15/2021		294	Oct 15/2022		298.32	Oct 15/2022	
259	Oct 15/2021		295	Oct 15/2022		298.33	Oct 15/2022	
260	Oct 15/2022		296	Oct 15/2022		298.34	Oct 15/2022	
261	Oct 15/2022		297	Oct 15/2022		298.35	Oct 15/2022	

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49-40 TASKS (cont)			49-40 TASKS (cont)			49-40 TASKS (cont)		
298.36	Oct 15/2022		298.72	Oct 15/2022		298.108	Oct 15/2022	
298.37	Oct 15/2022		298.73	Oct 15/2022		49-40 TASK SUPPORT		
298.38	Oct 15/2022		298.74	Oct 15/2022		301	Oct 15/2021	
298.39	Oct 15/2022		298.75	Oct 15/2022		302	Oct 15/2021	
298.40	Oct 15/2022		298.76	Oct 15/2022		303	Oct 15/2021	
298.41	Oct 15/2022		298.77	Oct 15/2022		304	BLANK	
298.42	Oct 15/2022		298.78	Oct 15/2022		49-45 TASKS		
298.43	Oct 15/2022		298.79	Oct 15/2022		201	Oct 15/2021	
298.44	Oct 15/2022		298.80	Oct 15/2022		202	Oct 15/2021	
298.45	Oct 15/2022		298.81	Oct 15/2022		203	Oct 15/2021	
298.46	Oct 15/2022		298.82	Oct 15/2022		204	Oct 15/2021	
298.47	Oct 15/2022		298.83	Oct 15/2022		205	Oct 15/2021	
298.48	Oct 15/2022		298.84	Oct 15/2022		206	Oct 15/2021	
298.49	Oct 15/2022		298.85	Oct 15/2022		207	Oct 15/2021	
298.50	Oct 15/2022		298.86	Oct 15/2022		208	Oct 15/2021	
298.51	Oct 15/2022		298.87	Oct 15/2022		49-45 TASK SUPPORT		
298.52	Oct 15/2022		298.88	Oct 15/2022		301	Oct 15/2021	
298.53	Oct 15/2022		298.89	Feb 15/2023		302	Oct 15/2021	
298.54	Oct 15/2022		298.90	Oct 15/2022		303	Oct 15/2021	
298.55	Oct 15/2022		298.91	Feb 15/2023		304	BLANK	
298.56	Oct 15/2022		298.92	Oct 15/2022		49-50 TASKS		
298.57	Oct 15/2022		298.93	Oct 15/2022		201	Oct 15/2021	
298.58	Oct 15/2022		298.94	Oct 15/2022		202	Oct 15/2021	
298.59	Oct 15/2022		298.95	Oct 15/2022		203	Oct 15/2021	
298.60	Oct 15/2022		298.96	Oct 15/2022		204	Oct 15/2021	
298.61	Oct 15/2022		298.97	Oct 15/2022		205	Oct 15/2021	
298.62	Oct 15/2022		298.98	Oct 15/2022		206	Oct 15/2021	
298.63	Oct 15/2022		298.99	Oct 15/2022		207	Oct 15/2021	
298.64	Oct 15/2022		298.100	Oct 15/2022		208	Oct 15/2021	
298.65	Oct 15/2022		298.101	Oct 15/2022		209	Feb 15/2023	
298.66	Oct 15/2022		298.102	Oct 15/2022		210	Feb 15/2023	
298.67	Oct 15/2022		298.103	Oct 15/2022		211	Feb 15/2023	
298.68	Oct 15/2022		298.104	Oct 15/2022		212	Feb 15/2023	
298.69	Oct 15/2022		298.105	Oct 15/2022		213	Feb 15/2023	
298.70	Oct 15/2022		298.106	Oct 15/2022		214	Feb 15/2023	
298.71	Oct 15/2022		298.107	Oct 15/2022		215	Feb 15/2023	
						216	Feb 15/2023	

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49-50 TASKS (cont)			49-51 TASKS (cont)			49-52 TASKS (cont)		
217	Feb 15/2023		226	Oct 15/2021		229	Feb 15/2023	
218	Feb 15/2023		227	Oct 15/2021		230	Feb 15/2023	
219	Feb 15/2023		228	Oct 15/2021		231	Feb 15/2023	
220	Feb 15/2023		229	Oct 15/2021		232	Feb 15/2023	
221	Feb 15/2023		230	Oct 15/2021		233	Feb 15/2023	
222	Feb 15/2023		231	Oct 15/2021		R 234	Oct 15/2023	
49-50 TASK SUPPORT			232	BLANK		R 235	Oct 15/2023	
301	Oct 15/2021		49-52 TASKS			R 236	Oct 15/2023	
302	Oct 15/2021		201	Oct 15/2021		R 237	Oct 15/2023	
303	Feb 15/2023		202	Oct 15/2021		R 238	Oct 15/2023	
304	Oct 15/2021		203	Oct 15/2021		O 239	Oct 15/2023	
49-51 TASKS			204	Oct 15/2021		O 240	Oct 15/2023	
201	Oct 15/2021		205	Oct 15/2021		O 241	Oct 15/2023	
202	Oct 15/2021		206	Feb 15/2023		242	Feb 15/2023	
203	Oct 15/2021		207	Feb 15/2023		243	Feb 15/2023	
204	Oct 15/2021		208	Feb 15/2023		244	Feb 15/2023	
205	Oct 15/2021		209	Feb 15/2023		245	Feb 15/2023	
206	Oct 15/2021		210	Feb 15/2023		246	Feb 15/2023	
207	Oct 15/2021		211	Feb 15/2023		247	Feb 15/2023	
208	Oct 15/2021		212	Feb 15/2023		248	Feb 15/2023	
209	Oct 15/2021		213	Feb 15/2023		249	Feb 15/2023	
210	Oct 15/2021		214	Feb 15/2023		250	Feb 15/2023	
211	Oct 15/2021		215	Feb 15/2023		251	Feb 15/2023	
212	Oct 15/2021		216	Feb 15/2023		252	Feb 15/2023	
213	Oct 15/2021		217	Feb 15/2023		253	Feb 15/2023	
214	Oct 15/2021		218	Feb 15/2023		254	Feb 15/2023	
215	Oct 15/2021		219	Feb 15/2023		255	Feb 15/2023	
216	Oct 15/2021		220	Feb 15/2023		256	Feb 15/2023	
217	Oct 15/2021		221	Feb 15/2023		257	Feb 15/2023	
218	Oct 15/2021		222	Feb 15/2023		258	Feb 15/2023	
219	Oct 15/2021		223	Feb 15/2023		259	Feb 15/2023	
220	Oct 15/2021		224	Feb 15/2023		260	Feb 15/2023	
221	Oct 15/2021		225	Feb 15/2023		261	Feb 15/2023	
222	Oct 15/2021		226	Feb 15/2023		262	Feb 15/2023	
223	Oct 15/2021		227	Feb 15/2023		263	Feb 15/2023	
224	Oct 15/2021		228	Feb 15/2023		264	Feb 15/2023	
225	Oct 15/2021							

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49-52 TASKS (cont)			49-53 TASKS (cont)			49-54 TASKS (cont)		
265	Feb 15/2023		234	Feb 15/2023		207	Oct 15/2021	
266	Feb 15/2023		235	Feb 15/2023		208	Oct 15/2021	
49-53 TASKS			236	Feb 15/2023		209	Oct 15/2021	
201	Oct 15/2021		237	Feb 15/2023		210	Oct 15/2021	
202	Oct 15/2021		238	Feb 15/2023		211	Oct 15/2021	
203	Oct 15/2021		239	Feb 15/2023		212	Oct 15/2021	
204	Feb 15/2023		240	Feb 15/2023		213	Oct 15/2021	
205	Feb 15/2023		241	Feb 15/2023		214	Oct 15/2021	
206	Feb 15/2023		242	Feb 15/2023		215	Oct 15/2021	
207	Feb 15/2023		243	Feb 15/2023		216	Oct 15/2021	
208	Feb 15/2023		244	Feb 15/2023		217	Oct 15/2021	
209	Feb 15/2023		245	Feb 15/2023		218	Oct 15/2021	
210	Feb 15/2023		246	Feb 15/2023		219	Oct 15/2021	
211	Feb 15/2023		247	Feb 15/2023		220	Oct 15/2021	
212	Feb 15/2023		248	Feb 15/2023		221	Oct 15/2021	
213	Feb 15/2023		249	Feb 15/2023		222	Oct 15/2021	
214	Feb 15/2023		250	Feb 15/2023		223	Oct 15/2021	
215	Feb 15/2023		251	Feb 15/2023		224	Oct 15/2021	
216	Feb 15/2023		252	Feb 15/2023		225	Oct 15/2021	
217	Feb 15/2023		253	Feb 15/2023		226	Oct 15/2021	
218	Feb 15/2023		254	Feb 15/2023		227	Oct 15/2021	
219	Feb 15/2023		255	Feb 15/2023		228	Oct 15/2021	
220	Feb 15/2023		256	Feb 15/2023		229	Oct 15/2021	
221	Feb 15/2023		257	Feb 15/2023		230	Oct 15/2021	
222	Feb 15/2023		258	Feb 15/2023		231	Oct 15/2021	
223	Feb 15/2023		259	Feb 15/2023		232	Oct 15/2021	
224	Feb 15/2023		260	Feb 15/2023		233	Oct 15/2021	
225	Feb 15/2023		261	Feb 15/2023		234	Oct 15/2021	
226	Feb 15/2023		262	BLANK		235	Oct 15/2021	
227	Feb 15/2023		49-54 TASKS			236	Oct 15/2021	
228	Feb 15/2023		201	Oct 15/2021		237	Oct 15/2021	
229	Feb 15/2023		202	Oct 15/2021		238	Oct 15/2021	
230	Feb 15/2023		203	Oct 15/2021		239	Oct 15/2021	
231	Feb 15/2023		204	Oct 15/2021		240	Oct 15/2021	
232	Feb 15/2023		205	Oct 15/2021		241	Feb 15/2022	
233	Feb 15/2023		206	Oct 15/2021		242	Feb 15/2022	

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49-54 TASKS (cont)			49-54 TASKS (cont)			49-55 TASKS		
243	Oct 15/2021		279	Oct 15/2021		201	Oct 15/2021	
244	Oct 15/2021		280	Oct 15/2021		202	Oct 15/2021	
245	Oct 15/2021		281	Oct 15/2021		203	Oct 15/2021	
246	Oct 15/2021		282	Oct 15/2021		204	Oct 15/2021	
247	Oct 15/2021		283	Oct 15/2021		205	Oct 15/2021	
248	Oct 15/2021		284	Oct 15/2021		206	Oct 15/2021	
249	Oct 15/2021		285	Oct 15/2021		R 207	Oct 15/2023	
250	Oct 15/2021		286	Oct 15/2021		R 208	Oct 15/2023	
251	Oct 15/2021		287	Oct 15/2021		209	Oct 15/2021	
252	Oct 15/2021		288	Oct 15/2021		210	Feb 15/2023	
253	Oct 15/2021		289	Oct 15/2021		211	Oct 15/2021	
254	Oct 15/2021		290	Oct 15/2021		212	Oct 15/2021	
255	Oct 15/2021		291	Oct 15/2021		R 213	Oct 15/2023	
256	Oct 15/2021		292	Oct 15/2021		O 214	Oct 15/2023	
257	Oct 15/2021		293	Oct 15/2021		O 215	Oct 15/2023	
258	Oct 15/2021		294	Oct 15/2021		216	Oct 15/2021	
259	Oct 15/2021		295	Oct 15/2021		217	Oct 15/2021	
260	Oct 15/2021		296	Oct 15/2021		218	Oct 15/2021	
261	Oct 15/2021		297	Oct 15/2021		219	Oct 15/2021	
262	Oct 15/2021		298	Oct 15/2021		220	Oct 15/2021	
263	Oct 15/2021		298.1	Oct 15/2021		221	Oct 15/2021	
264	Oct 15/2021		298.2	Oct 15/2021		222	Oct 15/2021	
265	Oct 15/2021		298.3	Oct 15/2021		223	Oct 15/2021	
266	Oct 15/2021		298.4	Oct 15/2021		224	Oct 15/2021	
267	Oct 15/2021		298.5	Oct 15/2021		225	Oct 15/2021	
268	Oct 15/2021		298.6	Oct 15/2021		226	Oct 15/2021	
269	Oct 15/2021		298.7	Oct 15/2021		227	Oct 15/2021	
270	Oct 15/2021		298.8	Oct 15/2021		228	Oct 15/2021	
271	Oct 15/2021		298.9	Oct 15/2021		229	Oct 15/2021	
272	Oct 15/2021		298.10	Oct 15/2021		230	Oct 15/2021	
273	Oct 15/2021		298.11	Oct 15/2021		231	Oct 15/2021	
274	Oct 15/2021		298.12	Oct 15/2021		232	Oct 15/2021	
275	Oct 15/2021		298.13	Oct 15/2021		233	Oct 15/2021	
276	Oct 15/2021		298.14	Oct 15/2021		234	Oct 15/2021	
277	Oct 15/2021		298.15	Oct 15/2021		235	Oct 15/2021	
278	Oct 15/2021		298.16	BLANK		236	Oct 15/2021	

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49-55 TASKS (cont)			49-55 TASKS (cont)			49-60 TASKS (cont)		
237	Oct 15/2021		O 273	Oct 15/2023		226	Feb 15/2023	
238	Oct 15/2021		274	BLANK		227	Feb 15/2023	
239	Oct 15/2021		49-55 TASK SUPPORT			228	Feb 15/2023	
240	Oct 15/2021		301	Oct 15/2021		229	Feb 15/2023	
241	Oct 15/2021		302	Oct 15/2021		230	Feb 15/2023	
242	Oct 15/2021		303	Oct 15/2021		231	Feb 15/2023	
243	Oct 15/2021		304	Oct 15/2021		232	Feb 15/2023	
244	Oct 15/2021		305	Oct 15/2021		233	Feb 15/2023	
245	Oct 15/2021		306	Oct 15/2021		234	Feb 15/2023	
246	Oct 15/2021		307	Oct 15/2021		235	Feb 15/2023	
247	Oct 15/2021		308	BLANK		236	Feb 15/2023	
248	Oct 15/2021		49-60 TASKS			237	Feb 15/2023	
249	Oct 15/2021		201	Oct 15/2021		238	Feb 15/2023	
250	Oct 15/2021		202	Oct 15/2021		239	Feb 15/2023	
251	Oct 15/2021		203	Oct 15/2021		240	Feb 15/2023	
252	Oct 15/2021		204	Oct 15/2021		241	Feb 15/2023	
253	Oct 15/2022		205	Oct 15/2021		242	Feb 15/2023	
254	Oct 15/2021		206	Oct 15/2021		243	Feb 15/2023	
255	Oct 15/2022		207	Oct 15/2021		244	Feb 15/2023	
256	Oct 15/2021		208	Oct 15/2021		245	Feb 15/2023	
257	Oct 15/2021		209	Oct 15/2021		246	Feb 15/2023	
258	Oct 15/2021		210	Oct 15/2021		247	Feb 15/2023	
259	Oct 15/2021		211	Oct 15/2021		248	Feb 15/2023	
260	Oct 15/2021		212	Oct 15/2021		249	Feb 15/2023	
261	Oct 15/2021		213	Oct 15/2021		250	Feb 15/2023	
262	Jun 15/2023		214	Oct 15/2021		251	Feb 15/2023	
263	Jun 15/2023		215	Oct 15/2022		252	Feb 15/2023	
264	Jun 15/2023		216	Jun 15/2023		253	Feb 15/2023	
265	Jun 15/2023		217	Jun 15/2023		254	Feb 15/2023	
266	Jun 15/2023		218	Oct 15/2021		255	Feb 15/2023	
R 267	Oct 15/2023		219	Oct 15/2021		256	Feb 15/2023	
R 268	Oct 15/2023		220	Oct 15/2021		257	Feb 15/2023	
R 269	Oct 15/2023		221	Oct 15/2021		258	Feb 15/2023	
O 270	Oct 15/2023		222	Oct 15/2021		259	Feb 15/2023	
O 271	Oct 15/2023		223	Oct 15/2021		260	Feb 15/2023	
O 272	Oct 15/2023		224	Oct 15/2021		261	Feb 15/2023	
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49-60 TASKS (cont)			49-60 TASKS (cont)			49-70 TASKS		
262	Feb 15/2023		298	Feb 15/2023		201	Oct 15/2021	
263	Feb 15/2023		298.1	Feb 15/2023		202	Oct 15/2021	
264	Feb 15/2023		298.2	Feb 15/2023		203	Oct 15/2021	
265	Feb 15/2023		298.3	Feb 15/2023		204	Oct 15/2021	
266	Feb 15/2023		298.4	Feb 15/2023		205	Oct 15/2021	
267	Feb 15/2023		298.5	Feb 15/2023		206	Oct 15/2021	
268	Feb 15/2023		298.6	Feb 15/2023		207	Oct 15/2021	
269	Feb 15/2023		298.7	Feb 15/2023		208	Oct 15/2021	
270	Feb 15/2023		298.8	Feb 15/2023		209	Oct 15/2021	
271	Feb 15/2023		298.9	Feb 15/2023		210	Oct 15/2021	
272	Feb 15/2023		298.10	BLANK		211	Oct 15/2021	
273	Feb 15/2023		49-60 TASK SUPPORT			212	Oct 15/2021	
274	Feb 15/2023		301	Oct 15/2021		213	Oct 15/2021	
275	Feb 15/2023		302	Oct 15/2021		214	Oct 15/2021	
276	Feb 15/2023		303	Feb 15/2023		215	Oct 15/2021	
277	Feb 15/2023		304	Feb 15/2023		216	Oct 15/2021	
278	Feb 15/2023		305	Feb 15/2023		217	Oct 15/2021	
279	Feb 15/2023		306	Oct 15/2021		218	Oct 15/2021	
280	Feb 15/2023		49-65 TASKS			219	Oct 15/2021	
281	Feb 15/2023		201	Oct 15/2021		220	Oct 15/2021	
282	Feb 15/2023		202	Oct 15/2021		221	Oct 15/2021	
283	Feb 15/2023		203	Oct 15/2021		222	Oct 15/2021	
284	Feb 15/2023		204	Oct 15/2021		223	Oct 15/2021	
285	Feb 15/2023		205	Oct 15/2021		224	Oct 15/2021	
286	Feb 15/2023		206	Oct 15/2021		225	Oct 15/2021	
287	Feb 15/2023		207	Oct 15/2021		226	Oct 15/2021	
288	Feb 15/2023		208	Oct 15/2021		227	Oct 15/2021	
289	Feb 15/2023		209	Oct 15/2021		228	Oct 15/2021	
290	Feb 15/2023		210	Oct 15/2021		229	Oct 15/2021	
291	Feb 15/2023		211	Oct 15/2021		230	Oct 15/2021	
292	Feb 15/2023		212	Oct 15/2021		231	Oct 15/2021	
293	Feb 15/2023		213	Oct 15/2021		232	Oct 15/2021	
294	Feb 15/2023		214	Oct 15/2021		233	Oct 15/2021	
295	Feb 15/2023		49-65 TASK SUPPORT			234	Oct 15/2021	
296	Feb 15/2023		301	Oct 15/2021		235	Oct 15/2021	
297	Feb 15/2023		302	Oct 15/2021		236	Oct 15/2021	

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Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
49-70 TASKS (cont)			49-70 TASKS (cont)			49-90 TASKS (cont)		
237	Oct 15/2021		273	Oct 15/2021		206	Oct 15/2021	
238	Oct 15/2021		274	Oct 15/2021		207	Oct 15/2021	
239	Oct 15/2021		275	Oct 15/2021		208	Oct 15/2021	
240	Oct 15/2021		276	Oct 15/2021		209	Oct 15/2021	
241	Oct 15/2021		277	Oct 15/2021		210	Oct 15/2021	
242	Oct 15/2021		278	Oct 15/2021		211	Oct 15/2021	
243	Oct 15/2021		279	Oct 15/2021		212	Oct 15/2021	
244	Oct 15/2021		280	Oct 15/2021		213	Oct 15/2021	
245	Oct 15/2021		281	Oct 15/2021		214	Oct 15/2021	
246	Oct 15/2021		282	Oct 15/2021		215	Oct 15/2021	
247	Oct 15/2021		283	Oct 15/2021		216	Oct 15/2021	
248	Oct 15/2021		284	Oct 15/2021		217	Oct 15/2021	
249	Oct 15/2021		285	Oct 15/2021		218	Oct 15/2021	
250	Oct 15/2021		286	Oct 15/2021		219	Oct 15/2021	
251	Oct 15/2021		49-70 TASK SUPPORT			220	Oct 15/2021	
252	Oct 15/2021		301	Oct 15/2021		221	Oct 15/2021	
253	Oct 15/2021		302	Jun 15/2022		222	Oct 15/2021	
254	Oct 15/2021		303	Oct 15/2021		223	Oct 15/2021	
255	Oct 15/2021		304	Oct 15/2021		224	Oct 15/2021	
256	Oct 15/2021		49-75 TASKS			225	Oct 15/2021	
257	Oct 15/2021		201	Oct 15/2021		226	Oct 15/2021	
258	Oct 15/2021		202	Oct 15/2021		227	Oct 15/2021	
259	Oct 15/2021		203	Oct 15/2021		228	Oct 15/2021	
260	Oct 15/2021		204	Oct 15/2021		229	Oct 15/2021	
261	Oct 15/2021		205	Oct 15/2021		230	Oct 15/2021	
262	Oct 15/2021		206	Oct 15/2021		231	Oct 15/2021	
263	Oct 15/2021		207	Oct 15/2021		232	Oct 15/2021	
264	Oct 15/2021		208	BLANK		233	Oct 15/2021	
265	Oct 15/2021		49-75 TASK SUPPORT			234	Oct 15/2021	
266	Oct 15/2021		301	Oct 15/2021		235	Oct 15/2021	
267	Oct 15/2021		302	Oct 15/2021		236	Oct 15/2021	
268	Oct 15/2021		49-90 TASKS			237	Oct 15/2021	
269	Oct 15/2021		201	Oct 15/2021		238	Oct 15/2021	
270	Oct 15/2021		202	Oct 15/2021		239	Oct 15/2021	
271	Oct 15/2021		203	Oct 15/2021		240	Oct 15/2021	
272	Oct 15/2021		204	Oct 15/2021		241	Oct 15/2021	
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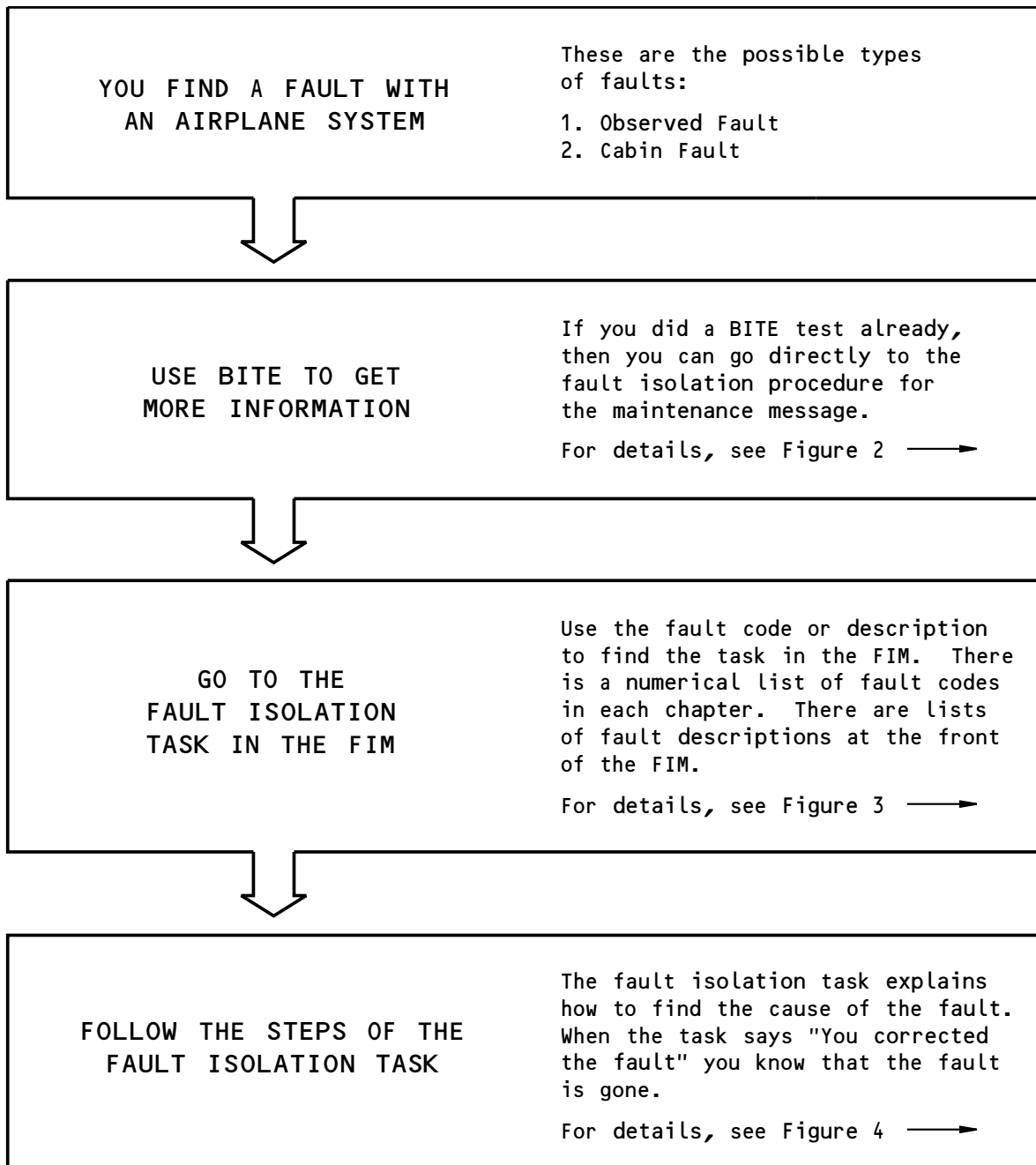
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Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
49-90 TASKS (cont)			49-95 TASKS					
242	Oct 15/2021		201	Feb 15/2023				
243	Oct 15/2021		202	Feb 15/2023				
244	Oct 15/2021		203	Feb 15/2023				
245	Oct 15/2021		204	Feb 15/2023				
246	Oct 15/2021							
247	Oct 15/2021							
248	Oct 15/2021							
249	Oct 15/2021							
250	Oct 15/2021							
251	Oct 15/2021							
252	Oct 15/2021							
253	Oct 15/2021							
254	Oct 15/2021							
255	Oct 15/2021							
256	Oct 15/2021							
257	Oct 15/2021							
258	Oct 15/2021							
259	Oct 15/2021							
260	Oct 15/2021							
261	Oct 15/2021							
R 262	Oct 15/2023							
R 263	Oct 15/2023							
R 264	Oct 15/2023							
R 265	Oct 15/2023							
R 266	Oct 15/2023							
R 267	Oct 15/2023							
R 268	Oct 15/2023							
R 269	Oct 15/2023							
R 270	Oct 15/2023							
R 271	Oct 15/2023							
R 272	Oct 15/2023							
49-90 TASK SUPPORT								
301	Oct 15/2021							
302	Oct 15/2021							
303	Oct 15/2021							
304	BLANK							

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G04902 S0000148576_V1

Basic Fault Isolation Process
Figure 1

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Some airplane systems have built-in test equipment (BITE). IF the system finds a fault when you do a BITE test, it will give you a maintenance message.

A maintenance message can be any of these:

- a code
- a text message
- a light
- an indication.

To find the fault isolation task for a maintenance message, go to the Maintenance Message Index in the chapter for the applicable system.

If you do not know which chapter is the correct one, look at the list at the front of any Maintenance Message Index. For each system or component (LRU) that has BITE, this list gives the chapter number where you can find the Index that you need.

Find the maintenance message for the applicable LRU or system in the Index. Then find the task number on the same line as the maintenance message. Go to the task in the FIM and do the steps of the task (see Figure 4).

G04950 S0000148578_V1

Getting Fault Information from BITE
Figure 2

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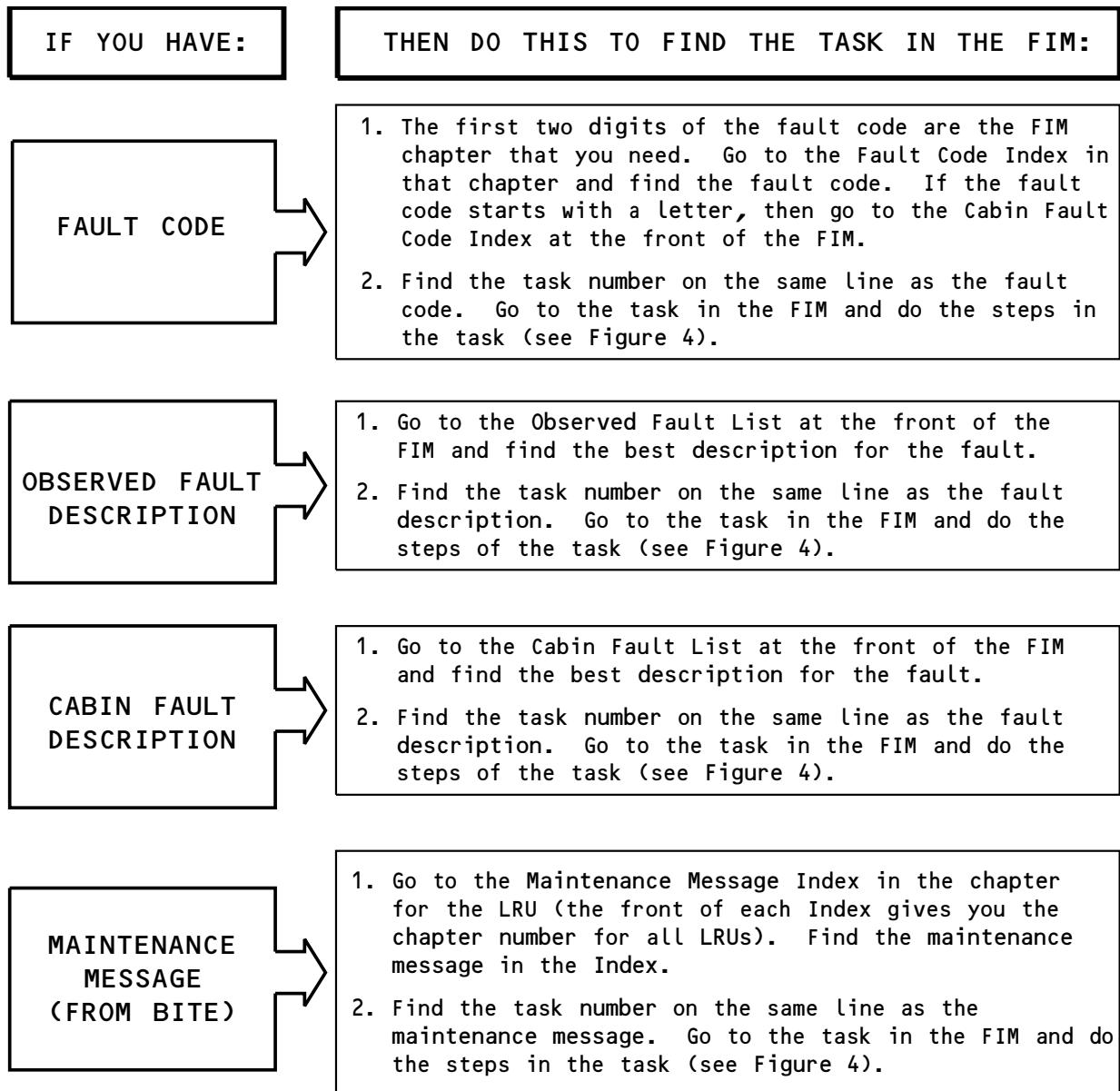
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G04979 S0000148579_V2

**Finding the Fault Isolation Task in the FIM
Figure 3**

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ASSUMED CONDITIONS AT START OF TASK

- External electrical power is ON
- Hydraulic power and pneumatic power are OFF
- Engines are shut down
- No equipment in the system is deactivated

POSSIBLE CAUSES

- The list of possible causes has the most likely cause first and the least likely cause last.
- You can use the maintenance records of your airline to determine if the fault occurred before. Compare the list of possible causes to the past maintenance actions. This will help prevent repetition of the same maintenance actions.

INITIAL EVALUATION PARAGRAPH

- The primary purpose of the Initial Evaluation paragraph at the start of the task is to help you find out if you can detect the fault right now:
 - If you cannot detect the fault right now, then the task cannot isolate the fault and the Initial Evaluation paragraph will say that there was an intermittent fault.
 - If you have an intermittent fault, you must use your judgement (and follow your airline's policy) to decide which maintenance action to take. Then monitor the airplane to see if the fault happens again on subsequent flights.
- The Initial Evaluation paragraph can also help you find out which Fault Isolation Procedure to use to isolate and correct the fault.

FAULT ISOLATION STEPS

- The FIM task steps are presented in a specified order. The "If... then" statements will guide you along a logical path. But if you do not plan to follow the FIM task exactly, make sure that you read it before you start to isolate the fault. Some FIM procedures start with important steps that have an effect on the other steps in the procedure.
- When you are at the endpoint of the path, the step says "...you corrected the fault." Complete the step and exit the procedure.

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

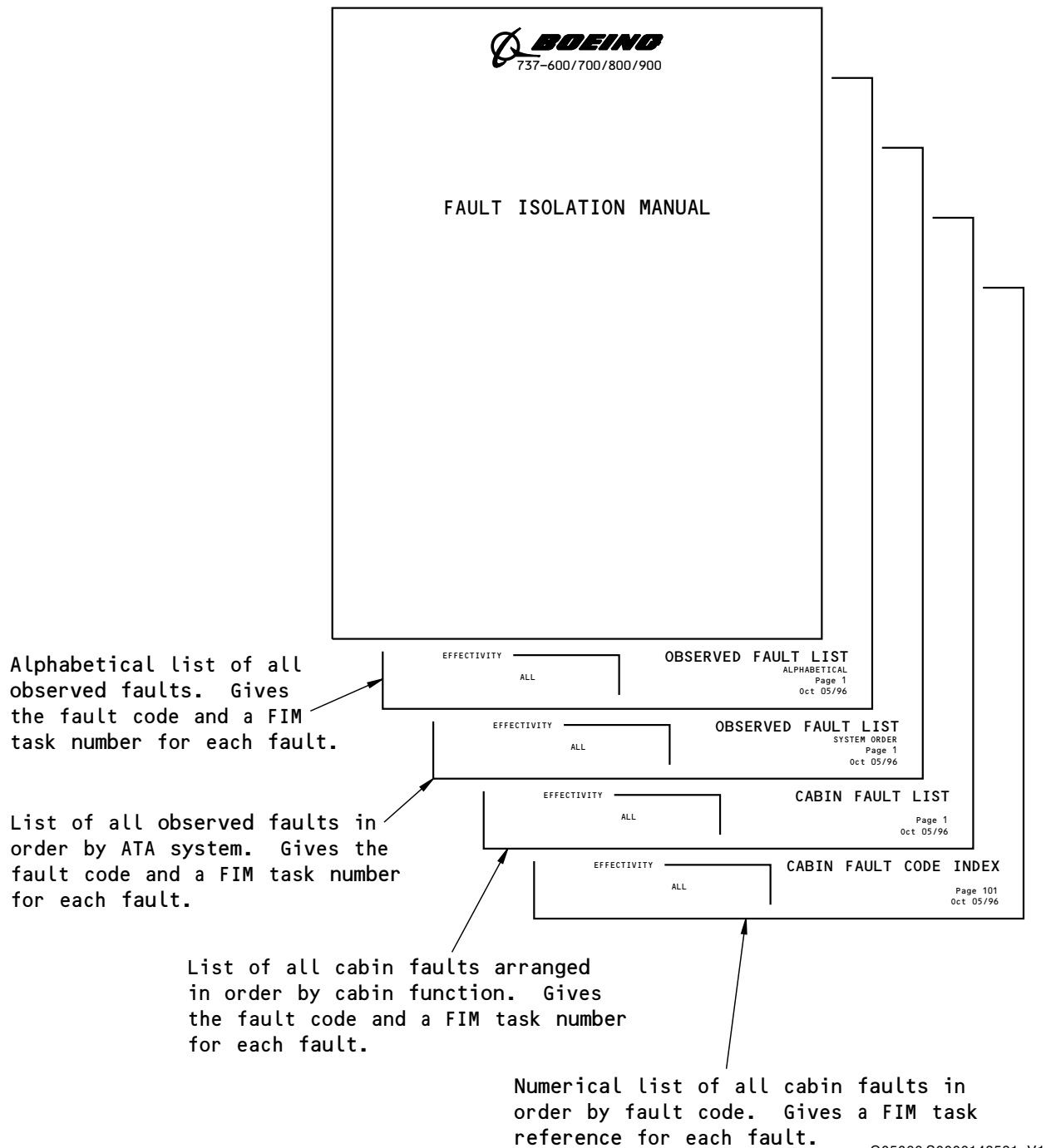
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Subjects at Front of FIM
Figure 5

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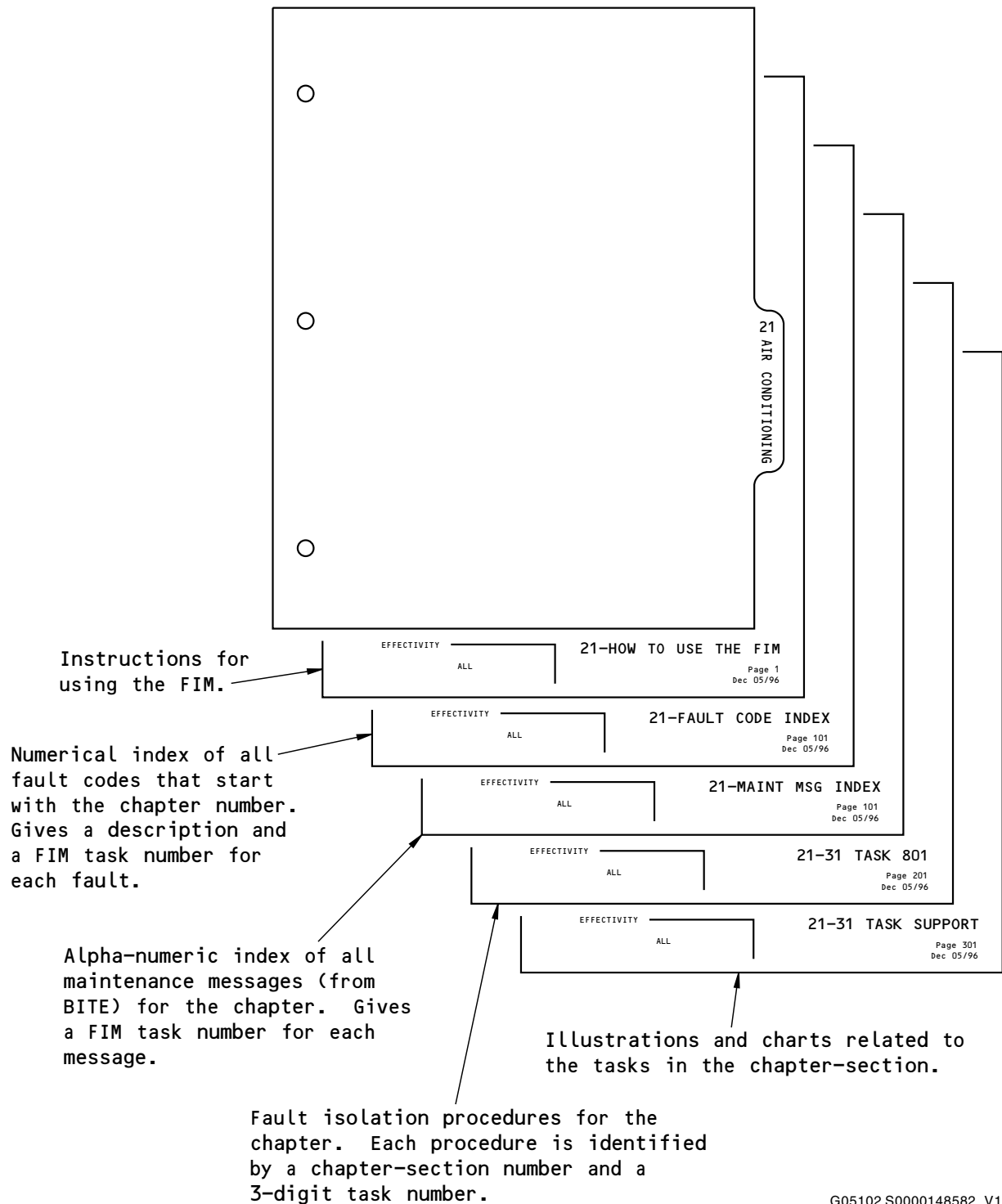
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G05102 S0000148582_V1

Subjects in Each FIM Chapter
Figure 6

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
491 010 00	APU: Air Inlet Door does not fully open or fully close.	49-60 TASK 801
491 020 00	APU: Vibration is excessive.	49-15 TASK 807
491 030 00	APU starter-generator: noisy during APU start.	49-45 TASK 803
491 040 00	APU: Operates with hydraulic contaminated fuel.	49-10 TASK 811
492 010 00	APU FAULT light: light on, APU had a protective shutdown.	49-60 TASK 801
492 020 00	APU FAULT light: light on, APU operates without a protective shutdown.	49-15 TASK 801
492 030 00	APU LOW OIL PRESSURE light: light on, APU operates with no protective shutdown.	49-15 TASK 802
492 040 00	APU OVER SPEED light: light on, APU operates with no protective shutdown.	49-15 TASK 803
492 050 00	APU GEN OFF BUS light: light not on, APU speed at 95%.	49-15 TASK 804
492 060 00	APU LOW OIL PRESSURE light: light on, APU had a protective shutdown.	49-60 TASK 801
492 070 00	APU MAINT light: light on.	49-60 TASK 801
492 080 00	APU OVER SPEED light: light on during APU shutdown.	49-60 TASK 801
492 090 00	APU OVER SPEED light: light on, APU had a protective shutdown.	49-60 TASK 801
492 100 00	APU: does not start, FAULT light ON.	49-60 TASK 801
492 110 00	APU: does not start, MAINT light ON.	49-60 TASK 801
492 120 00	APU: does not start, OVER SPEED light ON.	49-60 TASK 801
492 130 00	APU: does not start, no APU indication lights ON.	49-15 TASK 805
492 140 00	APU: oil consumption high.	49-95 TASK 801
492 150 00	Smoke or flame in APU exhaust.	49-55 TASK 801
492 160 00	Surge of APU during main engine start.	49-55 TASK 808
492 161 00	Surge of APU during ECS operation.	49-55 TASK 810
492 162 00	Abnormal noise during APU system operation.	49-55 TASK 809
493 010 00	APU: fuel valve does not fully open or fully close.	49-60 TASK 801
494 010 00	Battery voltage: less than 22 volts with BAT switch at ON and no AC power on the charger.	49-45 TASK 801
494 020 00	Battery voltage: less than 26 volts with AC power on the charger.	49-45 TASK 802
495 010 00	DUAL BLEED light: light on, APU BLEED switch at OFF.	49-55 TASK 803
495 031 00	Duct Pressure Indication: low or not constant during main engine start, the APU is the bleed source.	49-55 TASK 807
495 032 00	Duct Pressure Indication: low or not constant during pack operation, the APU is the bleed source.	49-55 TASK 806
495 050 00	Duct Pressure Indication: Zero, the APU is the bleed source.	49-55 TASK 804

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
496 010 00	APU BITE INOP message shows on the CDU.	49-65 TASK 801
497 010 00	APU EGT indicator: does not operate correctly.	49-75 TASK 801
499 010 00	Fumes or Smoke in Cabin: Pneumatic Power supplied by APU.	49-55 TASK 802

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
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Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
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Cargo Electronic Unit - Lower Aft	CEU - LWR AFT	26
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Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
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Enhanced Digital Flight Control System	EDFCS	22
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Flight Management Computer System	FMCS	34
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Satellite Communications System	SATCOM	23
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Stall Management Yaw Damper Computer - 2	SMYD - 2	27
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APU	49-11021 FIRE SHUTDOWN SHOWS COCKPIT FIRE HANDLE PULLED	49-10 TASK 802
APU	49-11023 FIRE SHUTDOWN SHOWS REMOTE FIRE HANDLE PULLED	49-10 TASK 803
APU	49-11024 FIRE SHUTDOWN FROM AUTOMATIC FIRE DETECTION SYSTEM	49-10 TASK 804
APU	49-15003 INLET DOOR SHUTDOWN DOOR NOT OPEN	49-10 TASK 805
APU	49-15004 INLET DOOR SHUTDOWN	49-10 TASK 806
APU	49-15215 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT	49-10 TASK 807
APU	49-15216 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT	49-10 TASK 808
APU	49-15217 INLET DOOR SWITCH POWER SHOWS HIGH CURRENT	49-10 TASK 809
APU	49-15218 INLET DOOR DID NOT CLOSE	49-10 TASK 810
APU	49-21015 OVERTEMPERATURE SHUTDOWN	49-20 TASK 801
APU	49-21235 BLEED DISABLED TO PREVENT OVERTEMPERATURE	49-20 TASK 802
APU	49-31001 APU FUEL VALVE SHUTDOWN	49-30 TASK 801
APU	49-31014 OVERSPEED SHUTDOWN APU OVERSPEED	49-30 TASK 802
APU	49-31016 OVERTEMPERATURE SHUTDOWN	49-30 TASK 803
APU	49-31018 UNDERSPEED SHUTDOWN	49-30 TASK 804
APU	49-31159 FCU RESOLVER CIRCUIT SHOWS SHORT TO GROUND	49-32 TASK 801
APU	49-31160 FCU RESOLVER CIRCUIT SHOWS OPEN	49-32 TASK 802
APU	49-31161 FCU RESOLVER CIRCUIT SHOWS SHORT	49-32 TASK 803
APU	49-31162 FCU RESOLVER CIRCUIT SHOWS BAD	49-32 TASK 804
APU	49-31163 FUEL CONTROL UNIT SHOWS SOLENOID FAILED ON	49-31 TASK 801
APU	49-31164 FUEL CONTROL UNIT SHOWS SOLENOID OPEN CIRCUIT	49-31 TASK 802
APU	49-31166 FUEL CONTROL UNIT SHOWS SOLENOID HIGH CURRENT	49-31 TASK 803
APU	49-31167 FUEL CONTROL UNIT SHOWS FUEL TEMP SENSOR SHORT	49-31 TASK 804
APU	49-31168 FUEL CONTROL UNIT TEMP SHOWS OUT OF RANGE HIGH	49-31 TASK 805

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APU	49-31170 FUEL CONTROL TORQ MOTOR SHOWS LOW SIDE GROUNDED	49-31 TASK 807
APU	49-31171 FUEL CONTROL UNIT FLOW DISAGREES WITH COMMAND	49-31 TASK 808
APU	49-31172 FUEL CONTROL UNIT TORQUE MOTOR SHOWS OPEN CIRCUIT	49-31 TASK 809
APU	49-31173 FUEL CONTROL UNIT TORQUE MOTOR SHOWS SHORT	49-31 TASK 810
APU	49-31175 FCU RESOLVER CIRCUIT SHOWS BAD	49-32 TASK 805
APU	49-31214 APU FUEL VALVE SHOWS NOT OPEN	49-33 TASK 801
APU	49-31294 FLOW DIVIDER SOLENOID SHOWS HIGH CURRENT	49-33 TASK 802
APU	49-31295 FLOW DIVIDER SOLENOID SHOWS OPEN CIRCUIT	49-33 TASK 803
APU	49-41010 NO ACCELERATION SHUTDOWN	49-40 TASK 801
APU	49-41011 NO FLAME SHUTDOWN	49-40 TASK 802
APU	49-41012 NO APU ROTATION SHUTDOWN	49-40 TASK 803
APU	49-41180 IGNITION UNIT CIRCUIT SHOWS HIGH CURRENT	49-40 TASK 804
APU	49-41181 IGNITION UNIT CIRCUIT SHOWS OPEN CIRCUIT	49-40 TASK 805
APU	49-41244 START CONVERTER SHOWS FAILED GENERATOR DIODE	49-40 TASK 806
APU	49-41245 START CONVERTER UNIT SHOWS GEN UNDERVOLTAGE	49-40 TASK 807
APU	49-41246 START CONVERTER UNIT SHOWS BAD INPUT COMMAND	49-40 TASK 808
APU	49-41247 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL	49-40 TASK 809
APU	49-41248 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 810
APU	49-41249 START CONVERTER UNIT SHOWS LOW BATTERY POWER	49-40 TASK 822
APU	49-41250 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 811
APU	49-41251 START CONVERTER UNIT SHOWS HIGH TEMPERATURE	49-40 TASK 812
APU	49-41252 START CONVERTER SHOWS VOLTAGE REGULATOR FAILED	49-40 TASK 813

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APU	49-41253 START POWER UNIT SHOWS START SYSTEM INOP	49-40 TASK 814
APU	49-41254 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 821
APU	49-41255 START POWER UNIT SHOWS HIGH TEMPERATURE	49-40 TASK 815
APU	49-41256 START CONVERTER SHOWS NO COOLING FAN POWER	49-40 TASK 816
APU	49-41266 START COMMAND SHOWS HIGH CURRENT	49-40 TASK 817
APU	49-41267 START COMMAND SHOWS OPEN CIRCUIT	49-40 TASK 818
APU	49-41297 START POWER UNIT SHOWS INTERNAL FAILURE	49-40 TASK 819
APU	49-41298 START CONVERTER SHOWS GENERATOR PMG FAILURE	49-40 TASK 820
APU	49-41305 START CONVERTER UNIT SHOWS BAD INPUT COMMAND	49-40 TASK 808
APU	49-41306 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL	49-40 TASK 823
APU	49-52017 REVERSE FLOW SHUTDOWN	49-50 TASK 801
APU	49-52102 TOTAL PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 811
APU	49-52183 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 801
APU	49-52186 IGV ACTUATOR LVDT SHOWS LOW SIDE GROUNDED	49-52 TASK 802
APU	49-52187 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 803
APU	49-52188 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 801
APU	49-52189 IGV ACTUATOR LVDT SHOWS OPEN CIRCUIT	49-52 TASK 804
APU	49-52190 IGV ACTUATOR POSITION DISAGREES WITH COMMAND	49-52 TASK 805
APU	49-52191 IGV ACTUATOR POSITION DISAGREES WITH COMMAND	49-52 TASK 805
APU	49-52192 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 806
APU	49-52193 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 807
APU	49-52194 IGV ACTUATOR TORQUE MOTOR SHOWS OPEN CIRCUIT	49-52 TASK 808
APU	49-52195 IGV ACTUATOR TORQ MOTOR SHOWS SHORT CIRCUIT	49-52 TASK 809
APU	49-52196 IGV ACTUATOR TORQ MOTOR SHOWS LOW SIDE GROUNDED	49-52 TASK 810

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APU	49-52219 INLET PRESSURE SENSOR DISAGREES WITH BUS DATA	49-54 TASK 801
APU	49-52221 INLET PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 802
APU	49-52222 INLET PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 803
APU	49-52236 BLEED VALVE POSITION DISAGREES WITH COMMAND	49-51 TASK 801
APU	49-52237 BLEED AIR VALVE CIRCUIT SHOWS OPEN CIRCUIT	49-51 TASK 802
APU	49-52238 BLEED VALVE POSITION DISAGREES WITH COMMAND	49-51 TASK 803
APU	49-52240 BLEED AIR VALVE CIRCUIT SHOWS HIGH CURRENT	49-51 TASK 804
APU	49-52269 BLEED DISABLED TO PREVENT REVERSE FLOW	49-50 TASK 821
APU	49-52270 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT	49-54 TASK 804
APU	49-52271 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 805
APU	49-52272 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 806
APU	49-52273 DELTA PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 807
APU	49-52280 SURGE VALVE TORQUE MOTOR SHOWS LOW SIDE GROUNDED	49-53 TASK 802
APU	49-52281 SURGE CONTROL VALVE LVDT SHOWS OPEN CIRCUIT	49-53 TASK 803
APU	49-52282 SURGE CONTROL VALVE LVDT SHOWS SHORT CIRCUIT	49-53 TASK 804
APU	49-52283 SURGE CONTROL VALVE LVDT SHOWS LOW SIDE GROUNDED	49-53 TASK 805
APU	49-52284 SURGE VALVE POSITION DISAGREES WITH COMMAND	49-53 TASK 806
APU	49-52285 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 807
APU	49-52286 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 808
APU	49-52287 SURGE VALVE TORQUE MOTOR SHOWS OPEN CIRCUIT	49-53 TASK 809

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APU	49-52289 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT	49-54 TASK 808
APU	49-52290 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 809
APU	49-52291 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 810
APU	49-52292 BLEED DISABLED TO PREVENT REVERSE FLOW	49-50 TASK 821
APU	49-52301 IGV ACTUATOR LVDT SHOWS HIGH SIDE GROUNDED	49-52 TASK 811
APU	49-52302 SURGE CONTROL VALVE LVDT SHOWS HIGH SIDE GROUNDED	49-53 TASK 811
APU	49-52303 INLET PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 812
APU	49-61002 ECU SHUTDOWN	49-60 TASK 824
APU	49-61025 SENSOR FAILURE SHUTDOWN	49-60 TASK 823
APU	49-61104 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61106 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61107 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61108 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61109 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61110 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61111 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61112 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61113 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61114 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61115 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61116 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61117 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61118 ECU INTERNAL FAILURE	49-60 TASK 802
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APU	49-61120 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61121 ECU INTERNAL FAILURE	49-60 TASK 802

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APU	49-61123 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61124 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61125 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61126 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61127 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61128 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61129 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61130 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61131 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61132 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61133 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61134 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61135 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61136 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61137 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61138 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61139 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61140 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61141 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61142 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61143 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61144 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61145 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61150 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61151 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61152 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61153 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61154 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61155 APU LOADSHED DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61156 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61157 ECU INTERNAL FAILURE or FCU TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61158 FCU RESOLVER EXCITATION SHOWS CIRCUIT FAILED ON	49-60 TASK 805

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APU	49-61174 FCU TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-31 TASK 812
APU	49-61176 APU LOADSHED DRIVER SHOWS HIGH CURRENT	49-60 TASK 806
APU	49-61178 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61179 IGNITION UNIT DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 808
APU	49-61182 IGV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 809
APU	49-61184 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61185 IGV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61197 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61198 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61199 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61200 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61201 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61202 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61203 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61204 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61210 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61211 DOOR CLOSE DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 810
APU	49-61212 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61213 DOOR OPEN DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 811
APU	49-61220 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61223 INLET TEMPERATURE SENSOR SHOWS SHORT CIRCUIT	49-60 TASK 812
APU	49-61224 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH	49-60 TASK 813
APU	49-61225 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW	49-60 TASK 814
APU	49-61231 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61232 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61233 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61234 ECU INTERNAL FAILURE	49-60 TASK 802

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APU	49-61239 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61241 BLEED AIR VALVE DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 815
APU	49-61242 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61243 READY TO LOAD DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 816
APU	49-61257 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61258 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61259 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61260 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61261 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61262 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61263 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61264 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61265 START ENABLE COMMAND SHOWS CIRCUIT FAILED ON	49-60 TASK 818
APU	49-61268 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61274 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61275 SCV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 819
APU	49-61276 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61277 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61278 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 820
APU	49-61279 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 821
APU	49-61293 FLOW DIVIDER SOLENOID SHOWS CIRCUIT FAILED ON	49-60 TASK 822
APU	49-61296 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61308 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61309 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61310 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61311 ECU INTERNAL FAILURE	49-60 TASK 802

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APU	49-61313 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61314 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61315 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-71146 EGT1 THERMOCOUPLE DISAGREES WITH EGT2	49-70 TASK 801
APU	49-71147 EGT1 THERMOCOUPLE SHOWS OPEN CIRCUIT	49-70 TASK 802
APU	49-71148 EGT2 THERMOCOUPLE SHOWS OPEN CIRCUIT	49-70 TASK 803
APU	49-71149 EGT2 THERMOCOUPLE DISAGREES WITH EGT1	49-70 TASK 804
APU	49-72101 DATA MEMORY MODULE POWER SHOWS HIGH CURRENT	49-70 TASK 805
APU	49-72103 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 806
APU	49-72104 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 807
APU	49-72105 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 808
APU	49-72205 FAULT LIGHT CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 809
APU	49-72206 LOP INDICATOR CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 810
APU	49-72207 MAINTENANCE INDICATOR SHOWS HIGH CURRENT	49-70 TASK 811
APU	49-72208 OVERSPEED INDICATOR SHOWS HIGH CURRENT	49-70 TASK 812
APU	49-72209 READY TO LOAD CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 813
APU	49-91005 HIGH OIL TEMP SHUTDOWN	49-90 TASK 801
APU	49-91006 INLET OVERHEAT SHUTDOWN	49-90 TASK 802
APU	49-91007 OIL PRESSURE SHUTDOWN LOW OIL PRESSURE	49-90 TASK 803
APU	49-91227 LOW OIL QUANTITY	49-90 TASK 804
APU	49-94226 LOW OIL PRESSURE SWITCH SHOWS OPEN CIRCUIT	49-90 TASK 805
APU	49-94228 OIL TEMPERATURE SENSOR SHOWS SHORT CIRCUIT	49-90 TASK 806
APU	49-94229 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH	49-90 TASK 807
APU	49-94230 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW	49-90 TASK 808

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-94299 STARTER GENERATOR OIL FILTER SHOWS CLOGGED	49-90 TASK 809
APU	49-94300 OIL FILTER SWITCH SHOWS SHORT CIRCUIT	49-90 TASK 810
APU	49-94304 OIL LEVEL SENSOR SHOWS CIRCUIT FAILURE	49-90 TASK 811

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801. DC Powerloss Shutdown Power Interrupt - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-11019 DC POWERLOSS SHUTDOWN POWER INTERRUPT
- (2) There was a dc power interruption or the dc power to the electronic control unit (ECU) was removed during the APU operation. The APU operation includes these operational modes: (1) starting, (2) on-speed, (3) roll-down and the APU speed is more than 15% and (4) cool-down cycle. If the last APU shutdown was caused by a dc power interruption or a decrease in dc power for more than 50 milliseconds, then the fault is set.
- (3) The ECU sets a bit in the memory for an orderly stop of the software's control mode when the APU master switch is set to the OFF position or an APU protective shutdown occurs. Each time the ECU is energized (powered-up), the ECU does a check of this bit. If this bit is not set, then the last APU operation was stopped by a dc power loss and not by the APU master switch that was set to the OFF position or an APU protective shutdown.
- (4) The APU FAULT light on the P5 forward overhead panel will not show if the APU speed is less than 15% for this maintenance message. The APU FAULT light will show if there was a dc power interruption or a decrease in dc power for more than 50 milliseconds and the APU speed is more than 15% for this maintenance message. If the BAT switch was set to the OFF position during the APU operation, no APU indication lights will show for this maintenance message.

B. Possible Causes

- (1) BAT switch, on the P5 forward overhead panel, was set to the OFF position during the APU operation
NOTE: After the APU master switch is set to the OFF position, the APU continues to operate for approximately 60 seconds during its cool-down cycle. The BAT switch must not be set to the OFF position until after the APU cool-down cycle and the APU engine stops its operations.
- (2) Battery, M6
- (3) Airplane wire harness problem
- (4) Voltage problem with the electronic control unit, M1709
- (5) Switched hot battery bus relay K8 in the standby power control unit, M1720
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 24-31-12)
- (4) (SSM 49-62-11)
- (5) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a visual inspection of the BAT switch:
 - (a) Make sure the APU master switch on the P5 forward overhead panel is OFF.
 - (b) Visually examine the position of the BAT switch on the P5 forward overhead panel.
 - (c) If the BAT switch was set to the OFF position during the APU operation, then do these steps:
NOTE: After the APU master switch is set to the OFF position, the APU continues to operate for approximately 60 seconds during its cool-down cycle. The BAT switch must not be set to the OFF position until after the APU cool-down cycle and the APU engine stops its operations.
 - 1) Set the BAT switch to the ON position.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (d) If the BAT switch is in the ON position or was set to the OFF position after the APU usual shutdown, then continue.
- (2) Do these steps to replace the battery, M6:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the battery, M6. These are the tasks:
 - Battery Removal, AMM TASK 24-31-11-000-802-002

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- Battery Installation, AMM TASK 24-31-11-400-802-002

NOTE: It is necessary to do the battery installation test to see if the DC VOLTS display shows 22 - 28 volts.

- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (h) Set the APU master switch to the OFF position.
- (3) Do a general visual inspection of the airplane wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (4) Do a voltage check of the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Set the APU master switch to the ON position.

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- (e) Do a voltage check on the electrical connector D3599C, pin 2 and structural ground, at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The voltage must be 22 - 28V DC.

- (f) If the voltage is not 22 - 28V DC, then do these steps:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Repair the wiring problems that you find (WDM 49-62-11).
- 4) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.

- (g) If the voltage is 22-28V DC, then do these steps and continue:

- 1) Set the APU master switch to the OFF position.
- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

- (5) Do these steps to replace the switched hot battery bus relay, K8:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the standby power control unit, M1720. To remove it, do this task: SPCU Removal, AMM TASK 24-34-11-000-801.

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- (c) Replace the switched hot battery bus relay, K8 (SSM 24-31-12).
 - (d) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (h) Set the APU master switch to the ON position.
 - (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (j) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

802. Fire Shutdown Shows Cockpit Fire Handle Pulled - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-11021 FIRE SHUTDOWN SHOWS COCKPIT FIRE HANDLE PULLED
- (2) The APU fire switch, S10, on the P8-1 engine and APU fire control panel, was pulled. The electronic control unit receives or has received this input from the APU fire switch, S10. The APU fire switch, S10, is also referred to as the fire handle.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) APU fire switch, S10, was pulled
- (2) Airplane wire harness problem

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- (3) Voltage problem between the APU fire switch, S10, and the electronic control unit, M1709
- (4) Internal problem with the APU fire switch, S10
- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	19	C00388	FIRE PROTECTION DET OVHT WW WING BODY
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1
B	19	C01344	APU FIRE SW POWER
B	20	C00297	FIRE PROTECTION EXTINGUISHERS RIGHT
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU
B	22	C00296	FIRE PROTECTION EXTINGUISHERS LEFT
B	23	C01022	FIRE PROTECTION EXTINGUISHERS ALTN R
B	24	C01021	FIRE PROTECTION EXTINGUISHERS ALTN L

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do these steps to put the APU fire switch (handle), S10, back to its initial (stowed) position on the P8-1 engine and APU fire control panel:
 - (a) Make sure the APU master switch is OFF.
 - (b) Visually examine the position of the APU fire switch, S10, on the P8-1 engine and APU fire control panel.
 - (c) If the APU fire switch, S10, was pulled, then do these steps:
 - 1) Set the APU fire switch (handle), S10, back to its initial (stowed) position.

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- 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (d) If the APU fire switch, S10, was not pulled, then continue.
 - (2) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
 - (3) Do this voltage check between the APU fire switch, S10, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Make sure the APU fire switch, S10, is in its initial (stowed) position.
 - (c) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (d) Do a voltage check on the electrical connector D3599B, pin B1 and structural ground, at the electronic control unit, M1709 (SSM 49-62-11).
- NOTE: The voltage must be 0V DC.
- (e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- (f) Do a voltage check on the electrical connector D3599B, pin B1 and structural ground.

NOTE: The voltage must be 0V DC.

- (g) If the voltage is more than 0V DC for the two voltage checks, then do these steps:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Remove the P8-1 engine and APU fire control panel. To remove it, do this task: Engine and APU Fire Control Panel Removal, AMM TASK 26-00-01-000-801.
- 3) Examine the electrical connectors D580 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 4) If there was a problem with the electrical connector D580 or D3599, then do these steps:
- a) Re-install the P8-1 engine and APU fire control panel. To re-install it, do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
- 5) If the electrical connectors D580 and D3599 are satisfactory, then do these steps:
- a) Measure the resistance between pin B1 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - b) Install a jumper between socket 4 and structural ground on the electrical connector D580 at the P8-1 engine and APU fire control panel.
 - c) Measure the resistance between pin B1 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - d) Remove the jumper.
 - e) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).

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- f) Re-install the P8-1 engine and APU fire control panel. To re-install it, do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.
- g) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- k) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- l) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- m) Set the APU master switch to the OFF position.

(h) If the voltage is 0V DC for the two voltage checks, then do these steps and continue:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

(4) Do this check of the APU fire switch, S10:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Make sure the APU fire switch, S10, is in its initial (stowed) position.
- (c) Remove the P8-1 engine and APU fire control panel. To remove it, do this task: Engine and APU Fire Control Panel Removal, AMM TASK 26-00-01-000-801.
- (d) Examine the electrical connector D580. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D580, then do these steps:
 - 1) Re-install the P8-1 engine and APU fire control panel. To re-install it, do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.
 - 2) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.

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- 7) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D580 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the APU fire switch, S10 (SSM 49-62-11):
 - a) Pin 4 and pin 5, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 5 and pin 6, specified resistance of less than 100 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the APU fire switch, S10 (WDM 49-62-11).
 - b) Re-install the P8-1 engine and APU fire control panel. To re-install it, do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.
 - c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - g) Set the APU master switch to the ON position.
 - h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-install the P8-1 engine and APU fire control panel. To re-install it, do this task: Engine and APU Fire Control Panel Installation, AMM TASK 26-00-01-400-801.
 - b) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

803. Fire Shutdown Shows Remote Fire Handle Pulled - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-11023 FIRE SHUTDOWN SHOWS REMOTE FIRE HANDLE PULLED
- (2) The APU remote fire switch, S16, on the P28 remote APU control panel, was pulled. The electronic control unit receives or has received this input from the APU remote fire switch, S16. The APU remote fire switch, S16, is also referred to as the remote fire handle.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) APU remote fire switch, S16, was pulled
- (2) Airplane wire harness problem
- (3) Voltage problem between the APU remote fire switch, S16, and the electronic control unit, M1709
- (4) Internal problem with the APU remote fire switch, S16
- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER
B	21	C00452	FIRE PROTECTION EXTINGUISHERS APU

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do these steps to put the APU remote fire switch (handle), S16, back to its initial (stowed) position on the P28 remote APU control panel:
 - (a) Make sure the APU master switch is OFF.
 - (b) Visually examine the position of the APU remote fire switch, S16, on the P28 remote APU control panel.
 - (c) If the APU remote fire switch, S16, was pulled, then do these steps:
 - 1) Set the APU remote fire switch, S16, back to its initial (stowed) position.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (d) If the APU remote fire switch, S16, was not pulled, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (3) Do this voltage check between the APU remote fire switch, S16, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Make sure the APU remote fire switch, S16, is in its initial (stowed) position.
 - (c) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.



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- (d) Do a voltage check on the electrical connector D3599B, pin B3 and structural ground, at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The voltage must be 0V DC.

- (e) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (f) Do a voltage check on the electrical connector D3599B, pin B3 and structural ground.

NOTE: The voltage must be 0V DC.

- (g) If the voltage is more than 0V DC for the two voltage checks, then do these steps:

- 1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Remove the P28 remote APU control panel. To remove it, do this task: Remote APU Control Panel Removal, AMM TASK 26-22-03-000-801.

- 3) Examine the electrical connectors D48080P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- 4) If there was a problem with the electrical connector D48080P or D3599, then do these steps:

- a) Re-install the P28 remote APU control panel. To re-install it, do this task: Remote APU Control Panel Installation, AMM TASK 26-22-03-400-801.

- b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

- c) Do this task: APU BITE Procedure, 49-60 TASK 801.

- d) Set the APU master switch to the ON position.

- e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

- f) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

- g) Set the APU master switch to the OFF position.

- 5) If the electrical connectors D48080P and D3599 are satisfactory, then do these steps:

- a) Measure the resistance between pin B3 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).

- b) Install a jumper between socket 2 and structural ground on the electrical connector D48080P at the P28 remote APU control panel.

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- c) Measure the resistance between pin B3 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 100 ohms.

- d) Remove the jumper.
- e) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
- f) Re-install the P28 remote APU control panel. To re-install it, do this task: Remote APU Control Panel Installation, AMM TASK 26-22-03-400-801.
- g) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- k) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- l) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- m) Set the APU master switch to the OFF position.

- (h) If the voltage is 0V DC for the two voltage checks, then do these steps and continue:

- 1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

- (4) Do this check of the APU remote fire switch, S16:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Make sure the APU remote fire switch, S16, is in its initial (stowed) position.
- (c) Remove the P28 remote APU control panel. To remove it, do this task: Remote APU Control Panel Removal, AMM TASK 26-22-03-000-801.
- (d) Examine the electrical connector D48080P. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D48080P, then do these steps:
- 1) Re-install the P28 remote APU control panel. To re-install it, do this task: Remote APU Control Panel Installation, AMM TASK 26-22-03-400-801.
- 2) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.

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- 7) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D48080P is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 2 on the APU remote fire switch, S16 (SSM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) If the resistance is less than 100K ohms, then do these steps:
 - a) Replace the APU remote fire switch, S16 (WDM 49-62-11).
 - b) Re-install the P28 remote APU control panel. To re-install it, do this task: Remote APU Control Panel Installation, AMM TASK 26-22-03-400-801.
 - c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - g) Set the APU master switch to the ON position.
 - h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 100K ohms (open circuit), then do these steps and continue:
 - a) Re-install the P28 remote APU control panel. To re-install it, do this task: Remote APU Control Panel Installation, AMM TASK 26-22-03-400-801.
 - b) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

804. Fire Shutdown From Automatic Fire Detection System - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-11024 FIRE SHUTDOWN FROM AUTOMATIC FIRE DETECTION SYSTEM
- (2) The engine and APU fire detection module, M279, senses a fire problem in the APU compartment. The electronic control unit receives or has received this input from the engine and APU fire detection module, M279.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Operational problem with the APU fire detection system
- (2) Airplane wire harness problem
- (3) Voltage problem between the engine and APU fire detection module, M279, and the electronic control unit, M1709
- (4) Engine and APU fire detection module, M279
- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	21	C00396	FIRE PROT DETECTION MA WRN & CONT
A	22	C00407	FIRE PROTECTION DETECTION ENG 2
A	23	C00403	FIRE PROTECTION DETECTION APU
A	24	C00405	FIRE PROTECTION DETECTION ENG 1
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do an operational check of the APU fire detection system:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: APU Fire Detection - Operational Test, AMM TASK 26-15-00-710-801.
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (h) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (3) Do this voltage check between the engine and APU fire detection module, M279, and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	24	C00405	FIRE PROTECTION DETECTION ENG 1

- (c) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- (d) Do a voltage check on the electrical connector D3599B, pin B2 and structural ground, at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The voltage must be 0V DC.

NOTE: A failure of the APU fire detection loops can cause the engine and APU fire detection module to show 28V DC at pin 6 on the module. The fire bell and the APU fire switch light come on to show that there is a problem with the fire protection system. Refer to FIM chapter 26 to correct the problem.

- (e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	24	C00405	FIRE PROTECTION DETECTION ENG 1
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (f) Do a voltage check on the electrical connector D3599B, pin B2 and structural ground.

NOTE: The voltage must be 0V DC.

- (g) If the voltage is more than 0V DC for the two voltage checks, then do these steps:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Remove the engine and APU fire detection module, M279. To remove it, do this task: Engine and APU Fire Detection Module Removal, AMM TASK 26-10-01-000-801.
- 3) Examine the electrical connectors D1000 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 4) If there was a problem with the electrical connector D1000 or D3599, then do these steps:
- a) Re-install the engine and APU fire detection module, M279. To re-install it, do this task: Engine and APU Fire Detection Module Installation, AMM TASK 26-10-01-400-801.
- b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) Set the APU master switch to the ON position.

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- e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- f) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- g) Set the APU master switch to the OFF position.
- 5) If the electrical connectors D1000 and D3599 are satisfactory, then do these steps:
 - a) Disconnect the electrical connector D12602 from the APU fire relay, R731.
NOTE: The APU fire relay, R731, is installed on the junction box, J24.
 - b) Measure the resistance between pin B2 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - c) Install a jumper between socket 6 and structural ground on the electrical connector D1000 at the engine and APU fire detection module, M279.
 - d) Measure the resistance between pin B2 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - e) Remove the jumper.
 - f) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - g) Re-connect the electrical connector D12602 to the APU fire relay, R731.
 - h) Re-install the engine and APU fire detection module, M279. To re-install it, do this task: Engine and APU Fire Detection Module Installation, AMM TASK 26-10-01-400-801.
 - i) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - j) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - k) Set the APU master switch to the ON position.
 - l) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - m) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - n) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - o) Set the APU master switch to the OFF position.
- (h) If the voltage is 0V DC for the two voltage checks, then do these steps and continue:
 - 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do these steps to replace the engine and APU fire detection module, M279:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the engine and APU fire detection module, M279. These are the tasks:
 - Engine and APU Fire Detection Module Removal, AMM TASK 26-10-01-000-801
 - Engine and APU Fire Detection Module Installation, AMM TASK 26-10-01-400-801
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (h) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

805. Inlet Door Shutdown Door Not Open - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15003 INLET DOOR SHUTDOWN DOOR NOT OPEN

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- (2) If the position switch for the air inlet door goes from the open position to the not fully open position and the APU speed is more than 7%, this APU protective shutdown occurs.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

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- (1) Electronic control unit, M1709

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- (2) Air Inlet Door Position Switch, S284

C. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do an operational check of the air inlet door:
 - 1) Make sure the APU master switch is OFF.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, set the APU master switch to the OFF position.
 - (b) If the air inlet door opens and closes correctly, then there was an intermittent fault.
 - (c) If the air inlet door does not open correctly, then do a check for other related maintenance messages on the FAULT HISTORY and CURRENT STATUS pages:
 - 1) 49-15004
 - 2) 49-15217
 - 3) 49-61211.
 - 4) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 5) If you find these maintenance messages 49-15217 and 49-61211, then you must do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-15003 shows.
 - f) If the CDU display does not show maintenance message 49-15003 again in the last APU cycle, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - (d) If the air inlet door does not open correctly and the CDU display does not show the above maintenance messages, then do these steps:
 - 1) Do this task: Air Inlet Door Test, AMM TASK 49-15-00-700-801.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 5) Set the APU master switch to the ON position.
- 6) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-15003 shows.
 - a) If the CDU display does not show maintenance message 49-15003 again in the last APU cycle, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.

D. Fault Isolation Procedure

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (1) Do these steps to replace the APU ECU (electronic control unit), M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

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- (2) Do these steps to replace the position switch for the air inlet door, S284:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the position switch for the air inlet door, S284. These are the tasks:
 - Air Inlet Door Position Switch Removal, AMM TASK 49-15-41-000-801
 - Air Inlet Door Position Switch Installation, AMM TASK 49-15-41-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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806. Inlet Door Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15004 INLET DOOR SHUTDOWN
- (2) If the electronic control unit does not receive an open signal from the position switch for the air inlet door when commanded open after 30 seconds, this APU protective shutdown occurs.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Operational problem with the air inlet door
- (2) Airplane wire harness problem
- (3) Wiring problem between the air inlet door actuator, M299, the position switch for the air inlet door, S284, and the electronic control unit, M1709
- (4) Air Inlet Door Position Switch, S284
- (5) Air inlet door actuator, M299
- (6) Electronic control unit, M1709
- (7) APU fuel shutoff valve, V43.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do an operational check of the air inlet door:
 - 1) Make sure the APU master switch is OFF.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, set the APU master switch to the OFF position.
 - 4) If the air inlet door opens and closes correctly, then there was an intermittent fault.

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- 5) If the air inlet door does not open correctly, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - a) 49-15216
 - b) 49-15217
 - c) 49-31214
 - 6) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 7) Do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-15004 shows.
 - d) If the CDU display does not show maintenance message 49-15004, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-15004, then continue.
 - f) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message for the last APU cycle, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
- NOTE:** You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do an operational check of the air inlet door:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position.
 - (c) If the air inlet door opens, then do these steps:
 - 1) Do this task: Air Inlet Door Adjustment, AMM TASK 49-15-00-800-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.

NOTE: It is recommended that you do a wiring check between the position switch for the air inlet door and the electronic control unit if the CDU display shows this maintenance message again.

 - 5) Set the APU master switch to the OFF position.
- (d) If the air inlet door does not open, then do these steps:
 - 1) Do a general visual inspection of the airplane wire harness. To inspect it, do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- 2) If the airplane wire harness is satisfactory, then replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the wiring between the air inlet door actuator, M299, the position switch for the air inlet door, S284, and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D922 from the air inlet door actuator, M299.
 - (d) Disconnect the electrical connector D1246 from the position switch for the air inlet door, S284.
 - (e) Examine the electrical connectors D922, D1246 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (f) If there was a problem with the electrical connector D922, D1246, or D3599, replace the connector (AMM TASK 49-11-01-960-803) then do these steps:
 - 1) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.
 - 2) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.

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- 6) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D922, D1246 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between socket 3 and structural ground on the electrical connector D922 at the air inlet door actuator, M299 (SSM 49-62-11).

NOTE: The resistance must be less than 5 ohms (short circuit).
 - 2) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709:
 - a) Pin A3 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A4 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin A7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin A8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - e) Pin A10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 3) Install a jumper between socket 1 and socket 4 on the electrical connector D1246 at the position switch for the air inlet door, S284.
 - 4) Measure the resistance between pin A3 and pin A10 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 5) Remove the jumper.
 - 6) Install the jumper between socket 1 and socket 2 on the electrical connector D922 at the air inlet door actuator, M299.
 - 7) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 8) Remove the jumper.
 - 9) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 10) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.
 - 11) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 12) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 13) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.

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- c) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 14) If the circuit is satisfactory, then continue.
- (4) Do these steps to replace the position switch for the air inlet door, S284:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the position switch for the air inlet door, S284. These are the tasks:
 - Air Inlet Door Position Switch Removal, AMM TASK 49-15-41-000-801
 - Air Inlet Door Position Switch Installation, AMM TASK 49-15-41-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the air inlet door actuator, M299:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message for the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message for the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the APU fuel shutoff valve, V43:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801
 - NOTE: The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.
 - (c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message for the last APU cycle, then you corrected the fault.
 - (g) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

807. APU Fuel Valve/Door Loop Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15215 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT

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- (2) This fault is set when there is a short in the APU fuel shutoff valve and air inlet door actuator circuit. The electronic control unit found an overcurrent of 5 amps during the operation to close the APU fuel shutoff valve and air inlet door. The APU fuel shutoff valve and/or air inlet door can fail to go to its commanded position.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709
- (3) APU fuel shutoff valve, V43
- (4) Air inlet door actuator, M299

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- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D920 from the APU fuel shutoff valve, V43.

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- (d) Disconnect the electrical connector D922 from the air inlet door actuator, M299.
- (e) Examine the electrical connectors D920, D922 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D920, D922 or D3599, then do these steps:
 - 1) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 2) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D920, D922 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11):
 - a) Pin A7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin B8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin D5 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 2 and socket 4 on the electrical connector D920 at the APU fuel shutoff valve, V43.
 - 3) Measure the resistance between pin B8 and pin D5 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 1 and socket 2 on the electrical connector D922 at the air inlet door actuator, M299.
 - 6) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 7) Remove the jumper.
 - 8) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 9) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 10) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.

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- 11) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 12) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 13) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the APU fuel shutoff valve, V43:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801
 - NOTE:** The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.
 - (c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the air inlet door actuator, M299:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— END OF TASK —————

808. APU Fuel Valve/Door Loop Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15216 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) This fault is set when there is a short in the APU fuel shutoff valve and air inlet door actuator circuit. The electronic control unit found an overcurrent of 5 amps during the operation to open the APU fuel shutoff valve and air inlet door. The APU fuel shutoff valve and/or air inlet door can fail to go to its commanded position.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709
- (3) Internal problem with the APU fuel shutoff valve, V43
- (4) APU fuel shutoff valve, V43
- (5) Air inlet door actuator, M299
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D920 from the APU fuel shutoff valve, V43.
 - (d) Disconnect the electrical connector D922 from the air inlet door actuator, M299.
 - (e) Examine the electrical connectors D920, D922 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (f) If there was a problem with the electrical connector D920, D922 or D3599, then do these steps:
 - 1) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 2) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.

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- 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D920, D922 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11):
 - a) Pin A7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin B7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 1 and socket 3 on the electrical connector D920 at the APU fuel shutoff valve, V43.
 - 3) Measure the resistance between pin B7 and pin D9 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 2 and socket 3 on the electrical connector D922 at the air inlet door actuator, M299.
 - 6) Measure the resistance between pin A7 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 7) Remove the jumper.
 - 8) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 9) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 10) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - 11) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 12) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.

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- 13) If the circuit is satisfactory, then continue.
- (3) Do this check of the APU fuel shutoff valve, V43:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D920 from the APU fuel shutoff valve, V43.
- (d) Examine the electrical connector D920. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D920, then do these steps:
 - 1) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D920 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 3 on the APU fuel shutoff valve, V43 (SSM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) If the resistance is less than 100K ohms, then do these steps:
 - a) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801

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- APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801

NOTE: The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.

- Remove the DO-NOT-OPERATE tag from the APU master switch.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 3) If the resistance is more than 100K ohms (open circuit), then do these steps and continue:
- Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do these steps to replace the APU fuel shutoff valve, V43:
- Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801
- NOTE:** The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.
- Remove the DO-NOT-OPERATE tag from the APU master switch.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - If the CDU display shows this maintenance message, then continue.
 - Set the APU master switch to the OFF position.
- (5) Do these steps to replace the air inlet door actuator, M299:
- Make sure the APU master switch is OFF.

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- (b) Replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

809. Inlet Door Switch Power Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15217 INLET DOOR SWITCH POWER SHOWS HIGH CURRENT
- (2) This fault is set when the electronic control unit found an overcurrent condition in the position switch circuit for the air inlet door.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem between the position switch for the air inlet door, S284, and the electronic control unit, M1709
- (3) Position switch for the air inlet door, S284
- (4) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the position switch for the air inlet door, S284, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D1246 from the position switch for the air inlet door, S284.

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- (d) Examine the electrical connectors D1246 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D1246 or D3599, then do these steps:
 - 1) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D1246 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11):
 - a) Pin A3 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 1 and socket 4 on the electrical connector D1246 at the position switch for the air inlet door, S284.
 - 3) Measure the resistance between pin A3 and pin A10 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 6) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the position switch for the air inlet door, S284:

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- (a) Make sure the APU master switch is OFF.
 - (b) Replace the position switch for the air inlet door, S284. These are the tasks:
 - Air Inlet Door Position Switch Removal, AMM TASK 49-15-41-000-801
 - Air Inlet Door Position Switch Installation, AMM TASK 49-15-41-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

810. Inlet Door Did Not Close - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-15218 INLET DOOR DID NOT CLOSE
- (2) The air inlet door did not close in 30 seconds when commanded close from the electronic control unit.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Operational problem with the air inlet door
- (2) Airplane wire harness problem
- (3) Wiring problem between the air inlet door actuator, M299, the position switch for the air inlet door, S284, and the electronic control unit, M1709
- (4) Air inlet door actuator, M299
- (5) Position switch for the air inlet door, S284

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- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-10 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-10 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

NOTE: This maintenance message will stay on the CURRENT STATUS page even after you corrected the fault. You must do a visual check of the air inlet door and the APU fuel shutoff valve in the close position during an APU usual shutdown to make sure you corrected the fault. Replacement of the electronic control unit will not show this maintenance message on the CURRENT STATUS page.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do an operational check of the air inlet door:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position.
 - (c) If the air inlet door opens, then do these steps:
 - 1) Do this task: Air Inlet Door Adjustment, AMM TASK 49-15-00-800-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) After 30 seconds, set the APU master switch to the OFF position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.

NOTE: It is recommended that you do a wiring check between the position switch for the air inlet door and the electronic control unit if the CDU display shows this maintenance message again.

- (d) If the air inlet door does not open, then do these steps:
- 1) Do a general visual inspection of the airplane wire harness. To inspect it, do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - 2) If the airplane wire harness is satisfactory, then replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801,
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) After 30 seconds, set the APU master switch to the OFF position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, set the APU master switch to the OFF position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the wiring between the air inlet door actuator, M299, the position switch for the air inlet door, S284, and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D922 from the air inlet door actuator, M299.
 - (d) Disconnect the electrical connector D1246 from the position switch for the air inlet door, S284.
 - (e) Examine the electrical connectors D922, D1246 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (f) If there was a problem with the electrical connector D922, D1246 or D3599, then do these steps:

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- 1) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.
 - 2) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) After 30 seconds, set the APU master switch to the OFF position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- (g) If the electrical connectors D922, D1246 and D3599 are satisfactory, then do these steps:
- 1) Measure the resistance between socket 3 and structural ground on the electrical connector D922 at the air inlet door actuator, M299 (SSM 49-62-11).

NOTE: The resistance must be less than 5 ohms (short circuit).
 - 2) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709:
 - a) Pin A3 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A4 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin A7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin A8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - e) Pin A10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 3) Install a jumper between socket 1 and socket 4 on the electrical connector D1246 at the position switch for the air inlet door, S284.
 - 4) Measure the resistance between pin A3 and pin A10 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 5) Remove the jumper.
 - 6) Install the jumper between socket 1 and socket 2 on the electrical connector D922 at the air inlet door actuator, M299.
 - 7) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 8) Remove the jumper.
 - 9) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 10) Re-connect the electrical connector D1246 to the position switch for the air inlet door, S284.

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- 11) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 12) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 13) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, set the APU master switch to the OFF position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 14) If the circuit is satisfactory, then continue.
- (4) Do these steps to replace the air inlet door actuator, M299:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the air inlet door actuator, M299. These are the tasks:
 - Air Inlet Door Actuator Removal, AMM TASK 49-15-31-000-801,
 - Air Inlet Door Actuator Installation, AMM TASK 49-15-31-400-801.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, set the APU master switch to the OFF position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (5) Do these steps to replace the position switch for the air inlet door, S284:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the position switch for the air inlet door, S284. These are the tasks:
 - Air Inlet Door Position Switch Removal, AMM TASK 49-15-41-000-801,
 - Air Inlet Door Position Switch Installation, AMM TASK 49-15-41-400-801.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, set the APU master switch to the OFF position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:

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- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, set the APU master switch to the OFF position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.

————— **END OF TASK** —————

811. APU Operates with Hydraulic Contaminated Fuel - Fault Isolation

A. Description

- (1) Hydraulic fluid can go into the fuel tanks through leakage in the hydraulic system. Hydraulic Fluid Heat Exchangers are in the left and right main tanks, and the center tank has hydraulic lines. The left main tank supplies fuel to the APU.
 - (a) If the APU operates with a hydraulic fluid leak in the left main tank, the APU is affected.
- (2) Hydraulic fluid stays in solution in fuel at concentrations up to 5% at temperatures more than -22°F (-30°C)

B. Possible Causes

- (1) Leakage in the hydraulic system.

C. Fault Isolation Procedure

- (1) Find how long the airplane operated with contaminated fuel.
 - (a) Review the maintenance records and find the maximum hydraulic fluid contamination level reached in the fuel by dividing the quantity of hydraulic fluid lost from the hydraulic system by the quantity of fuel the fluid leaked into.

NOTE: The maximum hydraulic fluid contamination level and amount of time of APU operation with the hydraulic fluid-contamination fuel are found in this task.
- (2) If the hydraulic fluid contamination level is 0.1% or less, then do these steps:
 - (a) Record the type of hydraulic fluid and the amount of time of APU operation with the hydraulic fluid-contamination fuel.
 - (b) If the APU operation with the hydraulic fluid-contamination fuel is less than 16 APU hours, no action is necessary.
 - (c) If the APU operation with the hydraulic fluid-contamination fuel is more than 16 APU hours, then do this task: APU Engine Inspection, AMM TASK 49-21-00-200-801

NOTE: It is necessary that you do the annular combustion chamber, first stage stator vane and first stage turbine borescope inspection.
- (3) If the hydraulic fluid contamination level is between 0.1% and 0.5%, then do these steps:
 - (a) Record the type of hydraulic fluid and the amount of time of APU operation with the hydraulic fluid-contamination fuel.
 - (b) Make sure the hydraulic fluid-contamination fuel has been removed (purged) from the left main fuel tank and replenish with fuel.

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- (c) Put the 5 U.S.-gal (19 l) fuel resistant container, STD-2015 U.S.-gal (19 l) fuel resistant container, STD-201 below the APU.
- (d) Do this task: Motor the APU, AMM TASK 49-11-00-860-804.
- (e) Replace the fuel filter element. These are the tasks:
 - Inlet Fuel Filter Element Removal, AMM TASK 49-31-21-000-801.
 - Inlet Fuel Filter Element Installation, AMM TASK 49-31-21-400-801.
- (f) If it is necessary, you can drain the fuel from the supply and return tube assemblies for the inlet guide vane actuator, surge control valve and fuel cluster.
- (g) Remove the 5 U.S.-gal (19 l) fuel resistant container, STD-201.
- (h) Do this task APU Engine Inspection, AMM TASK 49-21-00-200-801.

NOTE: It is necessary that you do the annular combustion chamber, first stage stator vane and first stage turbine borescope inspection.
- (i) Contact Boeing Service Engineering for the disposition of the APU due to continued APU operation.

NOTE: An APU operational inspection is recommended at three day intervals or 24 APU hour intervals for signs of fuel leakage and performance checks until the APU operation is satisfactory.
- (4) If the hydraulic fluid contamination level is more than 0.5%, contact Boeing Service Engineering and Honeywell for disposition of the APU due to APU operation with hydraulic fluid-contamination fuel.

NOTE: Boeing Service Engineering and Honeywell personnel will review airline operator-supplied information, which include type of hydraulic fluid, hydraulic fluid contamination level and amount of time of APU operation with the hydraulic fluid-contamination fuel. These personnel will provide recommendations on a case-by-case basis.

————— **END OF TASK** —————

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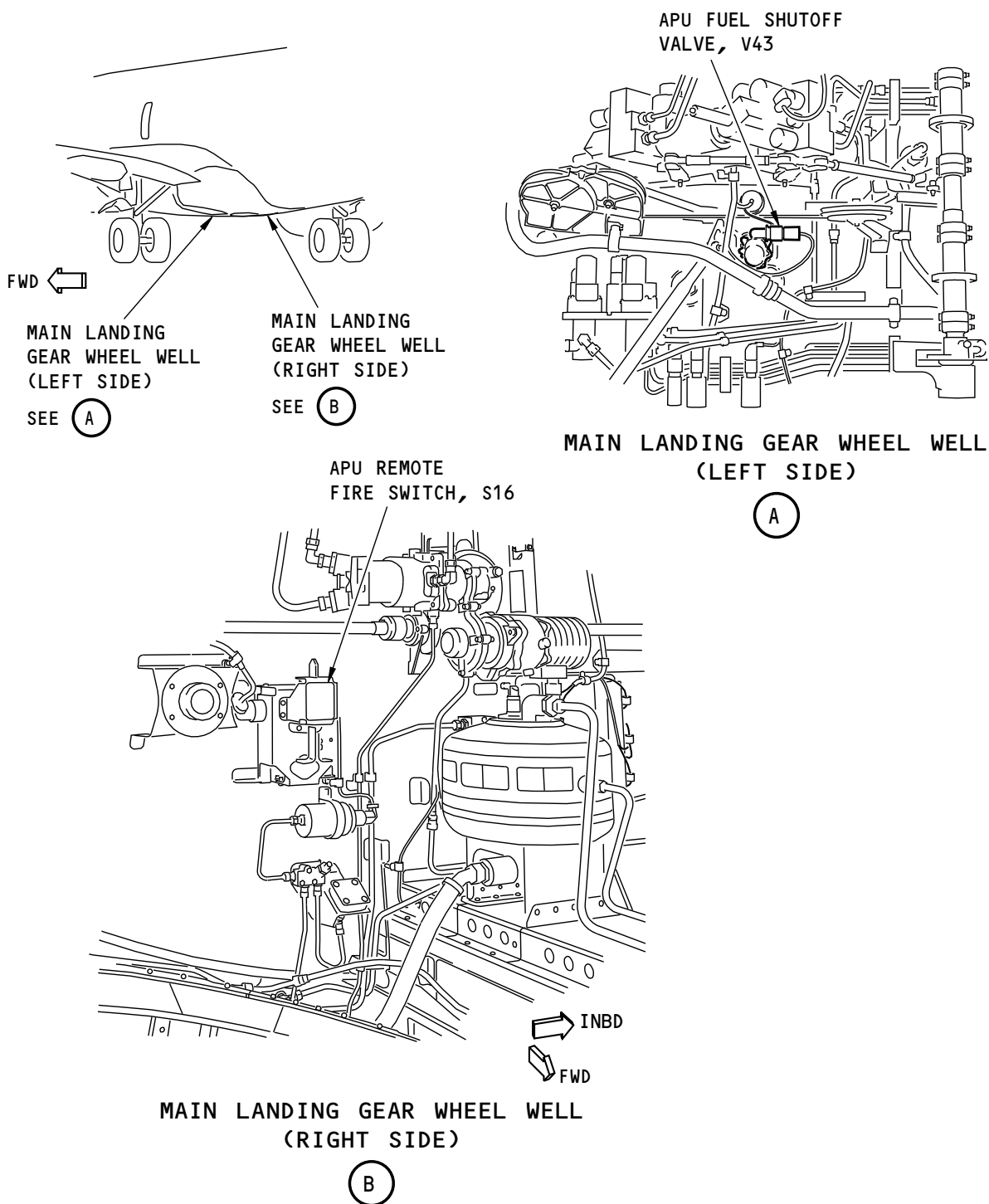
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G44996 S0006745006_V1

APU Power Plant Component Location
Figure 301/49-10-00-990-801 (Sheet 1 of 3)

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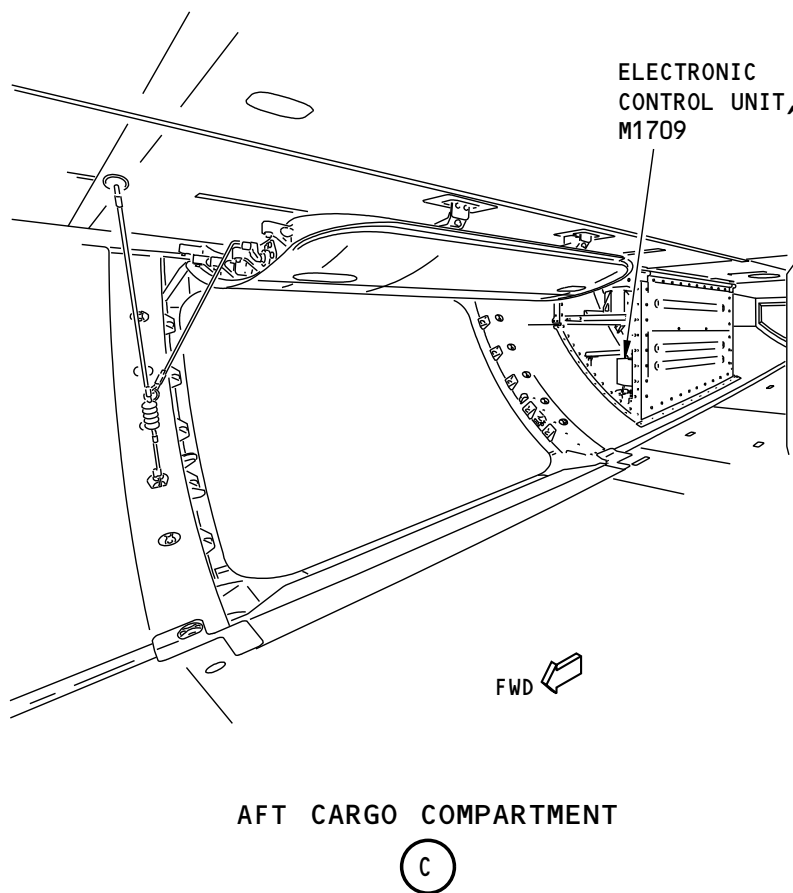
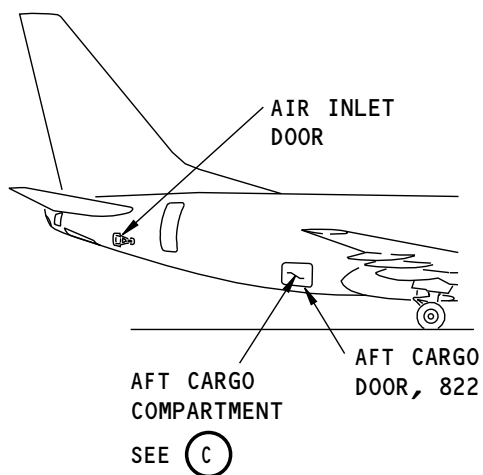
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H19591 S0006745008_V1

APU Power Plant Component Location
Figure 301/49-10-00-990-801 (Sheet 2 of 3)

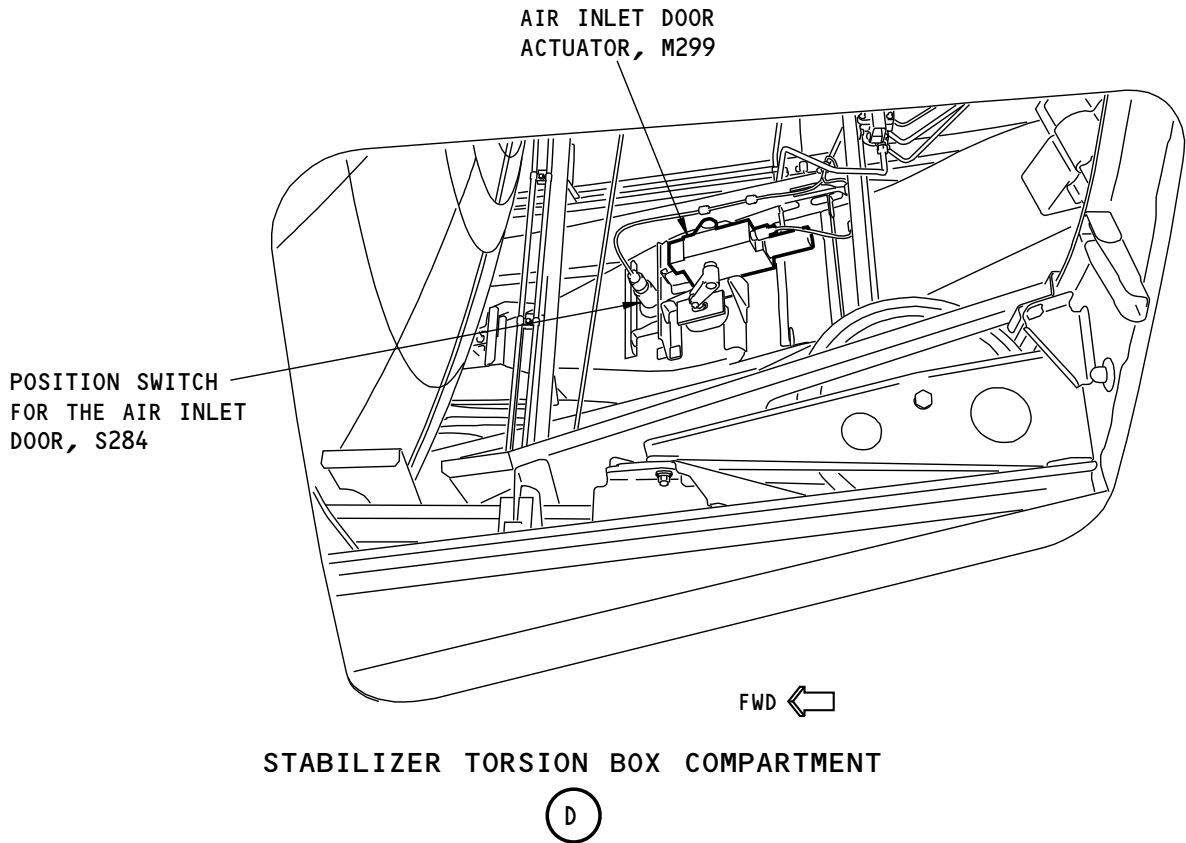
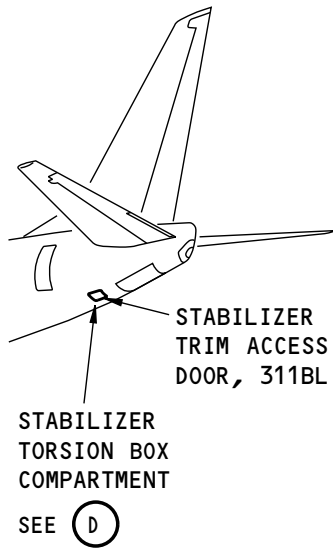
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G44999 S0006745010_V1

APU Power Plant Component Location
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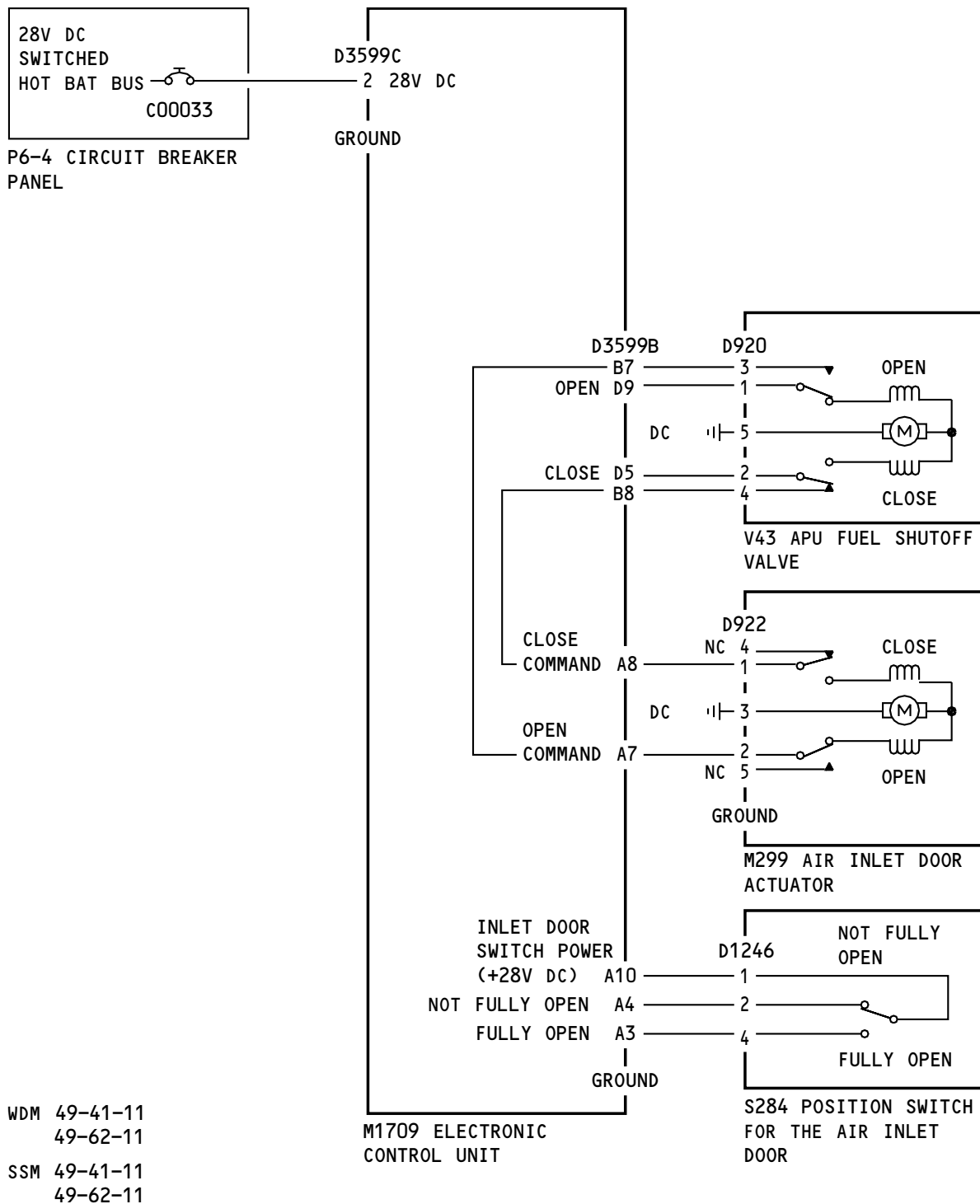
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G45138 S0006745011_V1

APU Power Plant Simplified Schematic
Figure 302/49-10-00-990-802 (Sheet 1 of 2)

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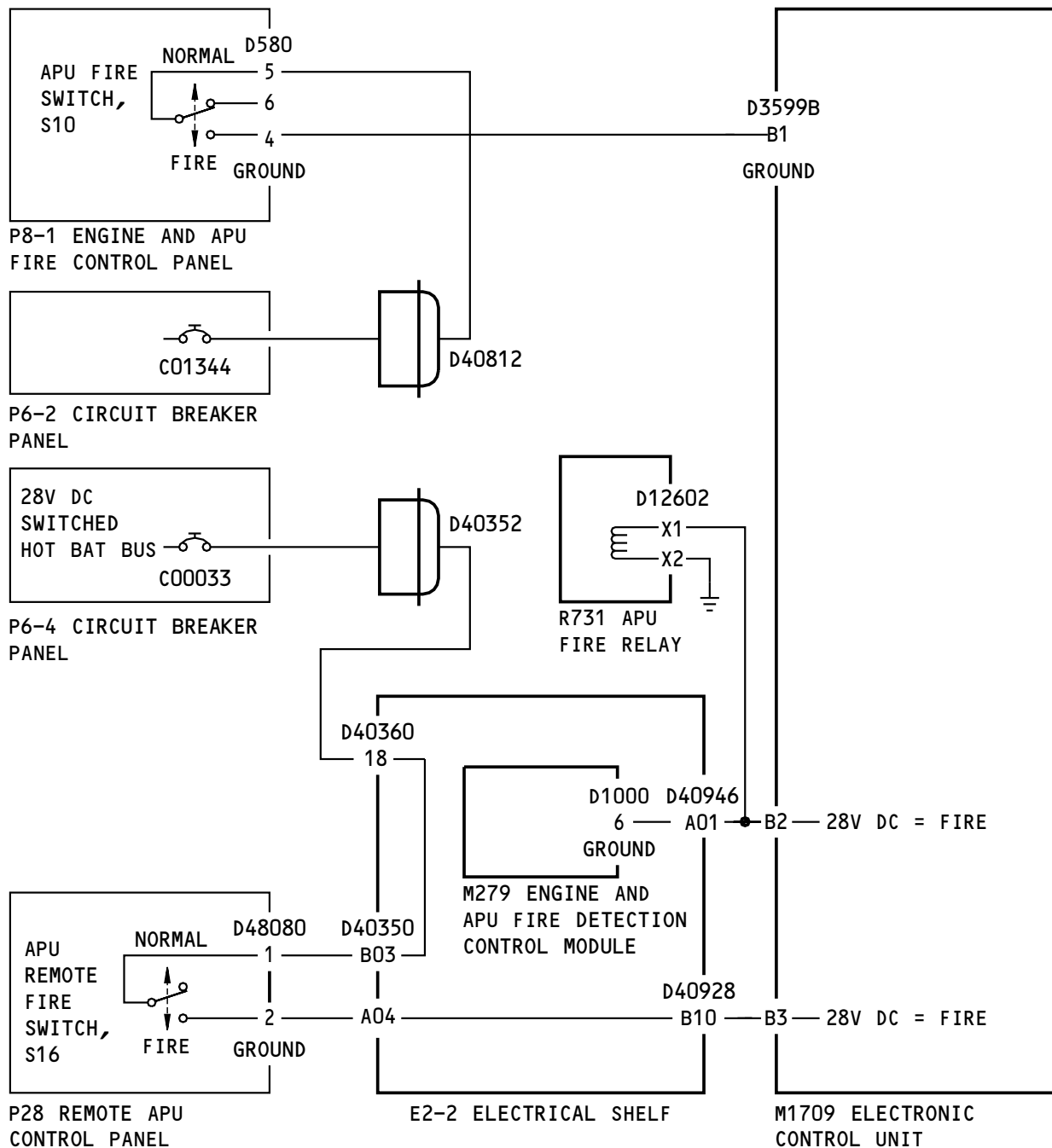
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L30596 S0006745013_V1

APU Power Plant Simplified Schematic
Figure 302/49-10-00-990-802 (Sheet 2 of 2)

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801. APU FAULT Light On, APU Operates With No Protective Shutdown - Fault Isolation

A. Description

- (1) The APU FAULT light is on but there was no protective shutdown for the APU. The APU FAULT light is on the P5 forward overhead panel.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electrical connector D3599 for the electronic control unit, M1709
- (3) Wiring problem between the E2-1 electrical shelf and the electronic control unit, M1709
- (4) Wiring problem between the two receptacles D40926J and D40564J on the E2-1 electrical shelf
- (5) Wiring problem between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	14	C01180	INDICATOR MASTER DIM SECT 8

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) (SSM 33-18-33)
- (4) (WDM 33-18-33)
- (5) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for other related maintenance messages on the CURRENT STATUS page of the control display unit (CDU) display:
 - 1) 49-61198.
 - (b) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s) to correct the fault.
 - (c) If you did not find the above maintenance message(s), then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU operation, look at the APU FAULT light.
 - b) If the APU FAULT light does not show, then you corrected the fault.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (2) Do a visual inspection of the electrical connector D3599 for the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU FAULT light shows on the P5 forward overhead panel.

 - 1) During the APU operation, look at the APU FAULT light.
 - 2) If the APU FAULT light does not show, then you corrected the fault.
 - 3) If the APU FAULT light shows, then continue.
- (3) Do this check of the wiring between the E2-1 electrical shelf and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40926P from the E2-1 electrical shelf.
 - (d) Examine the electrical connectors D40926P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D40926P or D3599, then do these steps:
 - 1) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU FAULT light shows on the P5 forward overhead panel.

 - a) During the APU operation, look at the APU FAULT light.
 - b) If the APU FAULT light does not show, then you corrected the fault.
 - (f) If the electrical connectors D40926P and D3599 are satisfactory, then do these steps:



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- 1) Measure the resistance between pin A13 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket A01 and structural ground on the electrical connector D40926P at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin A13 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU FAULT light shows on the P5 forward overhead panel.
 - d) During the APU operation, look at the APU FAULT light.
 - e) If the APU FAULT light does not show, then you corrected the fault.
 - 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do this check of the wiring between the two receptacles D40926J and D40564J on the E2-1 electrical shelf:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connectors D40926P and D40564P from the E2-1 electrical shelf.
- (d) Examine the electrical connectors D40926P and D40564P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D40926P or D40564P, then do these steps:
 - 1) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- a) During the APU operation, look at the APU FAULT light.
 - b) If the APU FAULT light does not show, then you corrected the fault.
- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If the electrical connectors D40926P and D40564P are satisfactory, then do these steps:
- 1) Measure the resistance between pin A01 and structural ground on the receptacle D40926J at the E2-1 electrical shelf (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between pin A02 and structural ground on the receptacle D40564J at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin A01 and structural ground on the receptacle D40926J.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - f) During the APU operation, look at the APU FAULT light.
 - g) If the APU FAULT light does not show, then you corrected the fault.
 - h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:

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- a) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the wiring between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D40564P from the E2-1 electrical shelf.
- (d) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
- (e) Examine the electrical connectors D40564P and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D40564P or D634, then do these steps:
 - 1) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - 2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU operation, look at the APU FAULT light.
 - b) If the APU FAULT light does not show, then you corrected the fault.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) If the electrical connectors D40564P and D634 are satisfactory, then do these steps:
 - 1) Measure the resistance between socket A02 and structural ground on the electrical connector D40564P at the E2-1 electrical shelf (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 6 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between socket A02 and structural ground on the electrical connector D40564P.

NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - c) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - g) During the APU operation, look at the APU FAULT light.
 - h) If the APU FAULT light does not show, then you corrected the fault.
 - i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if the APU FAULT light shows on the P5 forward overhead panel.
- 1) During the APU operation, look at the APU FAULT light.
- 2) If the APU FAULT light does not show, then you corrected the fault.

———— **END OF TASK** ————

802. APU LOW OIL PRESSURE Light On, APU Operates With No Protective Shutdown - Fault Isolation

A. Description

- (1) The APU LOW OIL PRESSURE light is on for more than 20 seconds but there was no protective shutdown for the Auxiliary Power Unit (APU). The APU LOW OIL PRESSURE light is on the P5 forward overhead panel.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electrical connector D3599 for the electronic control unit, M1709
- (3) Wiring problem between the E2-1 electrical shelf and the electronic control unit, M1709
- (4) Wiring problem between the two receptacles D40926J and D40564J on the E2-1 electrical shelf
- (5) Wiring problem between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	14	C01180	INDICATOR MASTER DIM SECT 8

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) (SSM 33-18-33)
- (4) (WDM 33-18-33)
- (5) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for this maintenance message 49-61200 on the CURRENT STATUS page of the Control Display Unit (CDU) display.
 - (b) If you find maintenance message 49-61200, then do the Fault Isolation Procedure for this message to correct the fault.
 - (c) If you did not find maintenance message 49-61200, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
 - b) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (2) Do a visual inspection of the electrical connector D3599 for the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU LOW OIL PRESSURE light shows on the P5 forward overhead panel.

- 1) During the APU start procedure, look at the APU LOW OIL PRESSURE light.

NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.

- 2) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.

- 3) If the APU LOW OIL PRESSURE light shows after the APU speed is 30%, then continue.

- (3) Do this check of the wiring between the E2-1 electrical shelf and the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.

- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

- (c) Disconnect the electrical connector D40926P from the E2-1 electrical shelf.

- (d) Examine the electrical connectors D40926P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- (e) If there was a problem with the electrical connector D40926P or D3599, then do these steps:

- 1) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU LOW OIL PRESSURE light shows on the P5 forward overhead panel.

- a) During the APU start procedure, look at the APU LOW OIL PRESSURE light.

NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.

- b) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.

- (f) If the electrical connectors D40926P and D3599 are satisfactory, then do these steps:

- 1) Measure the resistance between pin A12 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-94-21).

NOTE: The resistance must be more than 100K ohms (open circuit).

- 2) Install a jumper between socket A03 and structural ground on the electrical connector D40926P at the E2-1 electrical shelf.

- 3) Measure the resistance between pin A12 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 100 ohms.

- 4) Remove the jumper.

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- 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-94-21).
 - b) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU LOW OIL PRESSURE light shows on the P5 forward overhead panel.
 - d) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
 - e) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do this check of the wiring between the two receptacles D40926J and D40564J on the E2-1 electrical shelf:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connectors D40926P and D40564P from the E2-1 electrical shelf.
- (d) Examine the electrical connectors D40926P and D40564P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D40926P or D40564P, then do these steps:
 - 1) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
 - b) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.
- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If the electrical connectors D40926P and D40564P are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A03 and structural ground on the receptacle D40926J at the E2-1 electrical shelf (WDM 49-94-21).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between pin A06 and structural ground on the receptacle D40564J at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin A03 and structural ground on the receptacle D40926J.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-94-21).
 - b) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- f) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
- g) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.

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- h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the wiring between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D40564P from the E2-1 electrical shelf.
- (d) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
- (e) Examine the electrical connectors D40564P and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D40564P or D634, then do these steps:
 - 1) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - 2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
 - b) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) If the electrical connectors D40564P and D634 are satisfactory, then do these steps:
 - 1) Measure the resistance between socket A06 and structural ground on the electrical connector D40564P at the E2-1 electrical shelf (WDM 49-94-21).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 18 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between socket A06 and structural ground on the electrical connector D40564P.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-94-21).
 - b) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - c) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- g) During the APU start procedure, look at the APU LOW OIL PRESSURE light.
NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.

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- h) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.
- i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if the APU LOW OIL PRESSURE light shows on the P5 forward overhead panel.
- 1) During the APU start procedure, look at the APU LOW OIL PRESSURE light.

NOTE: The APU LOW OIL PRESSURE light comes on during the APU start procedure. When the APU speed is 30%, the APU LOW OIL PRESSURE light goes off.
 - 2) If the APU LOW OIL PRESSURE light does not show after the APU speed is 30%, then you corrected the fault.

————— **END OF TASK** —————

803. APU OVER SPEED Light On, APU Operates With No Protective Shutdown - Fault Isolation

A. Description

- (1) The APU OVER SPEED light is on but there was no protective shutdown for the APU. The APU OVER SPEED light is on the P5 forward overhead panel.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electrical connector D3599 for the electronic control unit, M1709
- (3) Wiring problem between the E2-1 electrical shelf and the electronic control unit, M1709
- (4) Wiring problem between the two receptacles D40926J and D40564J on the E2-1 electrical shelf

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- (5) Wiring problem between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	14	C01180	INDICATOR MASTER DIM SECT 8

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) (SSM 33-18-33)
- (4) (WDM 33-18-33)
- (5) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for this maintenance message 49-61204 on the CURRENT STATUS page of the CDU display.
 - (b) If you find maintenance message 49-61204, then do the Fault Isolation Procedure for this message to correct the fault.
 - (c) If you did not find maintenance message 49-61204, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU operation, look at the APU OVER SPEED light.
 - b) If the APU OVER SPEED light does not show, then you corrected the fault.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (2) Do a visual inspection of the electrical connector D3599 for the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU OVER SPEED light shows on the P5 forward overhead panel.

- 1) During the APU operation, look at the APU OVER SPEED light.
 - 2) If the APU OVER SPEED light does not show, then you corrected the fault.
 - 3) If the APU OVER SPEED light shows, then continue.
- (3) Do this check of the wiring between the E2-1 electrical shelf and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40926P from the E2-1 electrical shelf.
 - (d) Examine the electrical connectors D40926P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D40926P or D3599, then do these steps:
 - 1) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - NOTE:** It is necessary to do the installation test for the electronic control unit to see if the APU OVER SPEED light shows on the P5 forward overhead panel.
 - a) During the APU operation, look at the APU OVER SPEED light.
 - b) If the APU OVER SPEED light does not show, then you corrected the fault.
 - (f) If the electrical connectors D40926P and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A15 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket A02 and structural ground on the electrical connector D40926P at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin A15 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.

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- c) Re-install the electronic control unit, M1709. To re-install it, do this task:
Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU OVER SPEED light shows on the P5 forward overhead panel.
- d) During the APU operation, look at the APU OVER SPEED light.
- e) If the APU OVER SPEED light does not show, then you corrected the fault.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task:
Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do this check of the wiring between the two receptacles D40926J and D40564J on the E2-1 electrical shelf:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connectors D40926P and D40564P from the E2-1 electrical shelf.
- (d) Examine the electrical connectors D40926P and D40564P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D40926P or D40564P, then do these steps:
 - 1) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU operation, look at the APU OVER SPEED light.
 - b) If the APU OVER SPEED light does not show, then you corrected the fault.

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- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If the electrical connectors D40926P and D40564P are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A02 and structural ground on the receptacle D40926J at the E2-1 electrical shelf (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between pin A04 and structural ground on the receptacle D40564J at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin A02 and structural ground on the receptacle D40926J.

NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- f) During the APU operation, look at the APU OVER SPEED light.
- g) If the APU OVER SPEED light does not show, then you corrected the fault.
- h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the wiring between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D40564P from the E2-1 electrical shelf.
- (d) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
- (e) Examine the electrical connectors D40564P and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D40564P or D634, then do these steps:
 - 1) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - 2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU operation, look at the APU OVER SPEED light.
 - b) If the APU OVER SPEED light does not show, then you corrected the fault.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) If the electrical connectors D40564P and D634 are satisfactory, then do these steps:
 - 1) Measure the resistance between socket A04 and structural ground on the electrical connector D40564P at the E2-1 electrical shelf (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 30 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between socket A04 and structural ground on the electrical connector D40564P.
NOTE: The resistance must be less than 100 ohms.

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- 4) Remove the jumper.
- 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - c) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - g) During the APU operation, look at the APU OVER SPEED light.
 - h) If the APU OVER SPEED light does not show, then you corrected the fault.
 - i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU OVER SPEED light shows on the P5 forward overhead panel.

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- 1) During the APU operation, look at the APU OVER SPEED light.
- 2) If the APU OVER SPEED light does not show, then you corrected the fault.

END OF TASK

804. APU GEN OFF BUS Light Not On, APU Speed at 95% - Fault Isolation

A. Description

- (1) The APU GEN OFF BUS light does not come on when the APU speed is 95%. The APU GEN OFF BUS light is on the P5 forward overhead panel.

B. Possible Causes

- (1) APU GEN OFF BUS light problem
- (2) P5-4 module for the AC system generator and APU
- (3) Electrical connector D3599 for the electronic control unit, M1709
- (4) Wiring problem between the E2-1 electrical shelf and the electronic control unit, M1709
- (5) Wiring problem between the two receptacles D40926J and D40564J on the E2-1 electrical shelf and the electrical connector D10896A at the APU generator control unit, G14
- (6) Wiring problem between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU
- (7) Wiring problem between the APU Remote Fire switch, S16 and the APU generator control unit, G14
- (8) Voltage problem with the P5-4 module for the AC system generator and APU
- (9) Electronic control unit, M1709
- (10) APU generator control unit, G14.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00133	INDICATOR MASTER DIM DIM/TST CONT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6
F	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
F	12	C01285	GENERATOR APU GEN CONT UNIT

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	9	C01326	APU GEN CONT UNIT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) SSM 24-22-31
- (4) SSM 33-18-33
- (5) WDM 24-22-31
- (6) WDM 33-18-33
- (7) WDM 49-62-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for these related maintenance message(s) on the CURRENT STATUS page of the CDU display:
 - 1) 49-61242
 - 2) 49-72209.
 - 3) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s) to correct the fault.
 - 4) Do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - c) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - d) If the APU GEN OFF BUS light does not come on, then do the Fault Isolation Procedure below.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (b) If you did not find the above maintenance message(s), then do the Fault Isolation Procedure below.
- (2) Do this troubleshooting task to find if the electronic control unit, M1709, is the cause of the problem:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Make sure the BUS TRANS switch on the P5 forward overhead panel is in the AUTO position.

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- (c) Make sure the APU engine speed is 100%.

NOTE: The LOW OIL PRESSURE light goes off before the APU engine speed is 95% and the CPS FREQ display must become stable at 395-405 CPS when the APU engine speed is 100%. The LOW OIL PRESSURE light and CPS FREQ display are on the P5 forward overhead panel.

- (d) Set the AC selector switch on the P5 forward overhead panel to the APU GEN position.

- (e) Set the two APU GEN switches on the P5 forward overhead panel to the ON position and then release.

NOTE: One of the two APU GEN switches will connect the APU starter-generator to the two 115V ac transfer busses.

- (f) Put an electrical load of 60 amps on the APU starter-generator.

- (g) Remove the electrical load from the APU starter-generator.

- (h) Set the two APU GEN switches to the OFF position.

- (i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

- (j) If the APU starter-generator supplies electrical power to the aircraft systems, then the electronic control unit, M1709, is satisfactory.

NOTE: The ready-to-load signal from the electronic control unit is sent to the APU generator control unit, G14. The APU generator control unit sends the voltage regulator enable signal to the start converter unit, M1710, to supply electrical power to the aircraft systems.

- (k) If the APU starter-generator did not supply electrical power to the aircraft systems, then there is a problem with the electronic control unit, M1709.

F. Fault Isolation Procedure

- (1) Do a functional check of the APU GEN OFF BUS light:

- (a) Press the lens of the APU GEN OFF BUS light.

- (b) If the APU GEN OFF BUS light does not come on, then do these steps:

- 1) Do this task: Master Caution Problem - Fault Isolation, 31-52 TASK 801

- 2) Press the lens of the APU GEN OFF BUS light.

- 3) If the APU GEN OFF BUS light comes on, then press the lens again to make sure the light goes off.

- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

- a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.

- b) If the APU GEN OFF BUS light comes on, then you corrected the fault.

- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

- (c) If the APU GEN OFF BUS light comes on, then press the lens again to make sure the light goes off and continue.

- (2) Do a functional check of the APU GEN OFF BUS light:

- (a) Press the lens of the APU GEN OFF BUS light.

- (b) If the APU GEN OFF BUS light does not come on or is dim, then do these steps:

- 1) Replace the bulb for the APU GEN OFF BUS light.

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- 2) Press the lens of the APU GEN OFF BUS light.
- 3) If the APU GEN OFF BUS light comes on, then press the lens again to make sure the light goes off.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - b) If the APU GEN OFF BUS light comes on, then you corrected the fault.
- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (c) If the APU GEN OFF BUS light comes on, then press the lens again to make sure the light goes off and continue.
- (3) Do these steps to replace the P5-4 module for the AC system generator and APU:
 - (a) Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801,
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - (b) Press the lens of the APU GEN OFF BUS light.
 - (c) If the APU GEN OFF BUS light comes on, then press the lens again to make sure the light goes off.
 - (d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 1) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - 2) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - 3) If the APU GEN OFF BUS light does not come on, then continue.
 - (e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (4) Do a visual inspection of the electrical connector D3599 for the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light shows on the P5 forward overhead panel.

 - 1) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - 2) If the APU GEN OFF BUS light comes on, then you corrected the fault.

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- 3) If the APU GEN OFF BUS light does not come on, then continue.
- (5) Do this check of the wiring between the E2-1 electrical shelf and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40926P from the E2-1 electrical shelf.
 - (d) Examine the electrical connectors D40926P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D40926P or D3599, then do these steps:
 - 1) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light shows on the P5 forward overhead panel.

 - a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - b) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - (f) If the electrical connectors D40926P and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin B11 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket B01 and structural ground on the electrical connector D40926P at the E2-1 electrical shelf.
 - 3) Measure the resistance between pin B11 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light shows on the P5 forward overhead panel.
 - d) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.

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- e) If the APU GEN OFF BUS light comes on, then you corrected the fault.
- 6) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task:
Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (6) Do this check of the wiring between the two receptacles D40926J and D40564J on the E2-1 electrical shelf and the electrical connector D10896A on the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connectors D40926P and D40564P from the E2-1 electrical shelf.
- (d) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (e) Examine the electrical connectors D40926P, D40564P and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D40926P, D40564P or D10896, then do these steps:
 - 1) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - 2) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.

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- b) If the APU GEN OFF BUS light comes on, then you corrected the fault.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) If the electrical connectors D40926P, D40564P and D10896 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin B01 and structural ground on the receptacle D40926J at the E2-1 electrical shelf (WDM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between pin A03 and structural ground on the receptacle D40564J at the E2-1 electrical shelf.
 - 3) Install a jumper between socket 11 and structural ground on the electrical connector D10896A at the APU generator control unit, G14 (SSM 24-22-31).
 - 4) Measure the resistance between pin B01 and structural ground on the receptacle D40926J.
NOTE: The resistance must be less than 100 ohms.
 - 5) Remove the two jumpers.
 - 6) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 24-22-31), (WDM 49-62-11).
 - b) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - c) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- g) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.
NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
- h) If the APU GEN OFF BUS light comes on, then you corrected the fault.
- i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 7) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (7) Do this check of the wiring between the E2-1 electrical shelf and the P5-4 module for the AC system generator and APU:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D40564P from the E2-1 electrical shelf.
(d) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
(e) Examine the electrical connectors D40564P and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(f) If there was a problem with the electrical connector D40564P or D634, then do these steps:
1) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.

- b) If the APU GEN OFF BUS light comes on, then you corrected the fault.

- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

- (g) If the electrical connectors D40564P and D634 are satisfactory, then do these steps:

- 1) Measure the resistance between socket A03 and structural ground on the electrical connector D40564P at the E2-1 electrical shelf (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).

- 2) Install a jumper between socket 31 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.

- 3) Measure the resistance between socket A03 and structural ground on the electrical connector D40564P.

NOTE: The resistance must be less than 100 ohms.

- 4) Remove the jumper.

- 5) If there is a problem with the circuit, then do these steps:

- a) Repair the wiring (WDM 49-62-11).
b) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
c) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.

- f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

- g) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.

NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.

- h) If the APU GEN OFF BUS light comes on, then you corrected the fault.

- i) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

- 6) If the circuit is satisfactory, then do these steps and continue:

- a) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.

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- b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (8) Do the check of the wiring between the APU Remote Fire switch, S16 and the APU generator control unit, G14:
- (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801 APU Generator will not come on line - Fault Isolation, 24-21 TASK 820.
- (9) Do a voltage check of the P5-4 module for the AC system generator and APU:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (c) Do this task: Supply Electrical Power, AMM TASK 24-22-00-860-811.
 - (d) Do a voltage check on the electrical connector D730, socket 20 and structural ground, at the P5-4 module for the AC system generator and APU (SSM 33-18-33).
- NOTE: The voltage must be 16V-28V DC.
- (e) If the voltage is not 16V-28V DC, then do these steps:
- 1) Do this task: Remove Electrical Power, AMM TASK 24-22-00-860-812.
 - 2) Repair the wiring problems that you find (WDM 33-18-33).
 - 3) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.
- NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
- b) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - c) If the APU GEN OFF BUS light does not come on, then continue.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If the voltage is 16V-28V DC, then do these steps and continue:
- 1) Do this task: Remove Electrical Power, AMM TASK 24-22-00-860-812.



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- 2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (10) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light shows on the P5 forward overhead panel.
- 1) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.
NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - 2) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - 3) If the APU GEN OFF BUS light does not come on, then continue.
- (11) Do these steps to replace the APU generator control unit, G14, at the E2-1 electrical shelf:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU generator control unit, G14. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801,
 - Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 1) During the APU start and operation, look at the APU GEN OFF BUS light when the APU engine speed is 95%.
NOTE: The APU GEN OFF BUS light comes on when the APU engine speed is 95% for two seconds.
 - 2) If the APU GEN OFF BUS light comes on, then you corrected the fault.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

— END OF TASK —

805. APU Does Not Start, No APU Indication Lights On - Fault Isolation

A. Description

- (1) The APU does not start when the APU master switch is set to the START position and release it to the ON position. No APU indication lights on the P5 forward overhead panel come on.

B. Possible Causes

- (1) APU battery system problem
- (2) BAT switch, on the P5 forward overhead panel, is in the OFF position
- (3) Electrical connector D3599 for the electronic control unit, M1709
- (4) Voltage problem between the AUX POWER UNIT CONT circuit breaker and the electronic control unit, M1709
- (5) Voltage problem between the APU master switch, S248, and the electronic control unit, M1709

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- (6) Electronic control unit, M1709
- (7) APU master switch, S248
- (8) P5-4 module for the AC system generator and APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for these related maintenance message(s) on the CURRENT STATUS page of the CDU display:
 - 1) 49-61197
 - 2) 49-61203
 - 3) 49-61268.
 - 4) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s) to correct the fault.
NOTE: For maintenance message(s) 49-61197, 49-61203 and 49-61268, it is necessary to do the installation test for the electronic control unit to make sure the APU starts and you corrected the fault.
 - (b) If you did not find the above maintenance message(s), then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) If the APU does not start and no APU indication lights come on, then set the APU master switch to the OFF position and do the Fault Isolation Procedure below.
 - b) If the APU starts and operates correctly, then there was an intermittent fault.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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F. Fault Isolation Procedure

- (1) Do a check of the APU battery system:
 - (a) Make sure these switches on the P5 forward overhead panel are set correctly:
 - 1) APU master switch is set to the OFF position
 - 2) BAT switch is set to the ON position
 - 3) STANDBY POWER switch is set to the AUTO position
 - 4) DC selector switch is set to the BAT position.
 - (b) Look at the DC VOLTS display on the P5 forward overhead panel:
 - 1) If the DC VOLTS display is less than 22 volts, then do this task: Battery Voltage Less Than 22 Volts With BAT Switch at On and No AC Power on the Charger - Fault Isolation, 49-45 TASK 801.
 - 2) If the DC VOLTS display is more than 22 volts, then continue.
- (2) Do a visual inspection of the BAT switch on the P5 forward overhead panel:
 - (a) Make sure the APU master switch is OFF.
 - (b) Visually examine the position of the BAT switch.
 - (c) If the BAT switch is set to the OFF position, then do these steps:
 - 1) Set the BAT switch to the ON position.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - a) If the APU starts and operates correctly, then you corrected the fault.
 - b) If the APU does not start, then set the APU master switch to the OFF position and continue.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (d) If the BAT switch is set to the ON position, then continue.
- (3) Do a visual inspection of the electrical connector D3599 for the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU starts and operates correctly.

 - 1) If the APU starts and operates correctly, then you corrected the fault.
 - 2) If the APU does not start, then set the APU master switch to the OFF position and continue.
- (4) Do this voltage check between the AUX POWER UNIT CONT circuit breaker and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Set the APU master switch to the ON position.
- (e) Do a voltage check on the electrical connector D3599C, pin 2 and structural ground, at the electronic control unit, M1709 (WDM 49-62-11).

NOTE: The voltage must be 22V-28V DC.

- (f) If the voltage is not 22V-28V DC, then do these steps:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Repair the wiring (WDM 49-62-11).
- 4) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU starts and operates correctly.

- 5) If the APU starts and operates correctly, then you corrected the fault.
- (g) If the voltage is 22V-28V DC, then do these steps and continue:
- 1) Set the APU master switch to the OFF position.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (5) Do these voltage checks between the APU master switch, S248, and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Do a voltage check between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (WDM 49-62-11):
 - 1) Pin A2 and structural ground, specified voltage of less than 1V DC.
 - 2) Pin C1 and structural ground, specified voltage of less than 1V DC.
 - 3) Pin C2 and structural ground, specified voltage of 22V-28V DC.
- (e) Set the APU master switch to the ON position.
- (f) Do a voltage check between these pairs of pins on the electrical connector D3599B:
 - 1) Pin A2 and structural ground, specified voltage of 22V-28V DC.
 - 2) Pin C1 and structural ground, specified voltage of less than 1V DC.
 - 3) Pin C2 and structural ground, specified voltage of less than 1V DC.
- (g) Set and hold the APU master switch to the START position while you do the subsequent voltage check.
- (h) Do a voltage check between these pairs of pins on the electrical connector D3599B:
 - 1) Pin A2 and structural ground, specified voltage of 22V-28V DC.
 - 2) Pin C1 and structural ground, specified voltage of 22V-28V DC.
 - 3) Pin C2 and structural ground, specified voltage of less than 1V DC.
- (i) Set the APU master switch to the OFF position.
- (j) If the voltage is not in the range specified for each pair of pins, then do these steps:
 - 1) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Disconnect the electrical connectors D40560P and D40346P from the E1-4 electrical shelf.
- 4) Disconnect the electrical connectors D40348P and D40946P from the E2-2 electrical shelf.
- 5) Disconnect the electrical connectors D40564P and D40254P from the E2-1 electrical shelf.
- 6) Examine the electrical connectors D40560P, D40346P, D40348P, D40946P, D40564P and D40254P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 7) If there was a problem with the electrical connector D40560P, D40346P, D40348P, D40946P, D40564P or D40254P, then do these steps:
 - a) Re-connect the electrical connectors D40564P and D40254P to the E2-1 electrical shelf.
 - b) Re-connect the electrical connectors D40348P and D40946P to the E2-2 electrical shelf.
 - c) Re-connect the electrical connectors D40560P and D40346P to the E1-4 electrical shelf.
 - d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU starts and operates correctly.

- e) If the APU starts and operates correctly, then you corrected the fault.
- 8) If the electrical connectors D40560P, D40346P, D40348P, D40946P, D40564P and D40254P are satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connectors D40564P and D40254P to the E2-1 electrical shelf.
 - b) Re-connect the electrical connectors D40348P and D40946P to the E2-2 electrical shelf.
 - c) Re-connect the electrical connectors D40560P and D40346P to the E1-4 electrical shelf.
 - d) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

- (k) If the voltage is in the range specified for each pair of pins, then do these steps and continue:

- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (6) Do these steps to replace the electronic control unit, M1709:
- Make sure the APU master switch is OFF.
 - Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if the APU starts and operates correctly.
- If the APU starts and operates correctly, then you corrected the fault.
 - If the APU does not start, then set the APU master switch to the OFF position and continue.
- (7) Do these steps to replace the APU master switch, S248, on the P5 forward overhead panel:
- Make sure the APU master switch is OFF.
 - Replace the APU master switch, S248 (WDM 49-62-11).
 - Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - If the APU starts and operates correctly, then you corrected the fault.
 - If the APU does not start, then set the APU master switch to the OFF position and continue.
 - Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (8) Do these steps to replace the P5-4 module for the AC system generator and APU:
- Make sure the APU master switch is OFF.
 - Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
 - Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - If the APU starts and operates correctly, then you corrected the fault.
 - Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

END OF TASK

806. APU GEN OFF BUS Light On, APU Does Not Operate - Fault Isolation

A. Description

- The APU GEN OFF BUS light is on but the APU does not operate. The APU GEN OFF BUS light is on the P5 forward overhead panel.

B. Possible Causes

- Flight compartment lighting problem
- P5-4 module problem for the AC system generator and APU
- Wiring problem between the auxiliary power breaker, C803, and the P5-4 module for the AC system generator and APU
- Wiring problem between the APU generator control unit, G14, and the P5-4 module for the AC system generator and APU
- Wiring problem between the electronic control unit, M1709, and the P5-4 module for the AC system generator and APU

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- (6) Auxiliary Power breaker, C803
- (7) APU generator control unit, G14
- (8) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00133	INDICATOR MASTER DIM DIM/TST CONT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	11	C00313	INDICATOR MASTER DIM SECT 1
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6
F	13	C01179	INDICATOR MASTER DIM SECT 7
F	14	C01180	INDICATOR MASTER DIM SECT 8

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
F	12	C01285	GENERATOR APU GEN CONT UNIT

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	9	C01326	APU GEN CONT UNIT

D. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-15 TASK SUPPORT Figure 302)
- (3) (SSM 24-22-31)
- (4) (WDM 24-22-31)
- (5) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this check of the APU GEN OFF BUS light, L5:
 - (a) Press the lens of the APU GEN OFF BUS light, L5.
 - (b) If the APU GEN OFF BUS light, L5, goes off, then you corrected the fault.
 - (c) If the APU GEN OFF BUS light is on, then do these steps:

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- 1) Press the lens of the APU GEN OFF BUS light, L5.
- 2) If the APU GEN OFF BUS light comes on, then do the Fault Isolation Procedure below.
- 3) If the APU GEN OFF BUS light does not come on, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the flight compartment lighting:
 - (a) Make sure the master dim and test switch is in the NORM position.
 - (b) If the APU GEN OFF BUS light, L5, and other lights on the overhead panel P5 are on, then, do this task: Flight Compartment Lighting Problem - Fault Isolation, 33-10 TASK 801.
 - (c) If only the APU GEN OFF BUS light, L5, is on, then continue.
- (2) Do this check of the P5-4 module for the AC system generator and APU:
 - (a) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (b) Examine the electrical connector D634. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (c) If there was a problem with the electrical connector D634, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - (d) If the electrical connector D634 is satisfactory, then do these steps:
 - 1) Measure the resistance between socket 17 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Measure the resistance between socket 31 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU (WDM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 3) If the resistance at socket 17 and socket 31 is less than 100K ohms, then do these steps:
 - a) Install a new P5-4 module for the AC system generator and APU. To install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - b) If the APU GEN OFF BUS light, L5, does not come, then you corrected the fault.
 - 4) If the resistance at socket 17 or socket 31 is more than 100K ohms, then do these steps:
 - a) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.

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- (3) Do this wiring check between the auxiliary power breaker, C803, and the P5-4 module for the AC system generator and APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (d) Examine the electrical connectors D634 and D10904. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D634 or D10904, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - 3) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - (f) If the electrical connectors D634 and D10904 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between these sockets of electrical connector D10904 for the auxiliary power unit, C803, and these pins of the electrical connector D634 for the P5-4 module for the AC system generator and APU (WDM 24-22-31):

D10904	D674
socket 10	pin 17
 - 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-22-31).
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - c) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - d) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - b) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
- (4) Do this check of the wiring between the APU generator control unit, G14, and the P5-4 module for the AC system generator and APU:
- (a) Make sure the APU master switch is OFF.

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- (b) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
- (d) Examine the electrical connectors D10896 and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10896 or D634, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 3) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
- (f) If the electrical connectors D10896 and D634 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between this socket of electrical connector D10896A for the APU generator control unit, G14, and this pin of electrical connector D674 for the P5-4 module for the AC system generator and APU (WDM 24-22-31) (WDM 49-62-11):

D10896A	D674
socket 11	pin 31
 - 2) If there is a problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 24-22-31) (WDM 49-62-11).
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - c) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - d) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- (5) Do this check of the wiring between the electronic control unit, M1709, and the P5-4 module for the AC system generator and APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.

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- (d) Examine the electrical connectors D3599 and D634. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599 or D634, then do these steps:
- 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light, L5, shows on the P5 forward overhead panel.
- 3) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
- (f) If the electrical connectors D3599 and D634 are satisfactory, then do these steps:
- 1) Do a check for an open or a short-to-ground circuit between these pins of electrical connector D3599B for the electronic control unit, M1710, and the electrical connector D674 for the P5-4 module for the AC system generator and APU (WDM 49-62-11):

D3599B	D674
pin 11	pin 31

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).
 - b) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light, L5, shows on the P5 forward overhead panel.

 - d) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - 3) If the circuit is satisfactory, then do these steps and continue.
 - a) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (6) Do these steps to replace the auxiliary power breaker, C803:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the auxiliary power breaker, C803. These are the tasks:
 - Breaker Removal, AMM TASK 24-21-41-000-801
 - Breaker Installation, AMM TASK 24-21-41-400-801
 - (c) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.

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- (d) If the APU GEN OFF BUS light, L5, comes on, then continue.
- (7) Do these steps to replace the APU generator control unit, G14, at the E2-1 electrical shelf:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU generator control unit, G14. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801
 - Generator Control Unit Installation, AMM TASK 24-21-81-400-801
 - (c) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.
 - (d) If the APU GEN OFF BUS light, L5, comes on, then continue.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if the APU GEN OFF BUS light, L5, shows on the P5 forward overhead panel.

 - (c) If the APU GEN OFF BUS light, L5, does not come on, then you corrected the fault.

————— **END OF TASK** —————

807. APU Has Too Much Vibration - Fault Isolation

A. Description

- (1) The airplane floor has too much vibration that you can feel when the APU is operating.

B. Possible Causes

- (1) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (2) Damage to the APU supports struts and vibration isolators
- (3) APU rotation problem
- (4) Starter-generator, YAAG013
- (5) APU internal problem.

C. Related Data

- (1) Component Location (49-15 TASK SUPPORT Figure 301)

D. Initial Evaluation

- (1) Do this APU vibration check:
 - (a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (b) If the APU has too much vibration, then do the Fault Isolation Procedure below.
 - (c) If the APU does not have too much vibration, then there was a intermittent fault.

E. Fault Isolation Procedure

- (1) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you find metal particles on the magnetic drain plug, then do these steps:
 - 1) Do the corrective action as specified in the inspection procedure.

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- 2) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 3) If the APU does not have too much vibration, then you corrected the fault.
- (d) If you do not find metal particles on the magnetic drain plug, then continue.
- (2) Do these steps to inspect the APU support struts and vibration isolators:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: APU Mounts Inspection (APU Installed), AMM TASK 49-13-11-200-803.
 - (c) If there was damage to the APU support struts and vibration isolators, then do these steps:
 - 1) Do the corrective action as specified in the inspection procedure.
 - 2) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 3) If the APU does not have too much vibration, then you corrected the fault.
 - (d) If there was no damage to the APU support struts and vibration isolators, then continue.
- (3) Do these steps to manual rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal (Hydraulic Jack Procedure), AMM TASK 49-11-00-000-803
 - APU Power Plant Installation (Hydraulic Jack Procedure), AMM TASK 49-11-00-400-803
 - 2) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 3) If the APU does not have too much vibration, then you corrected the fault.
 - (d) If the APU turns freely, then continue.
- (4) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) If the APU does not have too much vibration, then you corrected the fault.
 - (e) If the APU has too much vibration, then continue.
- (5) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) If the APU does not have too much vibration, then you corrected the fault.

————— **END OF TASK** —————

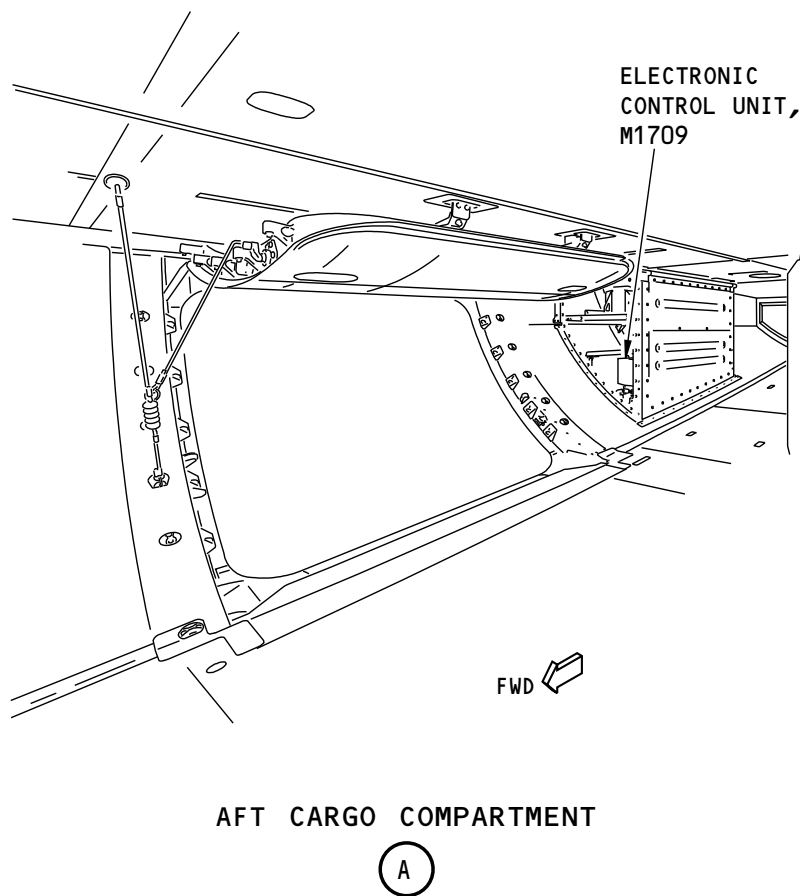
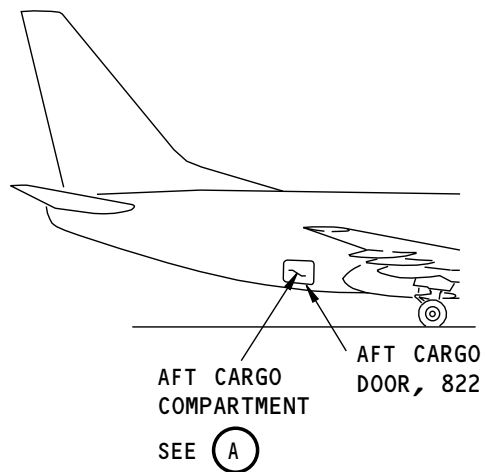
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H19616 S0006745030_V1

APU Flight Deck Indications Component Location
Figure 301/49-15-00-990-801

EFFECTIVITY	SIA ALL

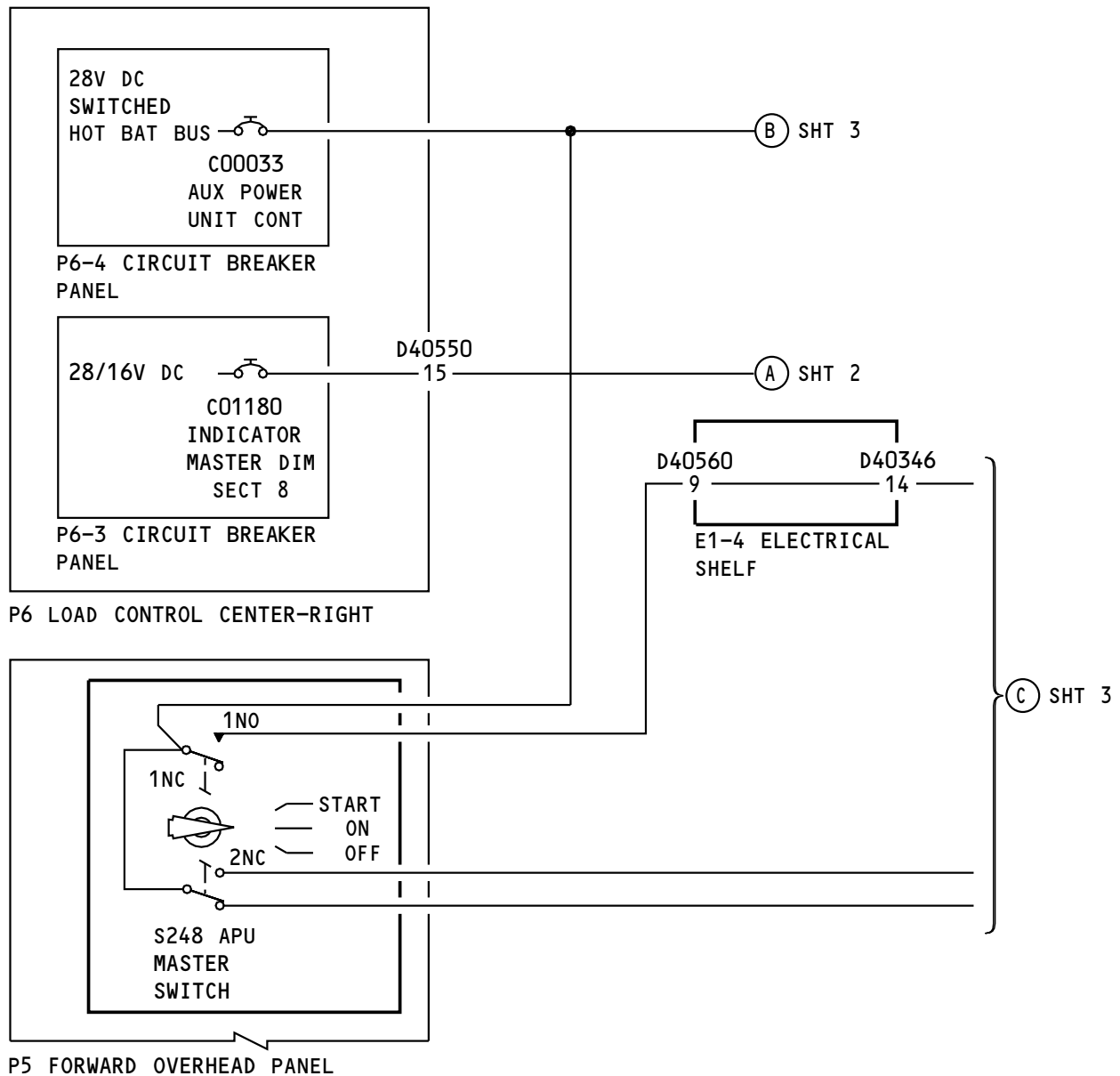
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WDM 24-22-31 SSM 24-22-31
33-18-33 33-18-33
49-41-11 49-41-11
49-62-11
49-94-21

G81611 S0006745032_V1

APU Flight Deck Indication Simplified Schematic
Figure 302/49-15-00-990-802 (Sheet 1 of 4)

EFFECTIVITY
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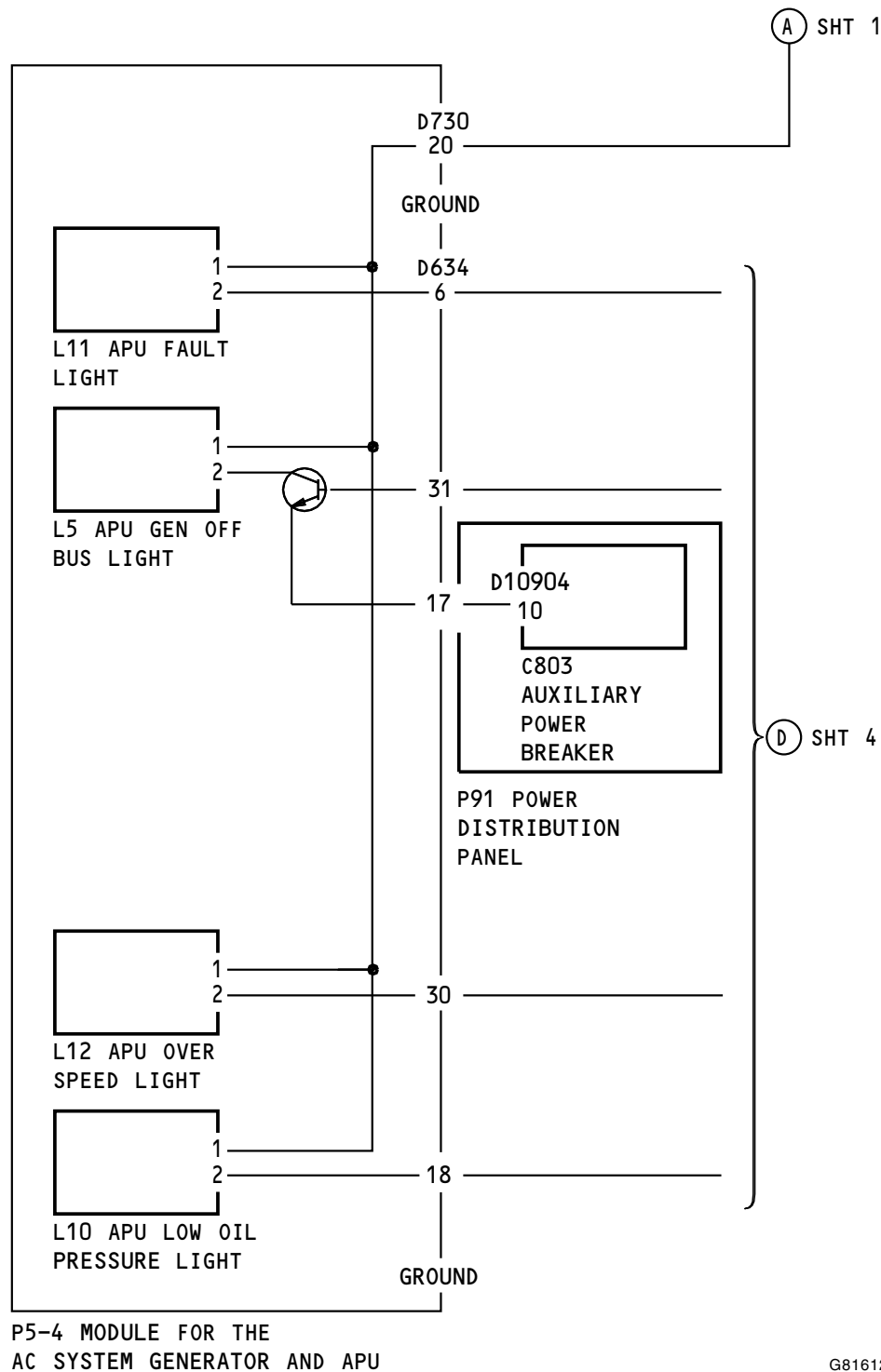
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APU Flight Deck Indication Simplified Schematic
Figure 302/49-15-00-990-802 (Sheet 2 of 4)

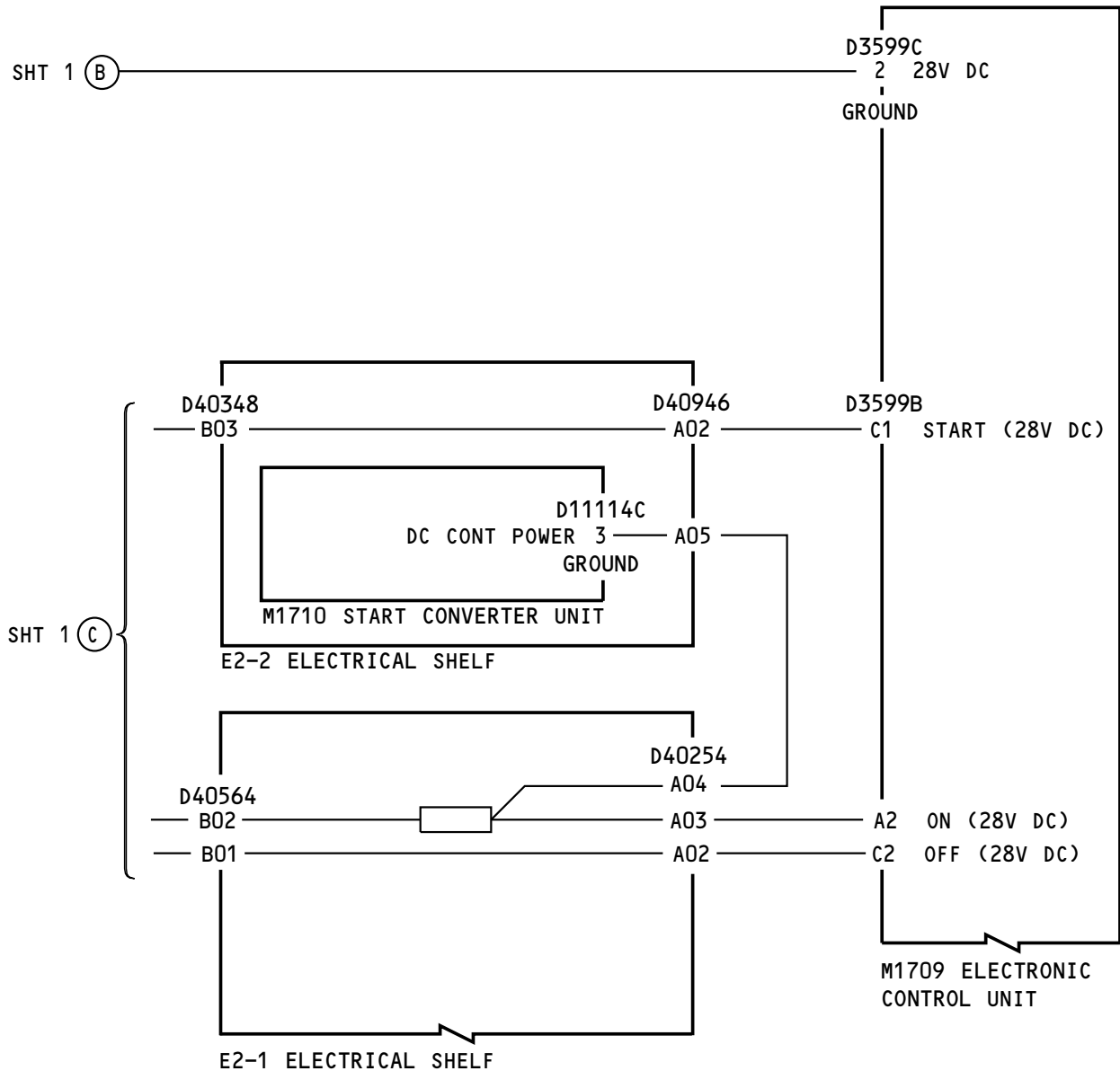
EFFECTIVITY
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G83358 S0006745034_V1

APU Flight Deck Indication Simplified Schematic
Figure 302/49-15-00-990-802 (Sheet 3 of 4)

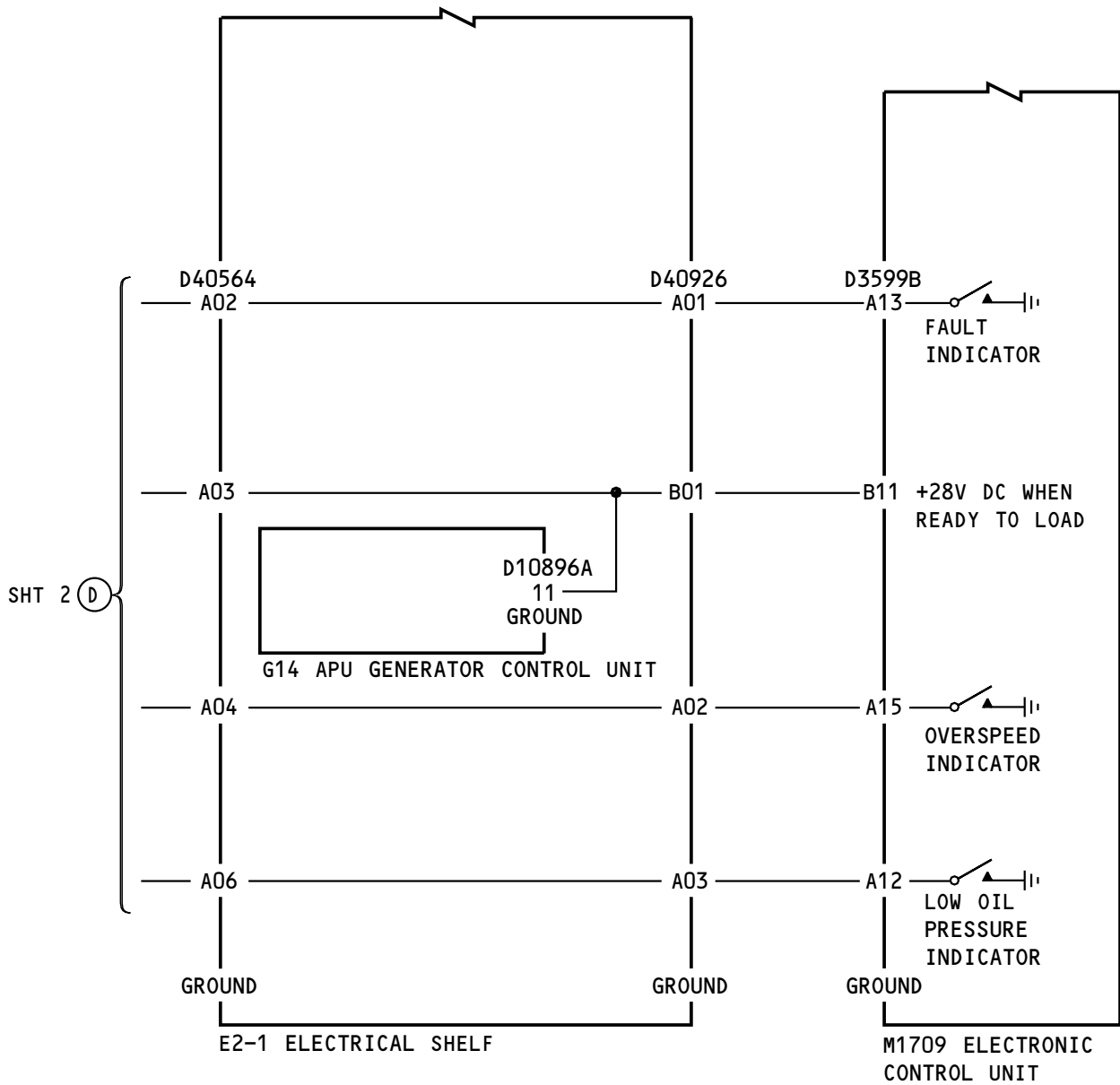
EFFECTIVITY
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G83361 S0006745035_V1

APU Flight Deck Indication Simplified Schematic
Figure 302/49-15-00-990-802 (Sheet 4 of 4)

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801. Overtemperature Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-21015 OVERTEMPERATURE SHUTDOWN
- (2) This condition occurs if the turbine inlet temperature, T4, is more than the shutdown limit of 2200°F (1204°C) for one second during an APU operation. Temperature, T4, is calculated from the higher of the two exhaust gas temperature (EGT) signals. The first protection against a high T4 is the electronic control unit positions the inlet guide vanes to keep T4 below 2050°F (1121°C). The second protection against a high T4 is the trim control loop which adjusts the inlet guide vanes to the T4 trim setpoint. The third protection is the bleed shutoff function which latches the inlet guide vanes to the fully closed position if T4 is more than 2060°F (1127°C) for 15 seconds, 2130°F (1166°C) for six seconds or 2160°F (1182°C) for one second. If the EGT does not decrease to its operating limits when the inlet guide vanes are fully closed, then the last protection is this APU protective shutdown.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (2) APU rotation problem
- (3) Linkage problem with the inlet guide vane (IGV) actuator, YAAV002
- (4) Electronic control unit, M1709
- (5) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (6) EGT thermocouple 1, YAAT009
- (7) EGT thermocouple 2, YAAT010
- (8) Wiring problem between the bus power control unit, G15, and the electronic control unit, M1709
- (9) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-20 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-20 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 24-28-41)

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E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-52190
 - 2) 49-71146
 - 3) 49-71149.
 - 4) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 5) If you find this maintenance message 49-52190, then you must do these steps after you do the Fault Isolation Procedure for this message:
 - a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-21015 shows.
 - e) If the CDU display does not show maintenance message 49-21015 again in the last APU cycle, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows maintenance message 49-21015 again in the last APU cycle, then continue.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (2) Do these steps to manually rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.

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- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the APU turns freely, then continue.
- (3) Do an operational test of the inlet guide vane (IGV) actuator linkage:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there is a problem with the inlet guide vanes, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE:** It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the inlet guide vanes are satisfactory, then continue.
 - (4) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE:** Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (i) Set the APU master switch to the OFF position.
- (5) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.

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- (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (6) Do these steps to replace the EGT thermocouple 1, YAAT009:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the EGT thermocouple 1, YAAT009. These are the tasks:
- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
- NOTE:** Do not do the installation test for the EGT thermocouple 1. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (i) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the EGT thermocouple 2, YAAT010:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the EGT thermocouple 2, YAAT010. These are the tasks:
- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
- NOTE:** Do not do the installation test for the EGT thermocouple 2. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (g) Set the APU master switch to the ON position.
 - (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (i) Set the APU master switch to the OFF position.
 - (8) Do this check of the wiring between the bus power control unit, G15, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10898B from the bus power control unit, G15, on the E4-2 electrical shelf.
 - (d) Examine the electrical connectors D10898B and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10898B or D3599, then do these steps:
 - 1) Re-connect the electrical connector D10898B to the bus power control unit, G15.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 7) Set the APU master switch to the ON position.
- 8) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10898B and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A11 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 27 and structural ground on the electrical connector D10898B at the bus power control unit, G15.
 - 3) Measure the resistance between pin A11 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 24-28-41).
 - 6) Re-connect the electrical connector D10898B to the bus power control unit, G15.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

NOTE: If the circuit is satisfactory, then do the installation test for the electronic control unit to complete the fault isolation task for this maintenance message.
- 8) If there was a problem with the circuit, then do these steps:
 - a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - b) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- h) Set the APU master switch to the OFF position.
- 9) If the circuit is satisfactory, then continue.
- (9) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE:** It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

802. Bleed Disabled to Prevent Overtemperature - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-21235 BLEED DISABLED TO PREVENT OVERTEMPERATURE
- (2) This fault is set when the bleed air system does not operate when commanded if the turbine inlet temperature, T4, is more than its serviceable limits. With no bleed air available, the APU operates with an electrical load on the APU starter-generator. If this fault is not corrected, an overtemperature protective shutdown can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (4) Linkage problem with the inlet guide vane (IGV) actuator, YAAV002
- (5) Electronic control unit, M1709
- (6) Inlet temperature sensor, YAAT002
- (7) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-20 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for other related maintenance messages:
 - 1) 49-52190
 - 2) 49-61185.
 - 3) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 4) If you find this maintenance message 49-61185, then you must do these steps after you do the Fault Isolation Procedure for this message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Set the ISOLATION VALVE switch to the OPEN position.
NOTE: You can find these switches on the P5 forward overhead panel.
 - c) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - d) Make sure the L PACK and R PACK switches are OFF.
 - e) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
 - f) Set the APU BLEED switch to the OFF position.
 - g) Set the ISOLATION VALVE switch to the CLOSE position.
 - h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - i) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - j) Set the APU master switch to the ON position.
 - k) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-21235 shows.
 - l) If the CDU display does not show maintenance message 49-21235, then you corrected the fault.
 - m) If the CDU display shows maintenance message 49-21235, then continue.
 - n) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 8) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 8) Set the APU master switch to the OFF position.
- (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (4) Do an operational test of the inlet guide vane (IGV) actuator linkage:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there is a problem with the inlet guide vanes, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the inlet guide vanes are satisfactory, then continue.
- (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.

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- 2) Make sure the engines 1 and/or 2 BLEED switches are OFF.
- 3) Make sure the L PACK and R PACK switches are OFF.
- 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- (g) Set these switches on the P5 forward overhead panel:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
 - (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (j) Set the APU master switch to the ON position.
 - (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (l) Set the APU master switch to the OFF position.
 - (6) Do these steps to replace the inlet temperature sensor, YAAT002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
- NOTE: Do not do the installation test for the inlet temperature sensor. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:

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- 1) Set the APU BLEED switch to the OFF position.
- 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (l) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE:** It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

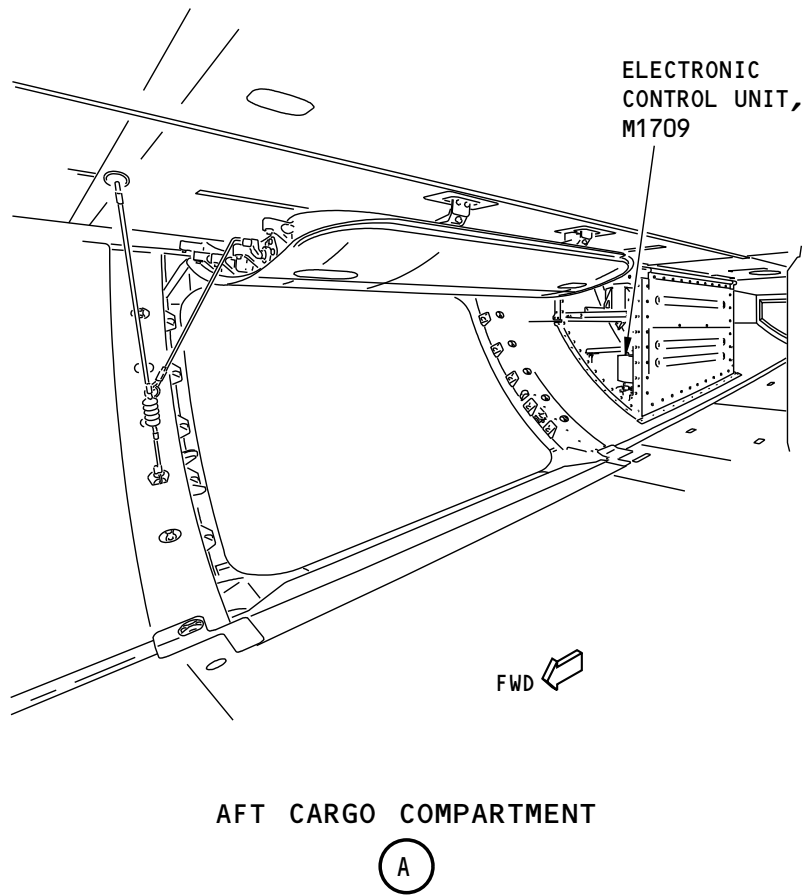
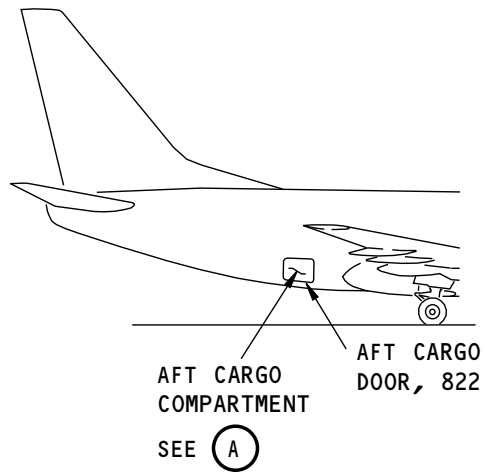
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H19652 S0006745043_V1

APU Engine Component Location
Figure 301/49-20-00-990-801 (Sheet 1 of 2)

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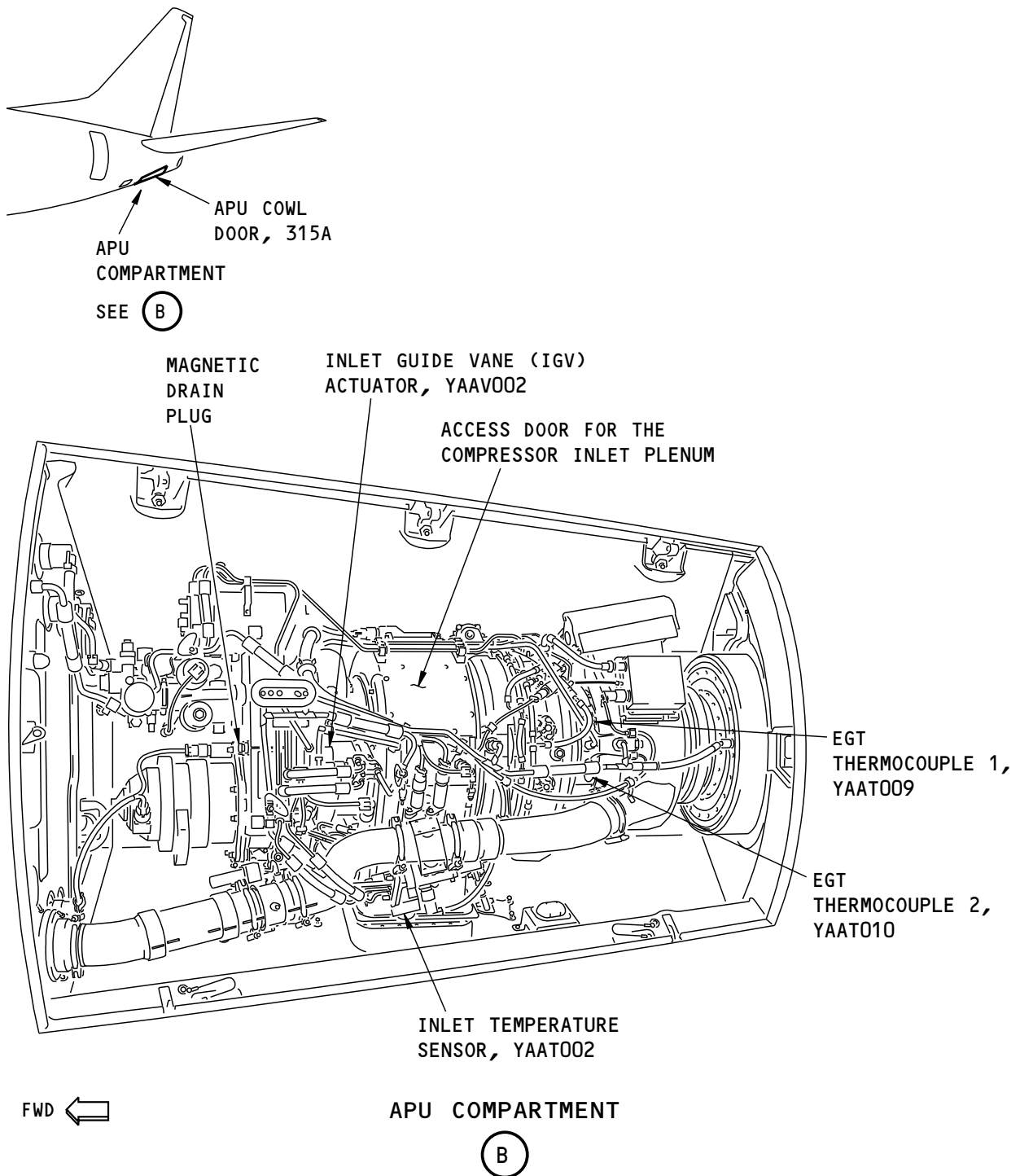
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G44764 S0006745045_V1

APU Engine Component Location
Figure 301/49-20-00-990-801 (Sheet 2 of 2)

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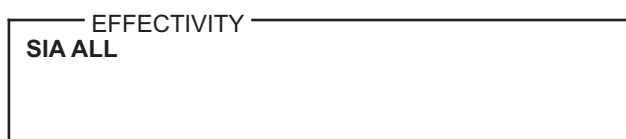


WDM 24-28-41

SSM 49-62-11

G45134 S0006745046_V1

APU Engine Simplified Schematic
Figure 302/49-20-00-990-802



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801. APU Fuel Valve Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31001 APU FUEL VALVE SHUTDOWN
- (2) The APU fuel shutoff valve did not close in 30 seconds from being commanded close.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Operational problem with the APU fuel shutoff valve, V43
- (3) APU fuel shutoff valve, V43
- (4) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page, then do these steps:
 - 1) Make sure the APU master switch on the P5 forward overhead panel is OFF.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, set the APU master switch to the OFF position.
 - 4) If the APU fuel shutoff valve opens and closes correctly, then there was an intermittent fault.
 - 5) If the APU fuel shutoff valve does not close correctly, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - a) 49-15215
 - b) 49-61210
 - c) 49-61213.

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- 6) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
- 7) Do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) After 30 seconds, set the APU master switch to the OFF position.
 - d) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-31001 shows.
 - e) If the CDU display does not show maintenance message 49-31001 for the last APU cycle, then you corrected the fault.
 - f) If the CDU display shows maintenance message 49-31001 for the last APU cycle, then continue.
- (b) If the CDU display shows this maintenance message for the last APU cycle, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, set the APU master switch to the OFF position.
 - 4) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do an operational check of the APU fuel shutoff valve, V43:
 - (a) Get access to the APU fuel shutoff valve.

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.
 - (b) With the APU master switch in the OFF position, make sure the APU fuel shutoff valve, V43, is fully closed.

NOTE: The manual override handle on the APU fuel shutoff valve gives an indication of the shutoff valve position.
 - (c) Set the APU master switch to the ON position.
 - (d) Make sure the APU fuel shutoff valve fully opens.
 - (e) Set the APU master switch to the OFF position.
 - (f) Make sure the APU fuel shutoff valve fully closes.
 - (g) If the APU fuel shutoff valve does not fully open or fully close, then do these steps:

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- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Disconnect the electrical connector D920 from the APU fuel shutoff valve, V43.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Set the APU master switch to the ON position.
- 5) Do a voltage check on the electrical connector D920, socket 2 and structural ground, at the APU fuel shutoff valve, V43 (SSM 49-62-11).
NOTE: The voltage must be 0V DC.
- 6) If the voltage is more than 0V DC, then do these steps:
 - a) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - b) Examine the electrical connectors D920 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - c) Measure the resistance between socket 1 and structural ground on the electrical connector D920 at the APU fuel shutoff valve, V43 (SSM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - d) Measure the resistance between socket 2 and structural ground on the electrical connector D920.
NOTE: The resistance must be more than 100K ohms (open circuit).
 - e) Measure the resistance between socket 3 and structural ground on the electrical connector D920.
NOTE: The resistance must be more than 100K ohms (open circuit).
 - f) Measure the resistance between socket 4 and structural ground on the electrical connector D920.
NOTE: The resistance must be more than 100K ohms (open circuit).
 - g) Measure the resistance between socket 5 and structural ground on the electrical connector D920.
NOTE: The resistance must be less than 5 ohms (short circuit).

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- h) Install a jumper between socket 1 and socket 3 on the electrical connector D920.
 - i) Measure the resistance between pin B7 and pin D9 on the electrical connector D3599B at the electronic control unit, M1709.
NOTE: The resistance must be less than 10 ohms.
 - j) Remove the jumper.
 - k) Install the jumper between socket 2 and socket 4 on the electrical connector D920.
 - l) Measure the resistance between pin B8 and pin D5 on the electrical connector D3599B.
NOTE: The resistance must be less than 10 ohms.
 - m) Remove the jumper.
 - n) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - o) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - p) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - q) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - r) Set the APU master switch to the ON position.
 - s) After 30 seconds, set the APU master switch to the OFF position.
 - t) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - u) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) If the voltage is 0V DC, then do these steps:
- a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801
 - NOTE: The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.
 - c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) After 30 seconds, set the APU master switch to the OFF position.
 - g) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) If the CDU display shows this maintenance message, then continue.

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- (h) If the APU fuel shutoff valve opens and closes correctly, then continue.
- (3) Do these steps to replace the APU fuel shutoff valve, V43:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801
- NOTE: The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.
- (c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) After 30 seconds, set the APU master switch to the OFF position.
 - (g) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (4) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, set the APU master switch to the OFF position.
 - (f) After 30 seconds, look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.

————— **END OF TASK** —————

802. Overspeed Shutdown APU Overspeed - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31014 OVERSPEED SHUTDOWN APU OVERSPEED
- (2) The primary overspeed protection for the APU is monitored by two independent overspeed circuits. This APU protective shutdown occurs when the APU speed is more than 106%.
- (3) The APU OVER SPEED light on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Blockage of unwanted materials, flammable materials and damage in the air inlet duct and compressor inlet plenum for the APU
- (4) Fuel control unit, YAAM002
- (5) Electronic control unit, M1709
- (6) Speed sensor, YAAT007.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-31171
 - 2) 49-61174.
 - 3) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 4) Do these steps after you do the Fault Isolation Procedure(s) for each maintenance message(s):
 - a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-31014 shows.
 - e) If the CDU display does not show maintenance message 49-31014 again in the last APU cycle, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows maintenance message 49-31014 again in the last APU cycle, then continue.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.

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- (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
(b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.

- (c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
(c) If there was a problem with the airplane wire harness, then do these steps:

- 1) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.

- (d) If the airplane wire harness is satisfactory, then continue.

- (3) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:

- (a) Make sure the APU master switch is OFF.
(b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.

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- (c) Visually examine the air inlet duct for blockage of unwanted materials, signs of flammable materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find signs of flammable materials, then remove the flammable materials and clean the area.
 - 3) If you find damage that can cause a decrease in airflow, then repair the damage that you find.
- (d) Visually examine the compressor inlet plenum for blockage of unwanted materials and signs of flammable materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials and signs of flammable materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - b) If you find signs of flammable materials, then remove the flammable materials and clean the area.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the OFF position.
- (g) If there was blockage of unwanted materials, signs of flammable materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (h) If there were no blockage of unwanted materials, no signs of flammable materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (4) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

NOTE: Do not do the installation test for the fuel control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

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- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- NOTE:** It may be necessary to start the APU more than three times after you replace the fuel control unit. If you start the APU again, then make sure you obey the start duty cycle of three times during a 15 minute interval.

- 1) Operate the APU with no load for a minimum of five minutes.
- 2) During the APU operation, examine the fuel control unit for signs of fuel leakage.
 - a) If you find fuel leakage, then repair the problems that you find.

- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (i) Set the APU master switch to the OFF position.

- (5) Do these steps to replace the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (i) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the speed sensor, YAAT007:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the speed sensor, YAAT007. These are the tasks:
 - Speed Sensor Removal, AMM TASK 49-61-21-000-801
 - Speed Sensor Installation, AMM TASK 49-61-21-400-801
 - NOTE:** Do not do the installation test for the speed sensor. You must do the APU operational test to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 1) Operate the APU with no load for a minimum of five minutes.
 - 2) During the APU operation, examine the speed sensor for signs of oil leakage.
 - a) If you find oil leakage, then repair the problems that you find.
 - (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (g) Set the APU master switch to the ON position.
 - (h) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (i) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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803. Overtemperature Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31016 OVERTEMPERATURE SHUTDOWN
- (2) This APU protective shutdown occurs during the APU start sequence only. The exhaust gas temperature, T5, is more than the calculated fuel flow temperature of 225°F (107°C) for two seconds. The exhaust gas temperature, T5, is calculated from these values: APU speed (N), inlet temperature (T2) and inlet pressure (P2).
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes, when this shutdown occurs on the ground:

- (1) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (2) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (3) APU rotation problem
- (4) Fuel control unit, YAAM002
- (5) Inlet temperature sensor, YAAT002
- (6) Inlet pressure sensor (P2), YAAT003
- (7) Start converter unit, M1710
- (8) Start power unit, M1850
- (9) EGT thermocouple 1, YAAT009
- (10) EGT thermocouple 2, YAAT010
- (11) Electronic control unit, M1709
- (12) APU.

C. Possible Causes, when this shutdown occurs in flight:

- (1) Fuel flow divider (shutoff solenoid)
- (2) Fuel nozzles streaking
- (3) APU fuel drains blocked
- (4) Start converter unit, M1710
- (5) Starter-generator, YAAG013
- (6) APU rotation problem
- (7) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (8) Fuel control unit, YAAM002
- (9) APU.

D. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

E. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)

F. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-31171
 - 2) 49-61112
 - 3) 49-61174.
 - 4) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 5) If you find these maintenance messages 49-61112 and 49-61174, then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-31016 shows.
 - f) If the CDU display does not show maintenance message 49-31016 again in the last APU cycle, then you corrected the fault.

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- g) If the CDU display shows maintenance message 49-31016 again in the last APU cycle, then continue.
- h) Set the APU master switch to the OFF position.
- (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

G. Fault Isolation Procedure, when this shutdown occurs on the ground:

- (1) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (2) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.

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- (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
- (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (3) Do these steps to manually rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the APU turns freely, then continue.
- (4) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the inlet temperature sensor, YAAT002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801



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- Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801

NOTE: Do not do the installation test for the inlet temperature sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
- Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801

NOTE: Do not do the installation test for the inlet pressure sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (h) Set the APU master switch to the ON position.
 - (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (j) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the start power unit, M1850:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801
- NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (9) Do these steps to replace the EGT thermocouple 1, YAAT009:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the EGT thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - NOTE: It is necessary to do the installation test for the EGT thermocouple 1 to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (10) Do these steps to replace the EGT thermocouple 2, YAAT010:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the EGT thermocouple 2, YAAT010. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - NOTE: It is necessary to do the installation test for the EGT thermocouple 2 to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (12) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

H. Fault Isolation Procedure, when this shutdown occurs in flight:

- (1) Do these steps to replace the fuel flow divider, YAAV004:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel flow divider, YAAV004. These are the tasks:
 - Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
 - NOTE: It is necessary to do the installation test for the fuel flow divider to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (2) Do this task: Fuel Nozzle Inspection, AMM TASK 49-31-14-200-801.
- (3) Do this task: Clean the APU Drains, AMM TASK 49-16-11-100-801.
- (4) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.

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- (b) Replace the start converter unit, M1710. These are the tasks:
- Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the starter-generator, YAAG013:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the starter-generator, YAAG013. These are the tasks:
- Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do these steps to manually rotate the APU:
- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
- (c) If the APU does not turn freely, then do these steps:
- 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.

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- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the APU turns freely, then continue.
- (7) Do a general visual inspection of the air inlet duct and compressor inlet plenum for blockage:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
 - (8) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801

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- Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
 - (9) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE:** It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

804. Underspeed Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31018 UNDERSPEED SHUTDOWN
- (2) The speed of the APU decreases to less than 85% for 10 seconds. Other APU protective shutdowns and its related maintenance messages can show in the CDU display if the APU does not start after you do a repair confirmation procedure. The NO ACCELERATION SHUTDOWN and NO FLAME SHUTDOWN maintenance messages are two examples. The conditions that cause this APU protective shutdown are related to the other APU protective shutdowns. If the APU does not start correctly after you do a repair confirmation procedure, it is recommended that you follow this fault isolation procedure from the start to the end until you correct this UNDERSPEED SHUTDOWN fault and its related maintenance messages.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Fuel leakage from the APU
- (4) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (5) Fuel supply flow problem
- (6) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (7) APU rotation problem
- (8) Inlet fuel filter element
- (9) Flow divider solenoid for the fuel flow divider, YAAV004
- (10) Fuel control unit, YAAM002
- (11) Inlet pressure sensor (P2), YAAT003
- (12) Inlet temperature sensor, YAAT002
- (13) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-31164
 - 2) 49-31166
 - 3) 49-31170
 - 4) 49-31171
 - 5) 49-31172
 - 6) 49-31173
 - 7) 49-61153
 - 8) 49-61154
 - 9) 49-61165
 - 10) 49-61176
 - 11) 49-61177.

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- 12) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 13) If you find these maintenance messages 49-31164, 49-31166, 49-31170, 49-31172, 49-31173, 49-61153, 49-61154, 49-61165, 49-61176 and 49-61177, then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-31018 shows.
 - f) If the CDU display does not show maintenance message 49-31018 again in the last APU cycle, then you corrected the fault.
 - g) If the CDU display shows maintenance message 49-31018 again in the last APU cycle, then continue.
 - h) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.

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- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to examine the APU for signs of fuel leakage:
 - (a) Make sure the APU master switch is OFF.
 - (b) Examine the fuel control unit, surge control valve, inlet guide vane (IGV) actuator and all fuel tubes for signs of fuel leakage.
 - (c) If there was fuel leakage, then do these steps:
 - 1) Repair the problems that you find.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (d) If there was no fuel leakage, then continue.
- (4) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.



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- 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
- 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the OFF position.
- (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (5) Do a flow check of the fuel supply system for the APU. To do a flow check, do this task: APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802.
 - (a) If the fuel flow is not sufficient, then, do this task: Fuel Flow to the APU is not Sufficient - Fault Isolation, 28-25 TASK 801.
 - (b) If the fuel flow is sufficient, then continue.
- (6) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (7) Do these steps to manually rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the APU turns freely, then continue.
- (8) Do these steps to replace the inlet fuel filter element:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet fuel filter element. These are the tasks:
 - Inlet Fuel Filter Element Removal, AMM TASK 49-31-21-000-801
 - Inlet Fuel Filter Element Installation, AMM TASK 49-31-21-400-801
 - NOTE:** It is necessary to do the installation test for the inlet fuel filter element to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (9) Do these steps to replace the flow divider solenoid for the fuel flow divider, YAAV004:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the flow divider solenoid for the fuel flow divider, YAAV004. These are the tasks:
 - Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
 - NOTE:** It is necessary to do the installation test for the fuel flow divider to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (10) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801

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- Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
- NOTE:** Do not do the installation test for the inlet pressure sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (h) Set the APU master switch to the ON position.
 - (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (j) Set the APU master switch to the OFF position.
- (12) Do these steps to replace the inlet temperature sensor, YAAT002:
- (a) Make sure the APU master switch is OFF.

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- (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:

- Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
- Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801

NOTE: Do not do the installation test for the inlet temperature sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (13) Do these steps to replace the APU:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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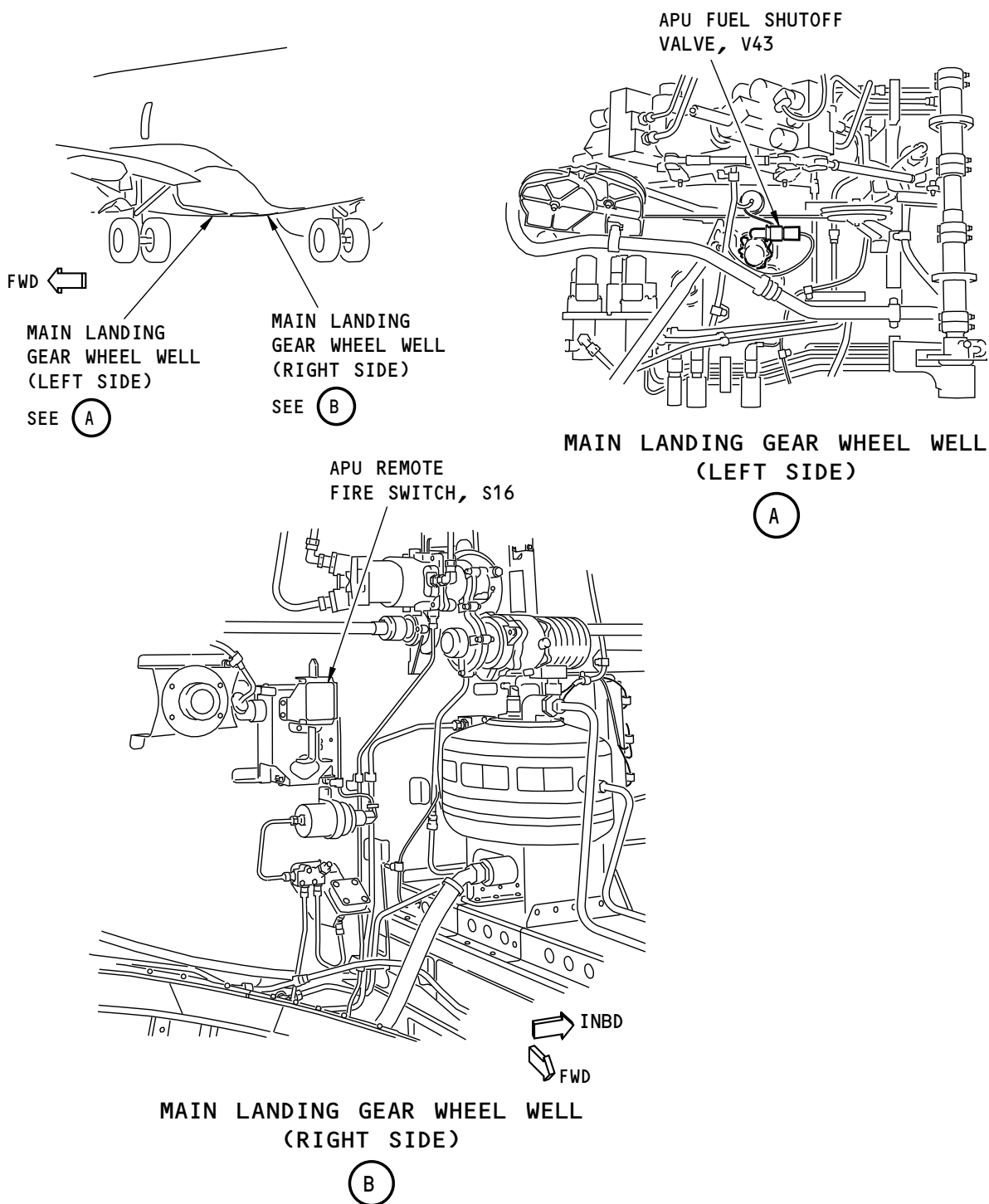
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G44805 S0006745055_V1

APU Fuel System Component Location
Figure 301/49-30-00-990-801 (Sheet 1 of 3)

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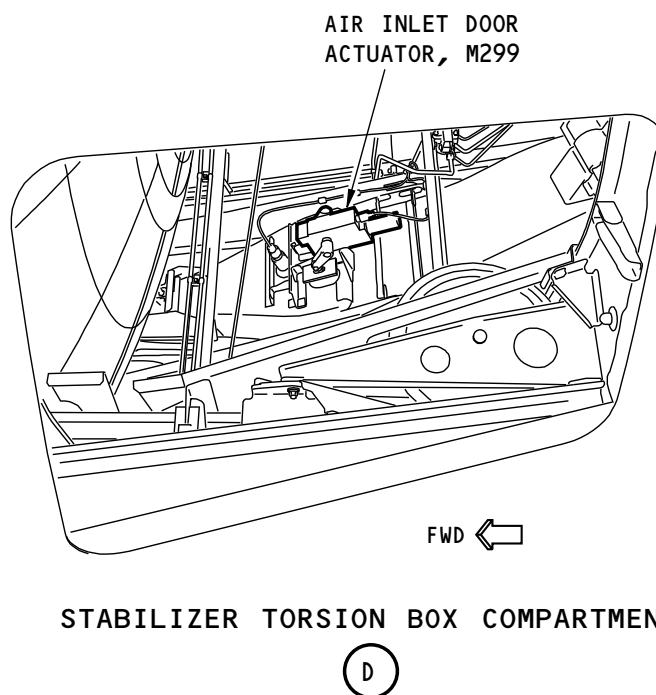
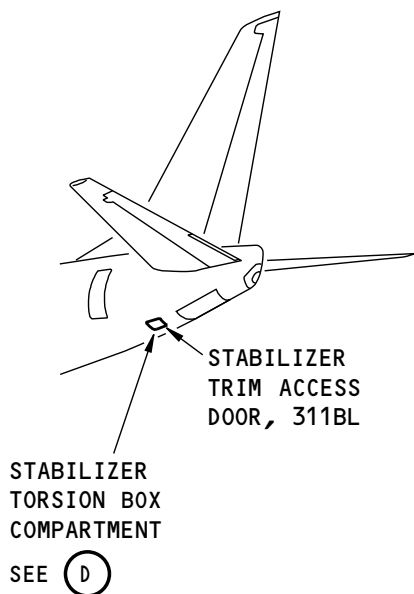
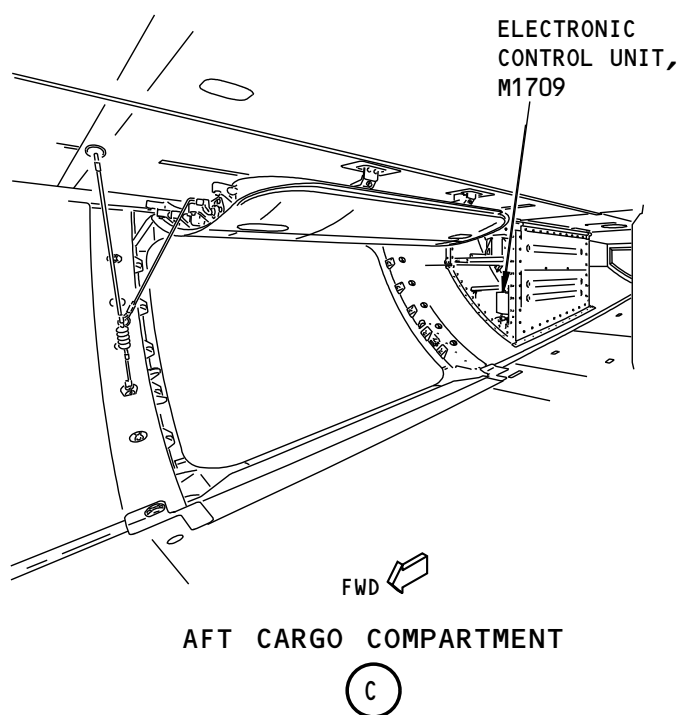
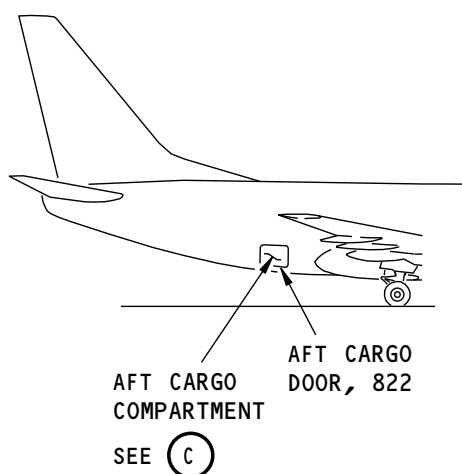
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H19668 S0006745057_V1

APU Fuel System Component Location
Figure 301/49-30-00-990-801 (Sheet 2 of 3)

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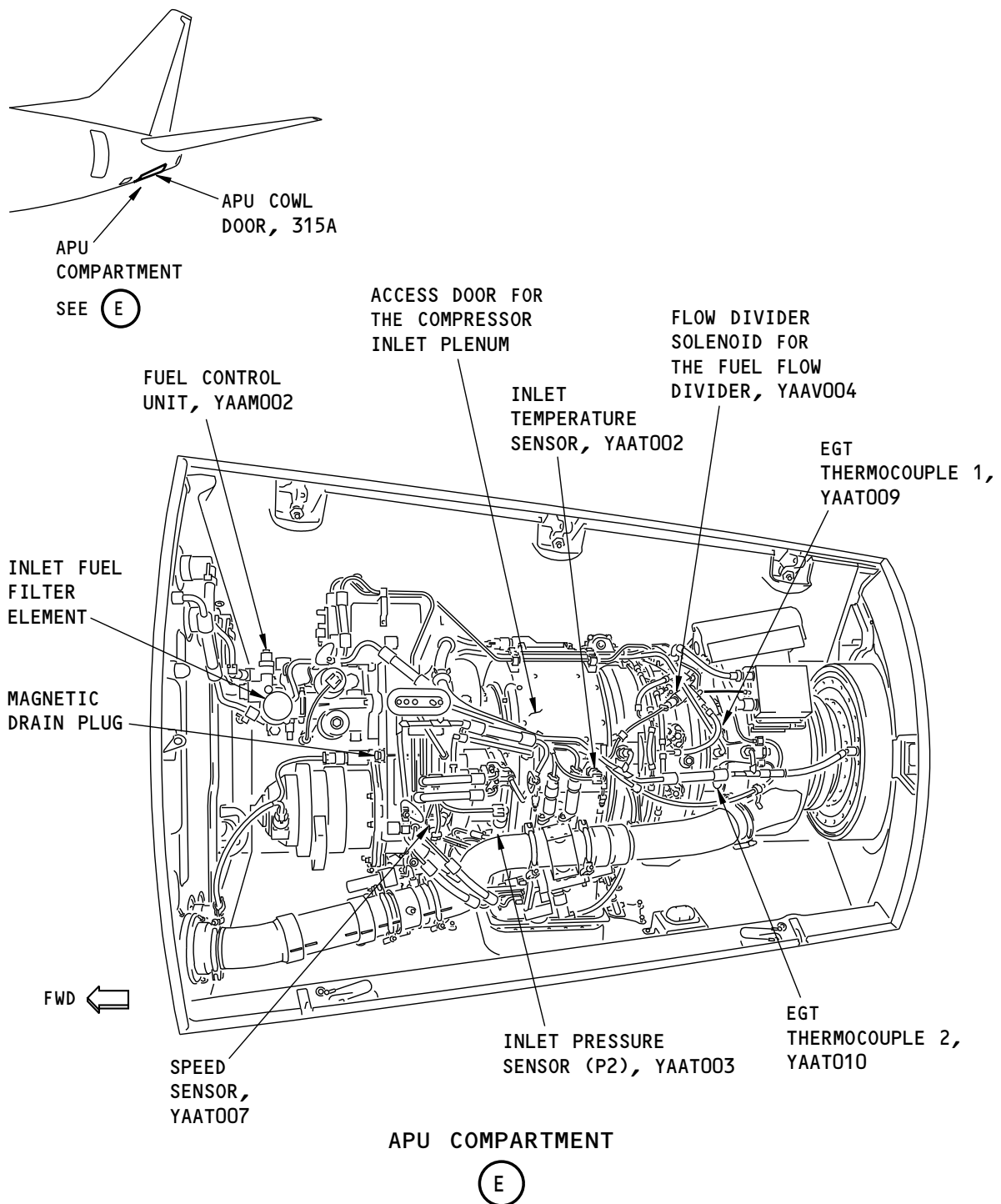
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H16152 S0006745059_V1

APU Fuel System Component Location
Figure 301/49-30-00-990-801 (Sheet 3 of 3)

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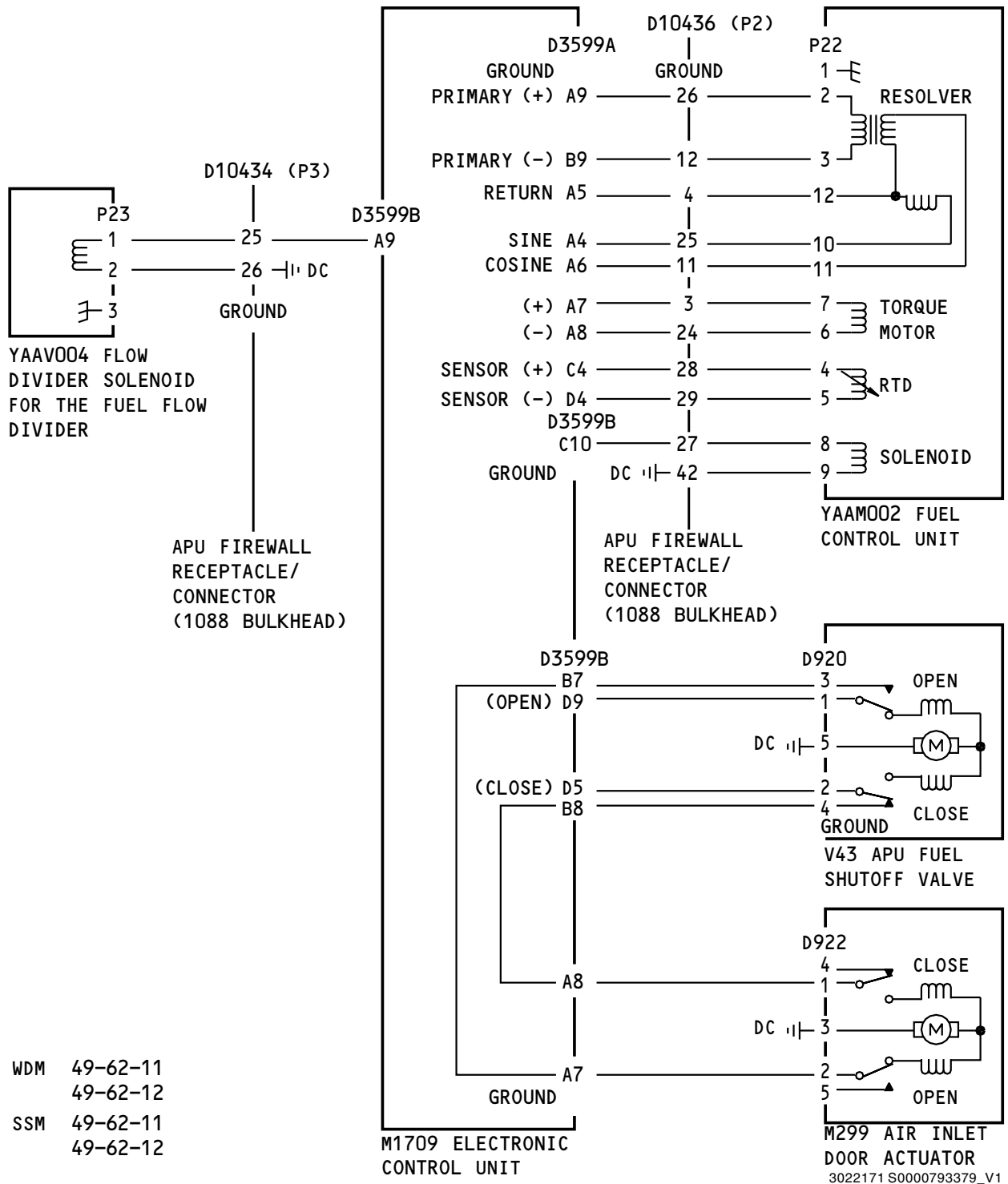
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APU Fuel System Simplified Schematic
Figure 302/49-30-00-990-802

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801. Fuel Control Unit Shows Solenoid Failed ON - Fault Isolation

A. Description

- (1) This task is for these maintenance message:
 - (a) 49-31163 FUEL CONTROL UNIT SHOWS SOLENOID FAILED ON
- (2) This fault is set when the fuel solenoid for the fuel control unit stays in the open position when commanded closed. This test occurs only when the APU master switch is set to the OFF position for an APU usual shutdown. After a check of the overspeed circuit, the fuel solenoid in the fuel control unit is commanded closed. If the APU speed does not decrease by 10 percent after 10 seconds, then the fault is set and the APU usual shutdown sequence continues by clamping the fuel torque motor to 0 mA. The APU will not start again unless you go to the current status page and enter "STARTOK" in the scratchpad and push the line select key at the top right side of the CDU before you start the APU. This fault stays on until another test occurs for an APU usual shutdown.
- (3) The APU OVER SPEED light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Fuel control unit, YAAM002
- (2) Engine wire harness problem
- (3) Airplane wire harness problem
- (4) Wiring problem with the airplane wire harness
- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Operate the APU for a minimum five minutes.
 - (g) During the APU operation, examine the fuel control unit for signs of fuel leakage.
 - 1) If you find fuel leakage, then repair the problems that you find.
 - (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (i) Set the APU master switch to the ON position.
 - (j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (k) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.

NOTE: The CDU display must show the CURRENT STATUS page for this maintenance message.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (4) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D10436 (P2) and D3599 and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10436 (P2) or D3599 or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE from the APU master switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10436 (P2) and D3599 and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Make sure the DO-NOT-OPERATE tag is installed on the APU master switch.
 - 3) Do a voltage check on the APU firewall receptacle D10436, pin 27 and pin 42, at the 1088 bulkhead (SSM 49-62-12).

NOTE: The voltage must be 0V DC.

- 4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 6) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- 7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 8) Do a voltage check on the electrical connector P22, pin 8 and pin 9, at the fuel control unit, YAAM002.

NOTE: The voltage must be 0V DC.

- 9) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 10) If the voltage is more than 0V DC for the two voltage checks, then repair the wiring (WDM 49-62-12).
- 11) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
- 12) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 13) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 14) If there was a problem with the circuit, then do these steps:
- Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 15) If the circuit is satisfactory, then continue.
- (5) Do these steps to replace the electronic control unit, M1709:
- Make sure the APU master switch is OFF.
 - Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must energize the CDU first before you can start the APU. To energize the CDU, the CDU display must show the CURRENT STATUS page for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE from the APU master switch.
- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- NOTE:** The CDU display must show the CURRENT STATUS page for this maintenance message.
- (f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (g) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (h) Set the APU master switch to the ON position.
- (i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (j) Set the APU master switch to the OFF position.

————— END OF TASK —————

802. Fuel Control Unit Shows Solenoid Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-31164 FUEL CONTROL UNIT SHOWS SOLENOID OPEN CIRCUIT

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- (2) This fault is set when there is an open in the fuel solenoid circuit for the fuel control unit. The electronic control unit does a check of the voltage and current to the solenoid for the fuel control unit. The voltage across the solenoid must be more than 3V DC. An open in the fuel solenoid circuit shows the current is less than 100 mA. An open circuit condition causes no fuel flow through the fuel control unit. An underspeed, no flame or no acceleration protective shutdown can occur.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (Electronic Control Unit Installation, AMM TASK 49-61-12-400-80149-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 8 and pin 9 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 80 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 27 and pin 42 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 42 and structural ground on the APU firewall receptacle D10436 at the 1088 bulkhead.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 4) If the resistance is more than 5 ohms, then do these steps:
- a) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) Set the APU master switch to the ON position.
 - g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) Set the APU master switch to the OFF position.
- 5) If the resistance is less than 80 ohms from pin 27 to pin 42 on the electrical connector D10436 (P2) and less than 5 ohms from socket 42 to structural ground on the APU firewall receptacle D10436, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C10 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

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- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

END OF TASK

803. Fuel Control Unit Shows Solenoid High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31166 FUEL CONTROL UNIT SHOWS SOLENOID HIGH CURRENT

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- (2) The fuel solenoid driver circuitry provides a signal that indicates the current flow of the driver. When the driver is commanded on and status=0 and voltage is < 15 V, the driver is turned off. Overcurrent to fuel solenoid can be detected while solenoid is turned on. An actual short would probably cause the solenoid to close, shutting off fuel to the APU, which would lead to an UNDERSPEED , No Flame, or No Acceleration autoshtutdown. If an overcurrent is found, the driver shall be turned off immediately. After one second, the driver shall be enabled.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)

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- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the fuel control unit, YAAM002 (SSM 49-62-12):
 - a) Pin 1 and pin 8, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 1 and pin 9, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 8 and pin 9, specified resistance of more than 10 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12):
 - a) Pin 27 and pin 42, specified resistance of more than 10 ohms.
 - b) Pin 27 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 42 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) Measure the resistance between socket 42 and structural ground on the APU firewall receptacle D10436 at the 1088 bulkhead.

NOTE: The resistance must be less than 5 ohms (short circuit).
 - 4) If the resistance is more than 5 ohms, then do these steps:
 - a) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Set the APU master switch to the ON position.
- g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- h) If the CDU display does not show this maintenance message, then you corrected the fault.
- i) Set the APU master switch to the OFF position.
- 5) If the resistance is in the range specified for each pair of pins on the electrical connector D10436 (P2) and less than 5 ohms from socket 42 to structural ground on the APU firewall receptacle D10436, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C10 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be more than 10 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

804. Fuel Control Unit Shows Fuel Temp Sensor Short - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31167 FUEL CONTROL UNIT SHOWS FUEL TEMP SENSOR SHORT

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- (2) This fault is set when there is a short to ground on the wire or an internal short of the Resistance Temperature Device (RTD) circuit for the Fuel Control Unit (FCU), YAAM002. The Electronic Control Unit (ECU), M1709 does a check of the voltage across the positive side of the RTD. A short to ground on the wire or an internal short of the RTD circuit shows the voltage greater than 0.7 V DC.

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- (3) If this failure occurs, the fuel temperature is set to an alternative value that is equal to the oil temperature and continues the Auxiliary Power Unit (APU) operation. An APU start problem can occur.
- (4) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) FCU, YAAM002
- (2) ECU, M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the FCU, YAAM002:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

FCU		FCU		
P22		P22		RESISTANCE
pin 1	.....	pin 4		>100 KΩ
pin 1	.....	pin 5		>100 KΩ

- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the FCU, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801<1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

		RESISTANCE
pin 28	GROUND	>100 KΩ
pin 29	GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

<1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure that the APU master switch is OFF.
- (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-62-12, WDM 49-52-31):

ECU

D3599A

		RESISTANCE
pin C4	GROUND	>100 K Ω
pin D4	GROUND	>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the problem.
 - e) Set the APU master switch to the OFF position.

- 5) If the circuit is satisfactory, then continue.

- (6) Do these steps to replace the ECU, M1709:

- (a) Make sure that the APU master switch is OFF.

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- (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- 1) Do the Repair Confirmation at the end of this task.
- (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

805. Fuel Control Unit Temp Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31168 FUEL CONTROL UNIT TEMP SHOWS OUT OF RANGE HIGH

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- (2) This fault is set when there is an open in the resistive temperature device (RTD) circuit for the fuel control unit. An open circuit shows infinite resistance and thus, infinite temperature. The value of infinite resistance in this FIM chapter 49 is more than 100K ohms. The temperature range for the fuel conditioning circuit is between -94°F (-70°C) and 400°F (204°C). This fault is set at 400°F (204°C).

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- (3) If this failure occurs, the fuel temperature is set to an alternative value that is equal to the oil temperature and continues the APU operation. An APU start problem can occur.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 4 and pin 5 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 28 and pin 29 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- Make sure the APU master switch is OFF.
 - Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the electrical connector D3599 is satisfactory, then do these steps:
 - Measure the resistance between pin C4 and pin D4 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - If there was a problem with the circuit, then do these steps:
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

806. Fuel Control Unit Temp Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31169 FUEL CONTROL UNIT TEMP SHOWS OUT OF RANGE LOW

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- (2) The near zero resistance of a short circuit looks like a very low temperature. The lowest possible temperature in operation is approximately -65 degrees F. The conditioner circuit range is -94 degrees F to 451 degrees F. The bite limit set at -85 degrees F ensures the conditioner can always read limit without saturating and provides good margin to prevent nuisance indications (accuracy is better than ± 12 degrees F). A 2 second verify time allows this fault to be included in the power-up test sequence and is longer than needed to filter out electrical noise.

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- (3) If this failure occurs, the fuel temperature is set to an alternative value that is equal to the oil temperature and continues the APU operation. An APU start problem can occur.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 4 and pin 5 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be more than 72 ohms.
 - 2) If the resistance is less than 72 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 72 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 28 and pin 29 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be more than 72 ohms.
 - 2) If the resistance is less than 72 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 72 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- Make sure the APU master switch is OFF.
 - Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the electrical connector D3599 is satisfactory, then do these steps:
 - Measure the resistance between pin C4 and pin D4 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be more than 72 ohms.
 - If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - If there was a problem with the circuit, then do these steps:
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— END OF TASK —————

807. Fuel Control Torq Motor Shows Low Side Grounded - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 49-31170 FUEL CONTROL TORQ MOTOR SHOWS LOW SIDE GROUNDED
 - (b) 49-31170 FUEL CONTROL TORQ MOTOR SHOWS HIGH SIDE GROUNDED
- (2) This fault is set when there is a ground in the torque motor circuit for the FCU, YAAM002. The ECU, M1709 does a check of the voltage and current to the torque motor. A ground in the driven side of the torque motor circuit shows the voltage is between 0.1V and 3.0V DC and the current is less than 20 mA. With a ground in the torque motor circuit, there is no fuel flow through the fuel control unit. A no flame, underspeed or no acceleration protective shutdown can occur.
- (3) The APU FAULT light on the Forward Overhead Panel, P5 can show for this maintenance message.

B. Possible Causes

- (1) FCU, YAAM002
- (2) ECU, M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location 49-30 TASK SUPPORT Figure 301
- (2) Simplified Schematic 49-30 TASK SUPPORT Figure 302
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the FCU, YAAM002:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
- 1) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
- 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

FCU	FCU	
P22	P22	RESISTANCE
pin 1	pin 7	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the FCU, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - <1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps:
 - a) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

	RESISTANCE
pin 3 GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:

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- a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

<1> Do the Repair Confirmation at the end of this task.
- b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-62-12, WDM 49-52-31):

ECU

D3599A

pin A7 GROUND

RESISTANCE

>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.

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- c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- d) If the CDU display does not show this maintenance message, then you corrected the problem.
- e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

808. Fuel Control Unit Flow Disagrees With Command - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31171 FUEL CONTROL UNIT FLOW DISAGREES WITH COMMAND
- (2) The APU FAULT and/or OVER SPEED Light, on the P5 forward overhead panel, can also come ON when this maintenance message shows.
- (3) This message shows when the APU Speed is more than 15%.
- (4) The fault is set when the measured or actual fuel flow is different from the commanded fuel flow by approximately 40 lb (18 kg) for each hour, for five seconds.
- (5) This maintenance message indicates that there is a Fuel Flow problem with the Fuel Metering Valve (FMV) or other parts of the FCU that causes incorrect movement of the FMV.
- (6) A FMV in the failed position can cause a speed drop or an Overspeed Protective Shutdown. Also, a No Acceleration, Overtemperature, Underspeed, Overspeed or No Flame Protective Shutdown can occur.

B. Possible Causes

- (1) Hydraulic lock of the APU Fuel Flow Divider, V4
- (2) Fuel Flow Divider, V4
- (3) Operational problem with the APU Fuel System

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- (4) Clogged Inlet Fuel Filter Element
- (5) Engine Wire Harness Problem
- (6) Airplane Wire Harness Problem
- (7) FCU, M2
- (8) Lube Module
- (9) Operational Problem with the APU Fuel Shutoff Valve, V43
- (10) APU Fuel Shutoff Valve, V43
- (11) ECU, M1709

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) WDM 49-62-11
- (4) WDM 49-62-12
- (5) SSM 49-62-11
- (6) SSM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU Display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY Page.
 - (b) If the CDU Display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) If the APU was operated in flight during the preceding flight, it is possible the APU Fuel Flow Divider has a hydraulic lock.
- (2) Wait 30 minutes and then do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (a) If the APU starts, then do these steps:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Do the APU BITE Procedure, 49-60 TASK 801.
 - a) On the P5 forward overhead panel, put the APU Switch to the ON position.

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- b) On the CDU Display, look at the CURRENT STATUS page to see if the maintenance message shows.
- <1> If the CDU Display does not show this maintenance message, then you corrected the problem.
- <a> On the P5 forward overhead panel, put the APU Switch to the OFF position.
- <2> If the CDU Display still shows the maintenance message, then put the APU Switch to the OFF position and continue.
- (b) If the APU does not start, then do these steps:
- 1) Loosen, then tighten the nut [4] on the Fuel Flow Divider to release the hydraulic lock (Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801).
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do the APU BITE Procedure, 49-60 TASK 801.
 - a) On the P5 forward overhead panel, put the APU Switch to the ON position.
 - b) On the CDU Display, look at the CURRENT STATUS page to see if the maintenance message shows.

<1> If the CDU Display does not show this maintenance message, then you corrected the problem.

<a> On the P5 forward overhead panel, put the APU Switch to the OFF position.

<2> If the CDU Display still shows the maintenance message, then put the APU Switch to the OFF position and continue.
- (3) Do this check of the Fuel Flow Divider Wiring (WDM 49-62-12):
- (a) Make sure that the APU Switch is OFF.
 - (b) Disconnect connector P23 from the APU Fuel Flow Divider Solenoid, V4.
 - (c) Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (d) Examine the electrical connectors D3599B and P23. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) Examine the wiring between the APU ECU and Fuel Flow Divider, V4 as follows:

APU ECU	FUEL FLOW DIVIDER
D3599B	P23
pin A9	pin 1

FUEL FLOW DIVIDER	
P23	
pin 2	GND
pin 3	GND

- 1) If you find a problem in the wiring, repair it as necessary.

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- a) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - b) Connect connector P23 to the APU Fuel Flow Divider Solenoid, V4.
 - c) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem in the wiring, then continue.
- (4) Replace the Fuel Flow Divider, V4. These are the tasks:
 - Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Do an Operational Check of the APU Fuel System. Do these tasks:
 - (a) Fuel Leakage Check, AMM TASK 49-31-00-700-801
 - (b) APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802

NOTE: Air in the Airplane Fuel System can cause this maintenance message to show on the CURRENT STATUS Page.

 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802
 - 3) Do the APU BITE Procedure, 49-60 TASK 801.
 - a) On the P5 forward overhead panel, put the APU Switch to the ON position.
 - b) On the CDU Display, look at the CURRENT STATUS page to see if the maintenance message shows.
 - <1> If the CDU Display does not show this maintenance message, then you corrected the problem.
 - <a> On the P5 forward overhead panel, put the APU Switch to the OFF position.
 - <2> If the CDU Display still shows the maintenance message, then put the APU Switch to the OFF position and continue.
- (6) Make sure that the APU Switch is OFF.
- (7) Replace the Inlet Fuel Filter Element. These are the tasks:
 - Inlet Fuel Filter Element Removal, AMM TASK 49-31-21-000-801
 - Inlet Fuel Filter Element Installation, AMM TASK 49-31-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (8) Do a general visual inspection of the APU Wire Harnesses:
 - (a) Make sure that the APU Switch is OFF.
 - (b) Do these tasks: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - 1) If there is a problem with an APU Wire Harnesses, then you can repair or replace the harness as necessary. These are the applicable tasks:
 - APU Harness Repair, AMM TASK 49-11-01-300-801
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- a) Do the Repair Confirmation at the end of this task.
 - 2) If the Wire Harnesses are satisfactory, then continue.
- (9) Do this check of the FCU, M2:
- (a) Make sure that the APU Switch is OFF and install a DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, M2 (WDM 49-62-12).
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - 1) If you find a problem with the electrical connector P22, then do these steps:
 - a) Repair the connector as necessary.
 - b) Re-connect the electrical connector P22 to the FCU, M2.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO NOT OPERATE tag, STD-858, from the APU Switch.
 - e) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connector P22 is satisfactory, then do these steps:
- a) Do a resistance check at the FCU Receptacle as follows (WDM 49-62-12):

FCU, M2		FCU, M2		RESISTANCE
RECEPTACLE		RECEPTACLE		
pin 6	.....	pin 7		20 - 100 Ohms
pin 2	.....	pin 3		30 - 200 Ohms

- <1> If the resistance is not in the specified range for each pair of pins, then replace the FCU, M2. These are the tasks:
- Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
- <a> Do the Repair Confirmation at the end of this task.
- <2> If the resistance is in the specified range for each pair of pins, then do these steps and continue:

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- <a> Re-connect the electrical connector P22 to the FCU, M2.
- Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- <c> Remove the DO NOT OPERATE tag, STD-858, from the APU Switch.

- (10) Do this check of the APU Engine Wire Harness:

- (a) Make sure that the APU Switch is OFF and install a DO NOT OPERATE tag, STD-858.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) On the aft bulkhead 1088, disconnect the electrical connector D10436 (P2) from the APU Firewall Receptacle (WDM 49-62-12).
- (d) Examine the electrical connector D10436 (P2) and APU Firewall Receptacle. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - 1) If you find a problem with the electrical connector D10436 (P2) or APU Firewall Receptacle, then do these steps:
 - a) Repair the connector(s) as necessary.
 - b) Re-connect the electrical connector D10436 (P2) to the APU Firewall Receptacle.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO NOT OPERATE tag, STD-858, from the APU Switch.
- e) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connector D10436 (P2) and APU Firewall Receptacle are satisfactory, then do these steps:

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- a) Do a resistance check at the D10436 (P2) Receptacle as follows (WDM 49-62-12):

APU FIREWALL		APU FIREWALL	
D10436J		D10436J	RESISTANCE
pin 3	.....	pin 24	20 - 100 Ohms
pin 12	.....	pin 26	30 - 200 Ohms

<1> If the resistance is not in the specified range for each pair of pins, then replace the Engine Wire Harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

<a> Do the Repair Confirmation at the end of this task.

<2> If the Resistance is in the specified range for each pair of pins, then do these steps and continue:

<a> Re-connect the electrical connector D10436 (P2) to the APU Firewall Receptacle.

 Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

<c> Remove the DO NOT OPERATE tag, STD-858, from the APU Switch.

(11) Do this check of the Airplane Wire Harness:

- Make sure that the APU Switch is OFF.
- Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Examine the electrical connector D3599A. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If you find a problem with the electrical connector D3599A, then do these steps:
 - Repair the connector as necessary.
 - Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - If the electrical connector D3599A is satisfactory, then do these steps:
 - Do a resistance check at the electrical connector D3599A as follows (WDM 49-62-12):

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APU ECU D3599A		APU ECU D3599A	RESISTANCE
pin A7		pin A8	20 - 100 Ohms
pin A9		pin B9	30 - 200 Ohms

- <1> If the resistance is not in the specified range for each pair of pins, then examine the wiring between the APU ECU, M1709 and D10436 connector at the aft bulkhead 1088 as follows:

APU ECU D3599A	1088 BLKHD D10436
pin A7	pin 3
pin A8	pin 24
pin A9	pin 26
pin B9	pin 12

<a> If you find a problem in the wiring, repair it as necessary.

 Do the Repair Confirmation at the end of this task.

- <2> If the Resistance is in the specified range for each pair of pins, then do this step and continue:

<a> Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

- (12) Make sure that the Drive Shaft on the Lube Module is not damaged.

NOTE: A damaged Drive Shaft can cause this maintenance message to show.

- (13) Replace the Lube Module: These are the tasks:

- Lube Module Removal, AMM TASK 49-91-11-000-801
- Lube Module Installation, AMM TASK 49-91-11-400-801

(a) Do the Repair Confirmation at the end of this task.

- (14) Do an Operational Check of the APU Fuel Shutoff Valve, V43 as follows:

(a) Get access to the APU Fuel Shutoff Valve.

NOTE: The APU Fuel Shutoff Valve is on the rear spar of the Left Wing in the Wheel Well.

(b) With the APU Switch in the OFF position, make sure that the APU Fuel Shutoff Valve, V43, is fully closed.

NOTE: The Manual Override Handle on the APU Fuel Shutoff Valve gives an indication of the Shutoff Valve position.

(c) Put the APU Switch to the ON position.

(d) Make sure that the APU Fuel Shutoff Valve fully opens.

(e) Put the APU Switch to the OFF position.

(f) Make sure that the APU Fuel Shutoff Valve fully closes.

(g) If the APU Fuel Shutoff Valve does not fully open or fully close correctly, then do these steps:

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- 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Disconnect the electrical connector D920 from the APU Fuel Shutoff Valve, V43 (WDM 49-62-11).
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Put the APU Switch to the ON position.
- 5) Do a voltage check between pins 2 and 5 of the APU Fuel Shutoff Valve electrical connector D920 (WDM 49-62-11).

NOTE: The voltage must be 0V DC.

- a) If you find 0V DC, then replace the APU Fuel Shutoff Valve, V43. These are the tasks:

NOTE: The APU Fuel Shutoff Valve is also referred to as the APU Shutoff Valve Actuator Assembly.

- APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801
- APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801

<1> Do the Repair Confirmation at the end of this task.

- b) If you find 28V DC, then do these steps:

<1> Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

<2> Examine the electrical connectors D920 and D3599B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

<a> If you find a problem, repair the connectors as necessary.

<3> Do a resistance check as follows (WDM 49-62-11):

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APU FSV

D920

RESISTANCE

pin 1		GND	> 100 KOhms
pin 2		GND	> 100 KOhms
pin 3		GND	> 100 KOhms
pin 4	.....	GND	> 100 KOhms
pin 5	.....	GND	< 5 Ohms

<a> If the resistance values are not as specified above, look for a short to ground and repair the wiring as necessary.

<4> Install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

<5> Connect the electrical connector D920 to the APU Fuel Shutoff Valve, V43.

<6> Do the Repair Confirmation at the end of this task.

(h) If the APU Fuel Shutoff Valve opens and closes correctly, then continue.

(15) Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

(16) Examine the wiring between the APU ECU and APU Fuel Shutoff Valve as follows (WDM 49-62-11):

APU ECU

APU FSV

D3599B

D920

pin B8	.....	pin 4
pin D5	.....	pin 2
pin D9	.....	pin 1
pin B7	.....	pin 3

(a) If you find a problem in the wiring, repair it as necessary.

1) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

2) Connect the electrical connector D920 to the APU Fuel Shutoff Valve, V43.

3) Do the Repair Confirmation at the end of this task.

(b) If you do not find a problem in the wiring, continue.

(17) Make sure that the APU Switch is OFF.

(18) Replace the APU ECU, M1709. These are the tasks:

- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

(a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do the APU BITE Procedure, 49-60 TASK 801.

(2) On the P5 forward overhead panel, put the APU Switch to the ON position.

(3) On the CDU Display, look at the CURRENT STATUS page to see if the maintenance message shows.

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- (a) If the CDU Display does not show this maintenance message, then you corrected the problem.
 - 1) On the P5 forward overhead panel, put the APU Switch to the OFF position.
- (b) If the CDU Display still shows the maintenance message, then put the APU Switch to the OFF position and continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

809. Fuel Control Unit Torque Motor Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31172 FUEL CONTROL UNIT TORQUE MOTOR SHOWS OPEN CIRCUIT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) This fault is set when the fuel torque motor is commanded to 125 mA. The ECU measures the torque motor drive current and the resulting voltage across the torque motor load. If the current is low and the voltage is high, then the torque motor is failed open.

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- (3) An open in the torque motor circuit will stop the fuel flow through the fuel control unit. A no flame, no acceleration or underspeed protective shutdown can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

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E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
- 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
- 1) Measure the resistance between pin 6 and pin 7 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be less than 100 ohms.
 - 2) If the resistance is more than 100 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 100 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

- 1) Measure the resistance between pin 3 and pin 24 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be less than 100 ohms.

- 2) If the resistance is more than 100 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 100 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:

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- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be less than 100 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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810. Fuel Control Unit Torque Motor Shows Short Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31173 FUEL CONTROL UNIT TORQUE MOTOR SHOWS SHORT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) This fault is set when the fuel torque motor is commanded to 125 mA. The ECU measures both the torque motor drive current and the resulting voltage across the torque motor load. If the fuel torque motor voltage bit is low and the current is normal, the torque motor failure is a short circuit.

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- (3) A short across the torque motor will stop the fuel flow through the fuel control unit. A no flame, no acceleration or underspeed protective shutdown can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

3) Do this task: APU BITE Procedure, 49-60 TASK 801.

4) Set the APU master switch to the ON position.

5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

6) Set the APU master switch to the OFF position.

(c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

(a) Make sure the APU master switch is OFF.

(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (c) If there was a problem with the airplane wire harness, then do these steps:

1) Do this task: APU BITE Procedure, 49-60 TASK 801.

2) Set the APU master switch to the ON position.

3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

4) Set the APU master switch to the OFF position.

(d) If the airplane wire harness is satisfactory, then continue.

- (3) Do this check of the fuel control unit, YAAM002:

(a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 6 and pin 7 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be more than 20 ohms.
 - 2) If the resistance is less than 20 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 20 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 3 and pin 24 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be more than 20 ohms.
 - 2) If the resistance is less than 20 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 20 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be more than 20 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

812. Fuel Control Unit Torque Motor Shows Circuit Failed On - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61174 FUEL CONTROL UNIT TORQUE MOTOR SHOWS CIRCUIT FAILED ON

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- (2) For this test, 0 mA is commanded. The ECU reads the torque motor drive current . If the fuel torque motor current is greater than 40 mA, the driver is shorted. The reading with no failures should be 0 mA . A driver short causes full fuel flow that can cause an overtemperature or NO_FLAME shutdown during a start or an overspeed autosutdown if onspeed when failure occurred. If this fault occurs during a start, there is a chance of turbine damage.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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801. FCU Resolver Circuit Shows Short to Ground - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31159 FCU RESOLVER CIRCUIT SHOWS SHORT TO GROUND
- (2) This fault is set when there is a short to ground in the resolver primary (+) circuit or there is an open in the Electronic Control Unit (ECU), M1709 driver circuit. An excitation voltage is applied continuously to the resolver primary (+) circuit in the fuel control unit. A short to ground in the resolver primary (+) circuit shows the voltage is less than 0.8V DC and the current is less than 3 mA. The resolver measures the fuel flow through the fuel control unit. If this failure occurs, the calibration factor for the fuel flow from the last Auxiliary Power Unit (APU) operation is used to continue the APU operation. This calibration factor comes from the data memory module. An APU start and operation problem at altitude can occur.
- (3) The APU FAULT light on the Forward Overhead Panel, P5 can show for this maintenance message.

B. Possible Causes

- (1) Fuel Control Unit (FCU), YAAM002
- (2) ECU, M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the FCU, YAAM002:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the FCU, YAAM002.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
- 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

FCU	FCU	
P22	P22	RESISTANCE
pin 1	pin 2	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
- a) Replace the FCU, YAAM002. These are the tasks:
- Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
- <1> Do the Repair Confirmation at the end of this task.
- b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- a) Re-connect the electrical connector P22 to the FCU, YAAM002.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

pin 26 GROUND

RESISTANCE

>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - <1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- Make sure that the APU master switch is OFF.
- Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
- If the electrical connector D3599 is satisfactory, then do these steps:
 - Do a resistance check at the ECU, M1709 as follows (WDM 49-62-12, WDM 49-52-31):

ECU

D3599A

	RESISTANCE
pin A9 GROUND	>100 KΩ

- If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- If there was a problem with the circuit, then do these steps:
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the problem.
 - Set the APU master switch to the OFF position.
- If the circuit is satisfactory, then continue.

- (6) Do these steps to replace the ECU, M1709:

- Make sure that the APU master switch is OFF.
- Replace the ECU, M1709. These are the tasks:

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- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- 1) Do the Repair Confirmation at the end of this task.

(c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

802. FCU Resolver Circuit Shows Open - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31160 FCU RESOLVER CIRCUIT SHOWS OPEN

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- (2) This fault is set when there is an open in the resolver circuit. An ac excitation voltage is continuously applied to the resolver. The excitation circuit furnishes a BITE voltage and a voltage related to current to the software. If the excitation voltage is in the normal range and secondary voltages are below the minimum limit then the resolver has opened. In normal operation the voltage reads 1.0 to 1.8 V, including temperature and component variations, providing good margin from nuisance trips.

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- (3) The resolver measures the fuel flow through the fuel control unit. If this failure occurs, the calibration factor for the fuel flow from the last APU operation is used to continue the APU operation. This calibration factor comes from the data memory module. An APU start and operation problem at altitude can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location ((49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 2 and pin 3 on the fuel control unit, YAAM002 (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 12 and pin 26 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A9 and pin B9 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be less than 200 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.

- (6) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

803. FCU Resolver Circuit Shows Short - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31161 FCU RESOLVER CIRCUIT SHOWS SHORT

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- (2) This fault is set when there is a short across the resolver primary (+) circuit. An ac excitation voltage is continuously applied to the resolver. The excitation circuit furnishes a BITE voltage and a voltage related to current to the software. If the excitation voltage is low and the secondary voltages are low then the resolver driver circuit has a short. The position signal is invalid if this fault occurs.

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- (3) The resolver measures the fuel flow through the FCU, YAAM002. If this failure occurs, the calibration factor for the fuel flow from the last APU operation is used to continue the APU operation. This calibration factor comes from the data memory module. An APU start and operation problem at altitude can occur.
- (4) The APU FAULT light on the Forward Overhead Panel, P5 can show for this maintenance message

B. Possible Causes

- (1) FCU, YAAM002
- (2) ECU, M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the FCU, YAAM002:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
- 1) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
- 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

FCU		FCU		RESISTANCE
P22		P22		
pin 1	.....	pin 2		>100 KΩ
pin 1	.....	pin 3		>100 KΩ
pin 2	.....	pin 3		>30 Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the FCU, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

<1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the FCU, YAAM002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
a) Do the Repair Confirmation at the end of this task.
4) Set the APU master switch to the OFF position.
(f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

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APU

D10436 (P2)

		RESISTANCE
pin 12	GROUND	>100 K Ω
pin 26	GROUND	>100 K Ω

D10346 (P2)

D10346 (P2)

RESISTANCE

pin 12	pin 26	>30 Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802<1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-62-12, WDM 49-52-31):

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ECU

D3599A

pin A9	GROUND	>100 K Ω
pin B9	GROUND	>100 K Ω

D3599A

D3599A

RESISTANCE

pin A9	pin B9	>30 Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the problem.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

804. FCU Resolver Circuit Shows Bad - Fault Isolation

A. Description

- (1) This task is for these maintenance message:
 - (a) 49-31162 FCU RESOLVER CIRCUIT SHOWS BAD

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- (b) 49-31162 FCU RESOLVER CIRCUIT SHOWS LOW SIDE GROUNDED
- (2) This fault is set when there is a short to ground in the resolver primary (-) circuit. An excitation voltage is applied continuously to the resolver primary (-) circuit in the FCU, YAAM002. A short to ground in the resolver primary (-) circuit shows the voltage is between 0.8V and 2.5V DC and the current is less than 3 mA. The resolver measures the fuel flow through the FCU, YAAM002. If this failure occurs, the calibration factor for the fuel flow from the last APU operation is used to continue the APU operation. This calibration factor comes from the data memory module. An APU start and operation problem at altitude can occur.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) FCU, YAAM002
- (2) ECU, M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
- (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the FCU, YAAM002:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

FCU	FCU	
P22	P22	RESISTANCE
pin 1	pin 3	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the FCU, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - <1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

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- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

	RESISTANCE
pin 12 GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - <1> Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-62-12, WDM 49-52-31):

ECU

D3599A

pin B9 GROUND

RESISTANCE

>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the problem.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.

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- (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

805. FCU Resolver Circuit Shows Bad - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31175 FCU RESOLVER CIRCUIT SHOWS BAD
- (2) This fault is set when there is an open or a short across the resolver sine or cosine circuit. An excitation voltage is applied continuously to the resolver circuit in the fuel control unit. The electronic control unit does a check of the two voltages for the resolver sine and cosine circuit. The resolver measures the fuel flow through the fuel control unit. An APU start and operation problem at altitude can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the fuel control unit, YAAM002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709
- (7) Fuel control unit, YAAM002.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

- 2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

- 4) Set the APU master switch to the ON position.

- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

- 6) Set the APU master switch to the OFF position.

- (c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.

- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (c) If there was a problem with the airplane wire harness, then do these steps:

- 1) Do this task: APU BITE Procedure, 49-60 TASK 801.

- 2) Set the APU master switch to the ON position.

- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

- 4) Set the APU master switch to the OFF position.

- (d) If the airplane wire harness is satisfactory, then continue.

- (3) Do this check of the fuel control unit, YAAM002:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the fuel control unit, YAAM002.
- (d) Examine the electrical connector P22. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the fuel control unit, YAAM002 (SSM 49-62-12):
 - a) Pin 1 and pin 10, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 1 and pin 11, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 10 and pin 12, specified resistance of 30-200 ohms.
 - d) Pin 11 and pin 12, specified resistance of 30-200 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P22 to the fuel control unit, YAAM002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12):
 - a) Pin 4 and pin 11, specified resistance of 30-200 ohms.
 - b) Pin 4 and pin 25, specified resistance of 30-200 ohms.
 - c) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin 25 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin A4 and pin A5, specified resistance of 30-200 ohms.
 - b) Pin A4 and pin B9, specified resistance of more than 100K ohms (open circuit).
 - c) Pin A5 and pin A6, specified resistance of 30-200 ohms.
 - d) Pin A6 and pin B9, specified resistance of more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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801. APU Fuel Valve Shows Not Open - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31214 APU FUEL VALVE SHOWS NOT OPEN
- (2) This fault is set when there is an open in the APU fuel shutoff valve circuit or the APU fuel shutoff valve does not open after 10 seconds. The electronic control unit sends an open command signal to the APU fuel shutoff valve. The APU fuel shutoff valve and/or air inlet door did not open when commanded open. This fault is related to the APU protective shutdown message for the air inlet door that is not open.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) APU fire switch, S10, or APU remote fire switch, S16, was pulled
- (2) Wiring problem between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709
- (3) Engine wire harness problem
- (4) Airplane wire harness problem
- (5) Operational problem with the APU fuel shutoff valve, V43
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) SSM 49-62-11
- (4) WDM 49-62-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do these steps to put the APU fire switch, S10, and/or APU remote fire switch, S16, back to its initial (stowed) position:

NOTE: The APU fire switch, on the P8-1 engine and APU fire control panel, is also referred to as the fire handle. The APU remote fire switch, on the P28 remote APU control panel, is also referred to as the fire handle.

 - (a) Make sure the APU master switch is OFF.
 - (b) Visually examine the position of the APU fire switch, S10, on the P8-1 engine and APU fire control panel.
 - (c) Visually examine the position of the APU remote fire switch, S16, on the P28 remote APU control panel.
 - (d) If the APU fire switch, S10, and/or the APU remote fire switch, S16, were pulled, then do these steps:
 - 1) Set the APU fire switch, S10, and/or the APU remote fire switch, S16, back to its initial (stowed) position.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the APU fire switch, S10, and the APU remote fire switch, S16, were not pulled, then continue.
- (2) Do this check of the wiring between the APU fuel shutoff valve, V43, the air inlet door actuator, M299, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D920 from the APU fuel shutoff valve, V43.
 - (d) Disconnect the electrical connector D922 from the air inlet door actuator, M299.
 - (e) Examine the electrical connectors D920, D922 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (f) If there was a problem with the electrical connector D920, D922 or D3599, then do these steps:
 - 1) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 2) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D920, D922 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11):
 - a) Pin A7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin B7 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin B8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - e) Pin D5 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - f) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 1 and socket 3 on the electrical connector D920 at the APU fuel shutoff valve, V43.
 - 3) Measure the resistance between pin B7 and pin D9 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 2 and socket 4 on the electrical connector D920.
 - 6) Measure the resistance between pin B8 and pin D5 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 7) Remove the jumper.
 - 8) Install the jumper between socket 1 and socket 2 on the electrical connector D922 at the air inlet door actuator, M299.
 - 9) Measure the resistance between pin A7 and pin A8 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 10) Remove the jumper.
 - 11) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 12) Re-connect the electrical connector D922 to the air inlet door actuator, M299.
 - 13) Re-connect the electrical connector D920 to the APU fuel shutoff valve, V43.
 - 14) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 15) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.

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- c) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 16) If the circuit is satisfactory, then continue.
- (3) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802,
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (4) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (5) Do an operational check of the APU fuel shutoff valve, V43:
 - (a) Get access to the APU fuel shutoff valve.

NOTE: The APU fuel shutoff valve is on the rear spar of the left wing in the wheel well.

NOTE: The APU fuel shutoff valve is also referred to as the APU shutoff valve actuator assembly.



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- (b) With the APU master switch in the OFF position, make sure the APU fuel shutoff valve, V43, is fully closed.
- NOTE: The manual override handle on the APU fuel shutoff valve gives an indication of the shutoff valve position.
- (c) Set the APU master switch to the ON position.
- (d) Make sure the APU fuel shutoff valve fully opens.
- (e) Set the APU master switch to the OFF position.
- (f) Make sure the APU fuel shutoff valve fully closes.
- (g) If the APU fuel shutoff valve does not fully open or fully close, then do these steps:
- 1) Replace the APU fuel shutoff valve, V43. These are the tasks:
 - APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801,
 - APU Shutoff Valve Actuator Assembly Installation, AMM TASK 28-25-02-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (h) If the APU fuel shutoff valve opens and closes correctly, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

— END OF TASK —

802. Flow Divider Solenoid Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-31294 FLOW DIVIDER SOLENOID SHOWS HIGH CURRENT

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- (2) This fault is set when there is a short in the flow divider solenoid circuit for the fuel flow divider. The electronic control unit (ECU) does a check of the current to the flow divider solenoid. An overcurrent condition occurs in the flow divider solenoid when the ECU driver is set to on. If this fault is not corrected, an APU start and operation problem and/or a no flame protective shutdown at altitude can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the flow divider solenoid for the fuel flow divider, YAAV004
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

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- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the flow divider solenoid for the fuel flow divider, YAAV004:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P23 from the flow divider solenoid, YAAV004.
- (d) Examine the electrical connector P23. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P23, then do these steps:
 - 1) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P23 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the flow divider solenoid, YAAV004 (SSM 49-62-12):
- a) Pin 1 and pin 2, specified resistance of more than 10 ohms.
- b) Pin 1 and pin 3, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the flow divider solenoid for the fuel flow divider, YAAV004. These are the tasks:
- Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
(d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
a) If the CDU display does not show this maintenance message, then you corrected the fault.
7) Set the APU master switch to the OFF position.
(f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D10434 (P3) at the 1088 bulkhead (SSM 49-62-12):
 - a) Pin 25 and pin 26, specified resistance of more than 10 ohms.
 - b) Pin 25 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 26 and structural ground on the APU firewall receptacle D10434 at the 1088 bulkhead (SSM 49-62-12).

NOTE: The resistance must be less than 5 ohms (short circuit).
- 4) If the resistance more than 5 ohms, then do these steps:
 - a) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Set the APU master switch to the ON position.
- g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- h) If the CDU display does not show this maintenance message, then you corrected the fault.
- i) Set the APU master switch to the OFF position.

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- 5) If the resistance is in the range specified for each pair of pins on the electrical connector D10434 (P3) and less than 5 ohms from socket 26 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
 - a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A9 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be more than 10 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

803. Flow Divider Solenoid Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-31295 FLOW DIVIDER SOLENOID SHOWS OPEN CIRCUIT
- (2) This fault is set when there is an open in the flow divider solenoid circuit for the fuel flow divider. The electronic control unit does a check of the voltage across the high side driver of the flow divider solenoid. An open in the flow divider solenoid circuit shows the voltage is more than 4.6V. If this fault is not corrected, an APU start and operation problem and/or a no flame protective shutdown at altitude can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the flow divider solenoid for the fuel flow divider, YAAV004
- (4) Voltage problem with the engine wire harness
- (5) Voltage problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-30 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-30 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.

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- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the flow divider solenoid for the fuel flow divider, YAAV004:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P23 from the flow divider solenoid, YAAV004.
- (d) Examine the electrical connector P23. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P23, then do these steps:
 - 1) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P23 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 2 on the flow divider solenoid, YAAV004 (SSM 49-62-12).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:

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- a) Replace the flow divider solenoid for the fuel flow divider, YAAV004. These are the tasks:
 - Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 80 ohms, then do these steps and continue:
- a) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 25 and pin 26 on the electrical connector D10434 (P3) at the 1088 bulkhead (SSM 49-62-12).
- NOTE: The resistance must be less than 80 ohms.
- 2) If the resistance is more than 80 ohms, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 26 and structural ground on the APU firewall receptacle D10434 at the 1088 bulkhead (SSM 49-62-12).
- NOTE: The resistance must be less than 5 ohms (short circuit).
- 4) If the resistance is more than 5 ohms, then do these steps:
- a) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Set the APU master switch to the ON position.
- g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- h) If the CDU display does not show this maintenance message, then you corrected the fault.
- i) Set the APU master switch to the OFF position.
- 5) If the resistance is less than 80 ohms on the electrical connector D10434 (P3) and less than 5 ohms from socket 26 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A9 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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801. No Acceleration Shutdown - Fault Isolation

A. Description

- (1) This task is for the maintenance (shutdown fault) message:
 - (a) 49-41010 NO ACCELERATION SHUTDOWN
- (2) There is no or low acceleration for 12.5 seconds during an APU start cycle and an APU lite-off occurred.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.
- (4) Boeing considers multiple start attempts after a start abort for slow acceleration to be acceptable, providing that the APU starter duty cycle limitations are observed, and providing no abnormal indications such as EGT over limits, tailpipe torching or compressor surging are observed.

B. Possible causes, when this shutdown occurs on the ground:

- (1) Operational problem with the AC generation system
- (2) Operational problem with the DC generation system
- (3) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (4) Fuel leakage from the APU
- (5) Fuel supply flow problem
- (6) Lube Module
- (7) Fuel nozzles (atomizers)
- (8) Fuel control unit, YAAM002
- (9) Fuel flow divider, YAAV004
- (10) Linkage problem with the inlet guide vane (IGV) actuator, YAAV002
- (11) Inlet temperature sensor, YAAT002
- (12) Inlet pressure sensor (P2), YAAT003
- (13) Start converter unit, M1710
- (14) Start power unit, M1850
- (15) Electronic control unit, M1709
- (16) EGT thermocouple 1, YAAT009
- (17) EGT thermocouple 2, YAAT010
- (18) Starter-generator, YAAG013
- (19) APU.

C. Possible causes, when this shutdown occurs in flight:

- (1) Lube Module
- (2) Inlet temperature sensor, YAAT002
- (3) Inlet pressure sensor (P2), YAAT003
- (4) Pressure sense pneumatic system blocked
- (5) Fuel nozzles (atomizers)
- (6) Fuel control unit, YAAM002
- (7) Fuel flow divider (possibly the solenoid), YAAV004

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- (8) Start converter unit, M1710
- (9) Start power unit, M1850
- (10) Starter-generator, YAAG013
- (11) APU.

D. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

E. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)

F. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do these steps to check and record the APU hours and CT5ATP:
 - 1) If you get access to the Control Display Unit (CDU) for the first time or were in an airplane system other than the APU, then push the INIT REF function key until the PERF INT page shows on the CDU display.
 - 2) Push the line select key adjacent to <INDEX.
 - 3) Push the line select key adjacent to MAINT>.
 - 4) Push the line select key adjacent to APU>.

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- 5) To view the Hours of APU operation (APU HOURS), from the MAIN MENU page, push the line select key adjacent to <IDENT/CONFIG.
 - a) The first page shows the Hours of APU operation (APU HOURS) data.
 - 6) To view CT5ATP, from the IDENT/CONFIG page, push the line select key adjacent to DATA MEMORY MODULE>.
 - a) Push the NEXT PAGE key to go to page 5, CT5ATP will be displayed on the last row of the CDU.

NOTE: The number of pages are shown on the top right side of the DATA MEMORY MODULE page.
 - b) Push the line select key adjacent to <INDEX to go back to the IDENT/CONFIG page.
 - 7) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, push the line select key adjacent to <INDEX.
- (b) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
- 1) 49-31159
 - 2) 49-31160
 - 3) 49-31161
 - 4) 49-31170
 - 5) 49-31171
 - 6) 49-31172
 - 7) 49-31173
 - 8) 49-31175
 - 9) 49-41244
 - 10) 49-41246
 - 11) 49-41247
 - 12) 49-41248
 - 13) 49-41250
 - 14) 49-41251
 - 15) 49-41253
 - 16) 49-41255
 - 17) 49-41256
 - 18) 49-41266
 - 19) 49-41267
 - 20) 49-52190
 - 21) 49-61158
 - 22) 49-61174
 - 23) 49-61268
 - 24) 49-61293.

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- 25) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
- 26) If you find these maintenance messages 49-31171, 49-41244, 49-41246, 49-41247, 49-41248, 49-41250, 49-41251, 49-41253, 49-41255, 49-41256, 49-41266, 49-41267 and 49-52190, then you must do these steps after you do the Fault Isolation Procedure for each message.

NOTE: During the installation test of the LRU or when you start the APU to make sure the fault is corrected, it is recommended that you do an ac start and then a dc start of the APU. If there is a problem with the ac and/or dc start, then you can do the troubleshooting procedure for that electrical power system(s).

- a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41010 shows.
 - d) If the CDU display does not show maintenance message 49-41010 again in the last APU cycle, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-41010 again in the last APU cycle, then continue.
 - f) Set the APU master switch to the OFF position.
- 27) If you find these maintenance messages 49-31159, 49-31160, 49-31161, 49-31170, 49-31172, 49-31173, 49-31175, 49-61158, 49-61174, 49-61268 and 49-61293, then you must do these steps after you do the Fault Isolation Procedure for each message.
- a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- NOTE:** It is recommended that you do an ac start and then a dc start of the APU. If there is a problem with the ac and/or dc start, then you can do the troubleshooting procedure for that electrical power system(s).
- b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41010 shows.
 - f) If the CDU display does not show maintenance message 49-41010 again in the last APU cycle, then you corrected the fault.
 - g) If the CDU display shows maintenance message 49-41010 again in the last APU cycle, then continue.
 - h) Set the APU master switch to the OFF position.
- (c) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the MAINTENANCE HISTORY page for the last APU cycle:
- 1) 49-41244
 - 2) 49-41246
 - 3) 49-41247

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- 4) 49-41248
- 5) 49-41250
- 6) 49-41251
- 7) 49-41253
- 8) 49-41255
- 9) 49-41256
- 10) 49-41267.
- 11) If you find the above maintenance message(s) in the last APU cycle, then do the Fault Isolation Procedure(s) for these message(s).
- 12) If you find the above maintenance message(s) in the last APU cycle, then you must do these steps after you do the Fault Isolation Procedure(s) for each message.

NOTE: During the installation test of the LRU or when you start the APU to make sure the fault is corrected, it is recommended that you do an ac start and then a dc start of the APU. If there is a problem with the ac and/or dc start, then you can do the troubleshooting procedure for that electrical power system(s).

- a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41010 shows.
 - d) If the CDU display does not show maintenance message 49-41010 again in the last APU cycle, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-41010 again in the last APU cycle, then continue.
 - f) Set the APU master switch to the OFF position.
- (d) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
- (e) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

G. Fault Isolation Procedure, when this shutdown occurs on the ground:

- (1) If external power is available, then do an operational check of the AC generation system:
 - (a) Supply external power. To supply it, do this task: Supply External Power, AMM TASK 24-22-00-860-813.
 - (b) Do this task: Operational Test for the AC Generation and Control System, AMM TASK 24-21-00-700-803, you only need to do the steps for 'APU Start with External Power and Switch Check'.
 - 1) Before you start and operate the APU, make sure this circuit breaker is set correctly for an ac start.

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- a) Make sure that this circuit breaker is closed:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (d) Remove external power. To remove it, do this task: Remove External Power, AMM TASK 24-22-00-860-814.
- (e) If the APU did not start or operate correctly on external power, then refer to the applicable troubleshooting procedure for the AC generation system in the FIM chapter 24.
- (f) If the APU did start and operate correctly on external power, then continue.
- (2) Do an operational check of the DC generation system:
- (a) Do this task: The Operational Test of the DC System, AMM TASK 24-31-00-700-801.
- (b) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 1) Before you start and operate the APU, make sure this circuit breaker is set correctly for a dc start.

NOTE: A dc start of the APU will occur automatically if there is a problem with an ac start. This circuit breaker can be in the open or closed position. For this test, this circuit breaker must be in the open position.

- a) Make sure that this circuit breaker is open:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (c) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (d) If the APU did not start or operate correctly on battery power, then refer to the applicable troubleshooting procedure for the DC generation system in the FIM chapter 24.
- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (f) Set the APU master switch to the ON position.
- (g) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- (h) Set the APU master switch to the OFF position.
- (i) If it is necessary to do an ac start of the APU, make sure this circuit breaker is set correctly for an ac start.
- 1) Make sure that this circuit breaker is closed:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- (3) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
- (a) Make sure the APU master switch is OFF.
- (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.

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- (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (4) Do these steps to examine the APU for signs of fuel leakage:
- (a) Make sure the APU master switch is OFF.
 - (b) Examine the fuel control unit, surge control valve, inlet guide vane (IGV) actuator and all fuel tubes for signs of fuel leakage.
 - (c) If there was fuel leakage, then do these steps:
 - 1) Repair the problems that you find.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.

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- (d) If there was no fuel leakage, then continue.
- (5) Do a flow check of the fuel supply system for the APU. To do a flow check, do this task: APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802.
- (a) If the fuel flow is not sufficient, then, do this task: Fuel Flow to the APU is not Sufficient - Fault Isolation, 28-25 TASK 801.
- (b) If the fuel flow is sufficient, then continue.
- (6) Do these steps to replace the lube module:
- (a) If the lube module is identified with series 3 or later on its nameplate, then continue at the subsequent step.
- (b) If the lube module is identified with series 1 or 2 on its nameplate, do these steps:
- 1) Make sure that the APU master switch is OFF.
 - 2) Replace the lube module. These are the tasks:
 - Lube Module Removal (Fuel Control Unit Installed on the APU), AMM TASK 49-91-11-000-802
 - Lube Module Installation (Fuel Control Unit Installed on the APU), AMM TASK 49-91-11-400-802
- NOTE: It is necessary to do the installation test for the lube module to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 6) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the fuel control unit, YAAM002:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the fuel control unit, YAAM002. These are the tasks:
- Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
- NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.



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- (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the fuel flow divider, YAAV004:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the fuel flow divider, YAAV004. These are the tasks:
- Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
- NOTE: It is necessary to do the installation test for the fuel flow divider to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (9) Do an operational test of the inlet guide vane (IGV) actuator linkage:
- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
- (c) If there was a problem with the inlet guide vanes, then do these steps:
- 1) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the inlet guide vanes are satisfactory, then continue.
- (10) Do these steps to replace the inlet temperature sensor, YAAT002:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
- Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801

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- Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801

NOTE: Do not do the installation test for the inlet temperature sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
- Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801

NOTE: Do not do the installation test for the inlet pressure sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (h) Set the APU master switch to the ON position.
 - (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (j) Set the APU master switch to the OFF position.
- (12) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (13) Do these steps to replace the start power unit, M1850:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801
- NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (14) Do these steps to replace the electronic control unit, M1709:
- Make sure the APU master switch is OFF.
 - Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - Set the APU master switch to the OFF position.
- (15) Do these steps to replace the EGT thermocouple 1, YAAT009:
- Make sure the APU master switch is OFF.
 - Replace the EGT thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801

NOTE: It is necessary to do the installation test for the EGT thermocouple 1 to see if this maintenance message shows on the CDU display.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - Set the APU master switch to the OFF position.
- (16) Do these steps to replace the EGT thermocouple 2, YAAT010:
- Make sure the APU master switch is OFF.
 - Replace the EGT thermocouple 2, YAAT010. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801

NOTE: It is necessary to do the installation test for the EGT thermocouple 2 to see if this maintenance message shows on the CDU display.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.

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- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (17) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (18) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

H. Fault Isolation Procedure, when this shutdown occurs in flight:

- (1) Do these steps to replace the lube module:
 - (a) If the lube module is identified with series 3 or later on its nameplate, then continue at the subsequent step.
 - (b) If the lube module is identified with series 1 or 2 on its nameplate, do these steps:

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- 1) Make sure that the APU master switch is OFF.
- 2) Replace the lube module. These are the tasks:
 - Lube Module Removal (Fuel Control Unit Installed on the APU), AMM TASK 49-91-11-000-802
 - Lube Module Installation (Fuel Control Unit Installed on the APU), AMM TASK 49-91-11-400-802

NOTE: It is necessary to do the installation test for the lube module to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- 6) Set the APU master switch to the OFF position.

- (2) Do these steps to replace the inlet temperature sensor, YAAT002:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801

NOTE: Do not do the installation test for the inlet temperature sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (3) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
- Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
- NOTE:** Do not do the installation test for the inlet pressure sensor. You must do the APU start, operation and usual shutdown procedures to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (4) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the sensors and tubes:
- 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
- a) Remove the delta pressure sensor drain tube.
- NOTE:** Reference CMM 49-26-95.
- 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
- a) Remove the total pressure sensor drain tube.
- NOTE:** Reference CMM 49-26-95.

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- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
- (d) Examine the housings for debris build up and residual lubricant.

NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.

 - 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.

NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;

Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.

 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
- (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
- (5) Do this task: Fuel Nozzle Inspection, AMM TASK 49-31-14-200-801.
- (6) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801



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- Fuel Control Unit Installation, AMM TASK 49-31-11-400-801

NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the fuel flow divider (and solenoid), YAAV004:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel flow divider, YAAV004. These are the tasks:
 - Fuel Flow Divider Removal, AMM TASK 49-31-15-000-801
 - Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801
- NOTE: It is necessary to do the installation test for the fuel flow divider to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (9) Do these steps to replace the start power unit, M1850:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801
 - NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (10) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.

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- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

802. No Flame Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41011 NO FLAME SHUTDOWN
- (2) The increase in exhaust gas temperature (EGT) does not rise more than 100°F (37.8°C) for 23 seconds and the APU speed is more than 7% during an APU start cycle.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes, when this shutdown occurs on the ground:

- (1) Operational problem with the APU ignition system
- (2) Operational problem with the APU fuel system
- (3) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (4) Igniter plug
- (5) Igniter plug lead
- (6) Ignition unit, YAAM001
- (7) Fuel supply flow problem
- (8) Clogged inlet fuel filter element
- (9) Fuel control unit, YAAM002
- (10) Clogged fuel nozzles adjacent to the igniter plug
- (11) Inlet pressure sensor (P2), YAAT003
- (12) Inlet temperature sensor, YAAT002
- (13) Engine wire harness problem
- (14) Airplane wire harness problem
- (15) Fuel leakage from the APU
- (16) Functional problem with the lube module
- (17) Electronic control unit, M1709
- (18) APU.

C. Possible Causes, when this shutdown occurs in flight:

- (1) Operational problem with the APU ignition system (unit, plug and lead)
- (2) Fuel control unit, YAAM002
- (3) Inlet temperature sensor, YAAT002

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- (4) Inlet pressure sensor (P2), YAAT003
- (5) Pressure sense pneumatic system blocked
- (6) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (7) Clogged fuel nozzles adjacent to the igniter plug
- (8) Clogged Fuel Manifold
- (9) APU.

D. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

E. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)

F. Initial Evaluation (for when the shutdown occurs both in flight and on the ground):

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-31164
 - 2) 49-31166
 - 3) 49-31170
 - 4) 49-31171
 - 5) 49-31172
 - 6) 49-31173
 - 7) 49-31294
 - 8) 49-31295
 - 9) 49-41180
 - 10) 49-41181
 - 11) 49-61153
 - 12) 49-61165
 - 13) 49-61174
 - 14) 49-61178
 - 15) 49-61296.
 - 16) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 17) If you find the above maintenance message(s), then you must do these steps after you do the Fault Isolation Procedure for each message.

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- a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41011 shows.
 - f) If the CDU display does not show maintenance message 49-41011 again in the last APU cycle, then you corrected the fault.
 - g) If the CDU display shows maintenance message 49-41011 again in the last APU cycle, then continue.
 - h) Set the APU master switch to the OFF position.
- (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

G. Fault Isolation Procedure, when this shutdown occurs on the ground:

- (1) Do a check of the APU ignition system for the correct operation:

NOTE: It is necessary that two persons do this system operation task. The location of the first person is in the left flight compartment. The location of the second person is near the APU compartment.

- (a) Make sure the APU master switch is OFF.
- (b) Make sure the APU cowl door is open and there is no noise conditions near the area.
- (c) Listen for a noise from the igniter plug during the initial APU start.
- (d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 1) Make sure there is a noise from the igniter plug during the initial APU start.
- (e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If there is no noise from the igniter plug during the initial APU start, then there is an ignition system problem.

NOTE: It is recommended that you replace the igniter plug, igniter plug lead and/or ignition unit to correct this fault.

- (g) If there is a noise from the igniter plug during the initial APU start, then continue.

- (2) Do a check of the APU fuel system for the correct operation:

NOTE: It is necessary that two persons do this system operation task. The location of the first person is in the left flight compartment. The location of the second person is near the APU compartment.

- (a) Make sure the APU master switch is OFF.
- (b) Do this task: APU Operation Limits, AMM TASK 49-11-00-710-802.
 - 1) Get access to the INPUT MONITORING page from the MAIN MENU page.

NOTE: You push the line select key adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.

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- 2) Make sure the control display unit (CDU) shows the first page of four pages for the INPUT MONITORING data.
 - 3) Look at the FUEL FLOW indication before and during the initial APU start sequence.
 - 4) Before you start the APU, look at the APU exhaust for a fuel fog during the initial APU start sequence and then do a check for fuel drainage from the APU drain mast during the APU operation.
- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 1) Look at the FUEL FLOW indication for a fuel flow rate of a minimum of 45 pounds per hour (PPH) during the initial APU start sequence.
 - 2) Make sure there is no fuel fog at the APU exhaust during the initial APU start sequence.
 - 3) Operate the APU with no load for a minimum of five minutes.
 - 4) Make sure there is no fuel drainage from the APU drain mast during the APU operation.
- (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (e) If the APU starts and operates correctly, then there was an intermittent fault.
- (f) If the APU did not start and the fuel flow rate is less than 45 PPH on the INPUT MONITORING page, or there is no fuel fog at the APU exhaust or there is no fuel drainage from the APU drain mast during the APU operation, then there is a fuel system problem.
- NOTE: It is recommended that you do a flow check of the fuel supply system, replacement of the inlet fuel filter element, do a check of the lube module and/or a replacement of the fuel control unit to correct this fault.
- (g) If the APU did not start but a fuel fog was seen at the APU exhaust and there was fuel drainage from the APU drain mast during the APU operation, then there is an ignition problem.
- NOTE: It is recommended that you do a check of the ignition system and its components to correct this fault.
- (3) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.



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- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (4) Do these steps to replace the igniter plug:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the igniter plug. These are the tasks:
 - Igniter Plug Removal, AMM TASK 49-41-51-000-801,
 - Igniter Plug Installation, AMM TASK 49-41-51-400-801.
- NOTE: It is necessary to do the installation test for the igniter plug to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the igniter plug lead:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the igniter plug lead. These are the tasks:
 - Igniter Plug Lead Removal, AMM TASK 49-41-52-000-801,
 - Igniter Plug Lead Installation, AMM TASK 49-41-52-400-801.
- NOTE: It is necessary to do the installation test for the igniter plug lead to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the ignition unit, YAAM001:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the ignition unit, YAAM001. These are the tasks:
 - Ignition Unit - Removal, AMM TASK 49-41-31-000-801,
 - Ignition Unit - Installation, AMM TASK 49-41-31-400-801.
 - NOTE: It is necessary to do the installation test for the ignition unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (7) Do a flow check of the fuel supply system for the APU. To do a flow check, do this task: APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802.
 - (a) If the fuel flow is not sufficient, then do this task: Fuel Flow to the APU is not Sufficient - Fault Isolation, 28-25 TASK 801.
 - (b) If the fuel flow is sufficient, then continue.
- (8) Do these steps to replace the inlet fuel filter element:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet fuel filter element. These are the tasks:
 - Inlet Fuel Filter Element Removal, AMM TASK 49-31-21-000-801,
 - Inlet Fuel Filter Element Installation, AMM TASK 49-31-21-400-801.
 - NOTE: It is necessary to do the installation test for the inlet fuel filter element to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (9) Do these steps to replace the fuel control unit, YAAM002:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801,
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801.
- NOTE: It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (10) Do these steps to replace the two fuel nozzles adjacent to the igniter plug:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel nozzle. These are the tasks:
 - Fuel Nozzle Removal, AMM TASK 49-31-14-000-801,
 - Fuel Nozzle Installation, AMM TASK 49-31-14-400-801.
- NOTE: It is recommended that you replace the two fuel nozzles adjacent to the igniter plug only. There is unwanted contamination in the two fuel nozzles that can cause no fuel spray to occur.
- NOTE: It is necessary to do the installation test for the fuel nozzle to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801,

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- Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801.

NOTE: Do not do the installation test for the inlet pressure sensor. You must do the APU start and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (12) Do these steps to replace the inlet temperature sensor, YAAT002:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
- Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801,
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801.

NOTE: Do not do the installation test for the inlet temperature sensor. You must do the APU start and usual shutdown procedures to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (h) Set the APU master switch to the ON position.
 - (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (j) Set the APU master switch to the OFF position.
- (13) Do a general visual inspection of the engine wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802,
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802.
NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (14) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.



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- a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (15) Do these steps to examine the APU for signs of fuel leakage:
 - (a) Make sure the APU master switch is OFF.
 - (b) Examine the fuel control unit, surge control valve, inlet guide vane (IGV) actuator and all fuel tubes for signs of fuel leakage.
 - (c) If there was fuel leakage, then do these steps:
 - 1) Repair the problems that you find.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (d) If there was no fuel leakage, then continue.
- (16) Do a functional check of the lube module:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the fuel control unit, YAAM002. To remove it, do this task: Fuel Control Unit Removal, AMM TASK 49-31-11-000-801.
 - (c) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.

NOTE: When you turn the hex socket on the end of the air/oil separator gear, the drive shaft of the lube module will turn.
 - (d) If the drive shaft of the lube module does not turn, then do these steps:
 - 1) Replace the lube module. These are the tasks:
 - Lube Module Removal (Fuel Control Unit Removed from the APU), AMM TASK 49-91-11-000-803,
 - Lube Module Installation (Fuel Control Unit Removed from the APU), AMM TASK 49-91-11-400-803.
 - NOTE:** It is necessary to do the installation test for the lube module to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.

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- (e) If the drive shaft of the lube module turns, then do this step and continue:
- 1) Re-install the fuel control unit, YAAM002. To re-install it, do this task: Fuel Control Unit Installation, AMM TASK 49-31-11-400-801.
- (17) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (18) Do these steps to replace the APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801,
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801.
- NOTE:** It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

H. Fault Isolation Procedure, when this shutdown occurs in flight:

- (1) Do a check of the APU ignition system for the correct operation:

NOTE: It is necessary that two persons do this system operation task. The location of the first person is in the left flight compartment. The location of the second person is near the APU compartment.

- (a) Make sure the APU master switch is OFF.
- (b) Make sure the APU cowl door is open and there is no noise conditions near the area.
- (c) Listen for a noise from the igniter plug during the initial APU start.
- (d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- 1) Make sure there is a noise from the igniter plug during the initial APU start.
- (e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) If there is no noise from the igniter plug during the initial APU start, then there is an ignition system problem.
NOTE: It is recommended that you replace the igniter plug, igniter plug lead and/or ignition unit to correct this fault.
- (g) If there is a noise from the igniter plug during the initial APU start, then continue.
- (2) Do these steps to replace the fuel control unit, YAAM002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel control unit, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - NOTE:** It is necessary to do the installation test for the fuel control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (3) Do these steps to replace the inlet temperature sensor, YAAT002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801,
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801.
 - NOTE:** Do not do the installation test for the inlet temperature sensor. You must do the APU start and usual shutdown procedures to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
- Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801,
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801.
- NOTE:** Do not do the installation test for the inlet pressure sensor. You must do the APU start and usual shutdown procedures to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (j) Set the APU master switch to the OFF position.
- (5) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the sensors and tubes:
- 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.

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- a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
- 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
- (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aid installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small orifice drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
- (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
- (6) Do a general visual inspection of the air inlet duct and compressor inlet plenum for blockage:
 - (a) Make sure the APU master switch is OFF.

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- (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials.
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (7) Do these steps to replace the two fuel nozzles adjacent to the igniter plug:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the fuel nozzle. These are the tasks:
 - Fuel Nozzle Removal, AMM TASK 49-31-14-000-801,
 - Fuel Nozzle Installation, AMM TASK 49-31-14-400-801.

NOTE: It is recommended that you replace the two fuel nozzles adjacent to the igniter plug only. There is unwanted contamination in the two fuel nozzles that can cause no fuel spray to occur.

NOTE: It is necessary to do the installation test for the fuel nozzle to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (8) Examine the primary and secondary fuel manifolds for clogs and fuel leakage:
 - (a) Do the installation tests for the primary and secondary fuel manifolds (AMM PAGEBLOCK 49-31-16/401).
 - 1) If necessary, apply pressurized shop air (maximum 100 psi) to loosen and remove clogs in the fuel manifolds.
- (9) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801,
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801.

NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— END OF TASK —————

803. No APU Rotation Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41012 NO APU ROTATION SHUTDOWN
- (2) The APU speed did not get to 7% in 20 seconds during an APU start cycle. The time of 20 seconds starts after the air inlet door has opened.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) APU battery system problem
- (2) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (3) APU rotation problem
- (4) Starter-generator, YAAG013
- (5) Start converter unit, M1710
- (6) Start power unit, M1850
- (7) Operational problem with the DC generation system

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- (8) Electronic control unit, M1709
- (9) Engine wire harness problem
- (10) Airplane wire harness problem
- (11) Wiring problem between the power distribution panel 1, P91, and the starter-generator, YAAG013
- (12) Wiring problem between the power distribution panel 1, P91, and the APU generator control unit, G14
- (13) Wiring problem between the power distribution panel 1, P91, and the start converter unit, M1710
- (14) Wiring problem between the start converter unit, M1710, and the starter-generator, YAAG013.
- (15) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

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D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) SSM 24-21-31
- (4) SSM 49-41-11

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- (5) WDM 24-21-31
- (6) WDM 49-41-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-41246
 - 2) 49-41247
 - 3) 49-41248
 - 4) 49-41249
 - 5) 49-41250
 - 6) 49-41251
 - 7) 49-41253
 - 8) 49-41254
 - 9) 49-41255
 - 10) 49-41266
 - 11) 49-41267
 - 12) 49-61268.
 - 13) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 14) If you find the above maintenance message(s), then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41012 shows.
 - d) If the CDU display does not show maintenance message 49-41012 again in the last APU cycle, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-41012 again in the last APU cycle, then continue.
 - f) Set the APU master switch to the OFF position.
- (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the MAINTENANCE HISTORY page for the last APU cycle:
 - 1) 49-41244
 - 2) 49-41245
 - 3) 49-41246
 - 4) 49-41247
 - 5) 49-41248
 - 6) 49-41250
 - 7) 49-41251

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- 8) 49-41253
 - 9) 49-41255
 - 10) 49-41267.
 - 11) If you find the above maintenance message(s) in the last APU cycle, then do the Fault Isolation Procedure(s) for these message(s).
 - 12) If you find the above maintenance message(s) in the last APU cycle, then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-41012 shows.
 - d) If the CDU display does not show maintenance message 49-41012 again in the last APU cycle, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-41012 again in the last APU cycle, then continue.
 - f) Set the APU master switch to the OFF position.
 - (c) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (d) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a check of the APU battery system:
 - (a) Make sure these switches on the P5 forward overhead panel are set correctly:
 - 1) APU master switch is set to the OFF position
 - 2) BAT switch is set to the ON position
 - 3) STANDBY POWER switch is set to the AUTO position
 - 4) DC selector switch is set to the BAT position.
 - (b) Look at the DC VOLTS display on the P5 forward overhead panel:
 - 1) If the DC VOLTS display is less than 22 volts, then do this task: Battery Voltage Less Than 22 Volts With BAT Switch at On and No AC Power on the Charger - Fault Isolation, 49-45 TASK 801.
 - 2) If the DC VOLTS display is more than 22 volts, then continue.
- (2) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (3) Do these steps to manually rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:

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- 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801,
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801.

NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the APU turns freely, then continue.
- (4) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801,
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801.

NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801,
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the start power unit, M1850:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801,
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.- (7) Do an operational check of the DC generation system:
 - (a) Do this task: The Operational Test of the DC System, AMM TASK 24-31-00-700-801.
 - (b) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (c) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (g) Set the APU master switch to the OFF position.- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (9) Do a general visual inspection of the engine wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802,
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (10) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (11) Do this check of the wiring between the power distribution panel 1, P91, and the starter-generator, YAAG013:

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- (a) Make sure the APU master switch is OFF.
- (b) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91.
To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
- (c) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (d) Disengage the terminal block cover from the four pins on the starter-generator, YAAG013.
- (e) Remove the terminal block cover.
- (f) Remove the four nuts from the four terminal studs.
- (g) Disconnect the four terminal lugs T1, T2, T3 and T4 from the four terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs. The terminal lug T4 is also referred to as terminal lug N.

- (h) Examine the four terminal lugs T1, T2, T3 and T4 on the starter-generator, YAAG013. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (i) Examine the three terminal lugs A, B and C on the terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (j) If there was a problem with one or more terminal lugs, then do these steps:
 - 1) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - 2) Install the four nuts on the four terminal studs.
 - a) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - 3) Put the terminal block cover on the starter-generator, YAAG013.

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- 4) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
- 5) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 6) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 7) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 10) Set the APU master switch to the ON position.
 - 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 12) Set the APU master switch to the OFF position.
- (k) If the terminal lugs are satisfactory, then do these steps:
- 1) Do a wiring check between these terminal lugs on the terminal block TB5002 for the power distribution panel 1, P91, and for the starter-generator, YAAG013 (SSM 24-21-31) (SSM 49-41-11):

P91

terminal lug A	.....	terminal lug T1
terminal lug B	.....	terminal lug T2
terminal lug C		terminal lug T3

YAAG013

terminal lug T1
terminal lug T2
terminal lug T3

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- 2) Measure the resistance between terminal lug T4 and structural ground at the starter-generator, YAAG013.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
- a) Repair the wiring (WDM 24-21-31) (WDM 49-41-11).
 - b) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - c) Install the four nuts on the four terminal studs.
 - d) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - e) Put the terminal block cover on the starter-generator, YAAG013.
 - f) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - g) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- h) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- i) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- j) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- k) Do this task: APU BITE Procedure, 49-60 TASK 801.
- l) Set the APU master switch to the ON position.

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- m) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - n) If the CDU display does not show this maintenance message, then you corrected the fault.
 - o) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
- a) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - b) Install the four nuts on the four terminal studs.
 - c) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - d) Put the terminal block cover on the starter-generator, YAAG013.
 - e) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - f) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- g) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- (12) Do this check of the wiring between the power distribution panel 1, P91, and the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.

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- (b) Disconnect the electrical connector D11438 from the power distribution panel 1, P91. To disconnect it, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
- (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (d) Examine the electrical connectors D11438 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11438 or D10896, then do these steps:
 - 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 2) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11438 and D10896 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D11438 for the power distribution panel 1, P91, and these sockets for the electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

D11438	D10896A
pin 1	socket 7
pin 5	socket 15
pin 6	socket 16

- 2) Measure the resistance between socket 17 and structural ground on the electrical connector D10896A.

NOTE: The resistance must be less than 5 ohms (short circuit).
- 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - c) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - g) Set the APU master switch to the ON position.
 - h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
- a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- (13) Do this check of the wiring between the power distribution panel 1, P91, and the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91. To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
 - (d) Examine the electrical connector D11114 and terminal lugs A, B and C on the terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or one or more terminal lugs, then do these steps:
 - 1) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE:** It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11114 and the terminal lugs are satisfactory, then do these steps:

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- 1) Do a wiring check between these sockets of electrical connector D11114A for the start converter unit, M1710, and these terminal lugs on the terminal block TB5002 for the power distribution panel, P91 (SSM 24-21-31):

D11114A	P91
Socket 1	terminal Lug A
Socket 2	terminal Lug B
Socket 3	terminal Lug C

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

- (14) Do this check of the wiring between the start converter unit, M1710, and the starter-generator, YAAG013:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
- (c) Disconnect the electrical connectors P5 and P6 from the starter-generator, YAAG013.
- (d) Examine the electrical connectors D11114, P5 and P6. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11114, P5 or P6, then do these steps:
 - 1) Re-connect the electrical connectors P5 and P6 to the starter-generator, YAAG013.

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- 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114, P5 and P6 are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D11114C for the start converter unit, M1710, and these pins of electrical connector P5 for the starter-generator, YAAG013 (SSM 49-41-11):

D11114C	P5
socket 41	pin 12
socket 42	pin 11
socket 53	pin 10
socket 54	pin 9
socket 66	pin 8
socket 67	pin 7

- 2) Do a wiring check between these sockets of electrical connector D11114B for the start converter unit, M1710, and these pins of electrical connector P6 for the starter-generator, YAAG013 (SSM 49-41-11):

D11114B	P6
socket 8	pin 5
socket 10	pin 7

- 3) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connectors P5 and P6 to the starter-generator, YAAG013.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.

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- h) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory, then do these steps:
 - a) Re-connect the electrical connectors P5 and P6 to the starter-generator, YAAG013.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (15) Do these steps to replace the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801,
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801.
 - NOTE: It is necessary to do the APU installation test to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

804. Ignition Unit Circuit Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41180 IGNITION UNIT CIRCUIT SHOWS HIGH CURRENT
- (2) This fault is set when there is a short across the power input driver in the ignition unit and the electronic control unit (ECU) driver is set to off. The electronic control unit does a check of the current to the ignition unit. A short across the power input driver shows an overcurrent condition to the ignition unit during the APU start cycle. If this fault is not corrected, a no flame protective shutdown can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Wiring problem with the engine wire harness
- (4) Wiring problem with the airplane wire harness
- (5) Ignition unit, YAAM001
- (6) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 49-41-11)
- (4) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P13 from the ignition unit, YAAM001.
- (e) Examine the electrical connectors P13, D10434 (P3), and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector P13, D10434 (P3), or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Re-connect the electrical connector P13 to the ignition unit, YAAM001.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors P13, D10434 (P3), and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D10434 (P3) for the APU firewall receptacle D10434, and these sockets of the electrical connector P13 for the ignition unit YAAM001 (WDM 49-41-11)(SSM 49-41-11):

D10434 (P3)	P13
pin 16	socket 2
pin 17	socket 1

- 2) If there is a problem with the wiring, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Re-connect the electrical connector P13 to the ignition unit, YAAM001.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.

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- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connectors D3599, D10434 (P3), and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599, D10434 (P3), or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599, D10434 (P3), and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D3599B for the electronic control unit M1709, and these sockets of the APU firewall receptacle D10434 (SSM 49-41-11):

D3599B	D10434
pin D7	socket 17
ground	socket 16

- 2) If there is a problem with the wiring, do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:

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- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the ignition unit, YAAM001:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the ignition unit, YAAM001. These are the tasks:
 - Ignition Unit - Removal, AMM TASK 49-41-31-000-801
 - Ignition Unit - Installation, AMM TASK 49-41-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

805. Ignition Unit Circuit Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41181 IGNITION UNIT CIRCUIT SHOWS OPEN CIRCUIT
- (2) This fault is set when there is an open in the power input circuit for the ignition unit. The electronic control unit (ECU) does a check of the voltage to the ignition unit. An open in the power input circuit shows the voltage is between 4.0V DC and 11.0V DC and the ECU driver is set to off. If this fault is not corrected, an APU start problem and/or a no flame protective shutdown can occur.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Wiring problem with the engine wire harness
- (4) Wiring problem with the airplane wire harness
- (5) Ignition unit, YAAM001
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 49-41-11)
- (4) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P13 from the ignition unit, YAAM001.
- (e) Examine the electrical connectors P13, D10434 (P3), and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector P13, D10434 (P3), or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector P13 to the ignition unit, YAAM001.
 - 2) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors P13, D10434 (P3), and APU firewall receptacle D10434 are satisfactory, then do these steps:
- 1) Do a wiring check between these pins of electrical connector D10434 (P3) for the APU firewall receptacle D10434, and these sockets of the electrical connector P13 for the ignition unit YAAM001 (SSM 49-41-11):

D10434 (P3)	P13
pin 16	socket 2
pin 17	socket 1

- 2) If there is a problem with the wiring, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
- b) Re-connect the electrical connector P13 to the ignition unit, YAAM001.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connectors D3599, D10434 (P3), and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599, D10434 (P3), or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599, D10434 (P3), and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D3599B for the electronic control unit M1709, and these sockets of the APU firewall receptacle D10434 (SSM 49-41-11):

D3599B		D10434
pin D7	.....	socket 17
ground	.....	socket 16
 - 2) If there is a problem with the wiring, do these steps:
 - a) Repair the wiring (WDM 49-41-11).

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- b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Set the APU master switch to the ON position.
- (5) Do these steps to replace the ignition unit, YAAM001:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the ignition unit, YAAM001. These are the tasks:
 - Ignition Unit - Removal, AMM TASK 49-41-31-000-801
 - Ignition Unit - Installation, AMM TASK 49-41-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.



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- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

806. Start Converter Shows Failed Generator Diode - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-41244 GENERATOR FAILED SEE FIM BEFORE STARTING APU
- (2) The Starter Converter Unit (SCU) contains a voltage regulator which keeps the bus voltage when electrical power is supplied by the Auxiliary Power Unit (APU) Starter-Generator to the airplane. The voltage regulator monitors the current output to the exciter field coil of the APU Starter-Generator. A high ripple is present in the field current when there is a shorted rotating diode in the APU Starter-Generator. The voltage regulator finds this high ripple and the SCU sends a fault message for this condition. The APU Starter-Generator stays on-line when this condition occurs but there will be some amount of electromagnetic interference in the waveform that can cause a problem to some sensitive airplane loads.

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- (3) A failure of the Starter-Generator rotating diode during an APU start can cause a secondary failure to the SCU. It is recommended that you replace the Starter-Generator before you start the APU again. You must go to the CURRENT STATUS page and enter STARTOK in the scratchpad and push the Line Select Key (LSK) at the top right side of the CDU before you start the APU.

SIA ALL; AIRPLANES WITH 1152466-250 START CONVERTER UNIT

- (4) One or more APU start tries with a failed Starter-Generator rotating diode will not damage the SCU. However, the Starter-Generator can have decreased performance. The result of this decreased performance is slower APU start times or hung starts and lower generating capacity. You must go to the CURRENT STATUS page and enter STARTOK in the scratchpad and push the LSK at the top right side of the CDU before you start the APU.

SIA ALL

- (5) The APU MAINT Light on the P5 Forward Overhead Panel will show for this maintenance message. The APU FAULT Light can show for this maintenance message.

B. Possible Causes

- (1) Starter-Generator, YAAG013
- (2) SCU, M1710

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU Display shows the maintenance message on the CURRENT STATUS page and/or MAINTENANCE HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.
 - (b) If the CDU Display does not show the maintenance message on the CURRENT STATUS page and MAINTENANCE HISTORY page for the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a check of the Part Number (P/N) for the SCU, M1710:
 - (a) Get access to the front panel of the SCU, M1710.

NOTE: You get access to the front panel of the SCU, M1710, when you open the Electronic Equipment Access Door, 117A.
 - (b) Write down or know the P/N of the SCU.

NOTE: The identification plate on the SCU shows Honeywell P/N 1151858-241, 1152426-245, 1152466-250, or 51090360-001.
 - (c) If the SCU is Honeywell P/N 1152466-250, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- 7) If the APU MAINT Light comes ON intermittent or goes OFF during a minimum of one of the three APU start cycles, there is an intermittent fault and maintenance message 49-41244 is false.

NOTE: It is recommended that the changes in Honeywell Service Bulletin (SB) 1152466-49-13 be added to the -250 series 2 SCUs to prevent false maintenance message 49-41244 to show on the CDU Display.

- 8) If the APU MAINT Light stays ON when the APU Master Switch is set to the ON position and the APU is operating, then continue.
- (d) If the SCU is Honeywell P/N 1151858-241, 1152426-245, or 51090360-001 then continue.
- (2) Do these steps to replace the Starter-Generator, YAAG013:
- (a) Replace the Starter-Generator, YAAG013. These are the tasks:
- Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- NOTE: It is necessary to do the installation test for the Starter-Generator to see if the maintenance message shows on the CDU Display.
- (b) Do the Repair Confirmation at the end of this task.

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YOU MUST REPLACE THE STARTER-GENERATOR BEFORE YOU START THE APU AGAIN. A FAILURE OF THE STARTER-GENERATOR ROTATING DIODE DURING AN APU START CAN CAUSE A SECONDARY FAILURE TO THE START CONVERTER UNIT.

SIA ALL

- (3) Do these steps to replace the SCU, M1710:
- (a) Replace the SCU, M1710. These are the tasks:
- Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the SCU to see if the maintenance message shows on the CDU Display.
- (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.
- (3) Go to the CURRENT STATUS page for the maintenance message and enter STARTOK in the scratchpad.
- (a) Push the LSK at the top right side of the CDU.
- (b) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 1) If the CDU Display does not show the maintenance message, then you corrected the problem.
 - 2) If the CDU Display shows the maintenance message, then continue the Fault Isolation Procedure at the subsequent step.

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- (4) Set the APU Master Switch to the OFF position.

————— **END OF TASK** —————

807. Start Converter Unit Shows Gen Undervoltage - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41245 START CONVERTER UNIT SHOWS GEN UNDERVOLTAGE
- (2) During the APU start cycle, the starter-generator is operated as a motor and driven by the start converter unit. When the APU is at governed speed, the starter-generator supplies three-phase AC power to the airplane. The three-phase voltage is controlled by the voltage regulator in the start converter unit. During the power generate mode, the start converter unit monitors the exciter field coil of the starter-generator for open or short circuit conditions. When the APU generator control unit, G14, sends an undervoltage signal to the start converter unit, this fault is set when the start converter unit finds the cause is from the starter-generator.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Starter-generator wire harness problem
- (2) Internal problem with the starter-generator, YAAG013
- (3) Wiring problem with the starter-generator wire harness
- (4) Internal problem with the four starter-generator terminal lugs
- (5) Wiring problem between the start converter unit, M1710, and the APU generator control unit, G14
- (6) Wiring problem between the power distribution panel 1, P91, and the starter-generator, YAAG013
- (7) Wiring problem between the power distribution panel 1, P91, and the APU generator control unit, G14
- (8) Wiring problem between the power distribution panel 1, P91, and the start converter unit, M1710
- (9) BITE problem for the APU generator control unit, G14
- (10) Auxiliary power breaker, C803
- (11) Starter-generator, YAAG013
- (12) Start converter unit, M1710.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER
SIA ALL			
F	12	C01285	GENERATOR APU GEN CONT UNIT

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	9	C01326	APU GEN CONT UNIT

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-21-31)
- (4) (SSM 49-41-11)
- (5) (WDM 24-21-31)
- (6) (WDM 49-41-11)

E. Initial Evaluation



YOU MUST FOLLOW THIS FAULT ISOLATION FROM THE START TO THE END UNTIL YOU CORRECT THE START CONVERTER UNIT GENERATOR UNDERVOLTAGE FAULT. IF YOU DO NOT FOLLOW THIS FAULT ISOLATION PROCEDURE AND YOU DO AN APU START, DAMAGE TO A SERVICEABLE STARTER-GENERATOR WILL OCCUR.

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for maintenance message 49-41252 on the CURRENT STATUS page and MAINTENANCE HISTORY pages.
 - 1) If you find maintenance message 49-41252, then do these steps:
 - a) Do the Fault Isolation Procedure for maintenance message 49-41252 to correct the fault.
 - b) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

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- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41245 shows.
 - f) If the CDU display does not show maintenance message 49-41245, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows maintenance message 49-41245, then do the Fault Isolation Procedure below.
- 2) If you do not find maintenance message 49-41252, then continue.
- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
- 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
 - 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the starter-generator wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the starter-generator wire harness, then do these steps:

NOTE: You can repair or replace the starter-generator wire harness.

 - 1) Repair the starter-generator wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801

NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.

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- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the starter-generator wire harness is satisfactory, then continue.
- (2) Do this check of the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disconnect the electrical connector P6 from the starter-generator, YAAG013.
- (d) Examine the electrical connector P6. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P6, then do these steps:
 - 1) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - 2) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

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- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector P6 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the starter-generator, YAAG013 (SSM 49-41-11):
 - a) Pin 5 and pin 7, specified resistance of 2-10 ohms.
 - b) Pin 5 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- NOTE: Do not do the installation test for the starter-generator. You must do the APU operational test to complete the fault isolation task for this maintenance message.

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- b) Do this task: Auxiliary Power Unit (APU) Cowl Door Installation, AMM TASK 52-48-21-400-801.

NOTE: Do not close the APU cowl door at this time. Use the two hold-open rods to hold the APU cowl door open.

- c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- f) During the APU operational test, examine the starter-generator for signs of oil leakage.
- g) If you find oil leakage, then repair the problem that you find.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- k) If the CDU display does not show this maintenance message, then you corrected the fault.
- l) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P6 to the starter-generator, YAAG013.

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- b) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (3) Do this check of the starter-generator wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D11118 (P4) from the APU firewall receptacle D11118 on the 1088 bulkhead.
- (d) Examine the electrical connector D11118 (P4) and APU firewall receptacle D11118. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11118 (P4) or APU firewall receptacle D11118, then do these steps:
 - 1) Re-connect the electrical connector D11118 (P4) to the APU firewall receptacle D11118 on the 1088 bulkhead.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11118 (P4) and APU firewall receptacle D11118 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D11118 (P4) at the 1088 bulkhead (SSM 49-41-11):
- a) Pin 6 and pin 8, specified resistance of 2-10 ohms.
- b) Pin 6 and pin 19, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the starter-generator wire harness. These are the tasks:
- Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801
- NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector D11118 (P4) to the APU firewall receptacle D11118 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the four starter-generator terminal lugs:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disengage the terminal block cover from the four pins on the starter-generator, YAAG013.
(d) Remove the terminal block cover.
(e) Remove the four nuts from the four terminal studs.
(f) Disconnect the four terminal lugs T1, T2, T3 and T4 from the four terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs. The terminal lug T4 is also referred to as terminal lug N.

- (g) Examine the four terminal lugs T1, T2, T3 and T4. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(h) If there was a problem with the terminal lugs T1, T2, T3 or T4, then do these steps:

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- 1) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
- 2) Install the four nuts on the four terminal studs.
 - a) Tighten the four nuts to 125 pound-inches (14.1 newton-meters).
- 3) Put the terminal block cover on the starter-generator, YAAG013.
- 4) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
- 5) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 6) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 7) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 8) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 9) Set the APU master switch to the ON position.
- 10) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 11) Set the APU master switch to the OFF position.
- (i) If the four terminal lugs T1, T2, T3 and T4 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of terminals on the starter-generator, YAAG013 (SSM 24-21-31) (SSM 49-41-11):
 - a) Terminal T1 and terminal T4, specified resistance of less than 5 ohms.
 - b) Terminal T2 and terminal T4, specified resistance of less than 5 ohms.
 - c) Terminal T3 and terminal T4, specified resistance of less than 5 ohms.

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- 2) If the resistance is not in the range specified for each pair of terminals, then do these steps:

- a) Replace the starter-generator, YAAG013. These are the tasks:
- Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801

NOTE: Do not do the installation test for the starter-generator. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- b) Do this task: Auxiliary Power Unit (APU) Cowl Door Installation, AMM TASK 52-48-21-400-801.

NOTE: Do not close the APU cowl door at this time. Use the two hold-open rods to hold the APU cowl door open.

- c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- f) During the APU operational test, examine the starter-generator for signs of oil leakage.
- g) If you find oil leakage, then repair the problem that you find.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- k) If the CDU display does not show this maintenance message, then you corrected the fault.
- l) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of terminals, then do these steps and continue:
 - a) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs. The terminal lug T4 is also referred to as terminal lug N.
 - b) Install the four nuts on the four terminal studs.
 - c) Tighten the four nuts to 125 pound-inches (14.1 newton-meters).
 - d) Put the terminal block cover on the starter-generator, YAAG013.
 - e) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - f) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the wiring between the start converter unit, M1710, and the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.

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- (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (d) Examine the electrical connectors D11114 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11114 or D10896, then do these steps:

- 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.

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(f) If the electrical connectors D11114 and D10896 are satisfactory, then do these steps:

- 1) Do a check for an open or a short-to-ground circuit between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

D11114C	D10896A
socket 29	socket 59

- 2) If there is an open or a short-to-ground circuit, then do these steps:

- a) Repair the wiring (WDM 24-21-31).
- b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- h) Set the APU master switch to the ON position.
- i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- j) If the CDU display does not show this maintenance message, then you corrected the fault.
- k) Set the APU master switch to the OFF position.
- 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (6) Do this check of the wiring between the power distribution panel 1, P91, and the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91. To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
- (d) Disengage the terminal block cover from the four pins on the starter-generator, YAAG013.
- (e) Remove the terminal block cover.
- (f) Remove the four nuts from the four terminal studs.
- (g) Disconnect the four terminal lugs T1, T2, T3 and T4 from the four terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs. The terminal lug T4 is also referred to as terminal lug N.

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- (h) Examine the four terminal lugs T1, T2, T3 and T4. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (i) Examine the three terminal lugs A, B, and C on terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (j) If there was a problem with one or more terminal lugs, then do these steps:
 - 1) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - 2) Install the four nuts on the four terminal studs.
 - a) Tighten the four nuts to 125 pound-inches (14.1 newton-meters).
 - 3) Put the terminal block cover on the starter-generator, YAAG013.
 - 4) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - 5) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 6) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 7) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 8) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 9) Set the APU master switch to the ON position.
- 10) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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SIA ALL

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- 11) Set the APU master switch to the OFF position.
- (k) If the terminal lugs are satisfactory, then do these steps:
- 1) Do a wiring check between these terminals on terminal block TB5002 for the power distribution panel 1, P91, and for the starter-generator, YAAG013 (SSM 24-21-31) (SSM 49-41-11):

P91	YAAG013
terminal A	terminal T1
terminal B	terminal T2
terminal C	terminal T3

- 2) Measure the resistance between terminal T4 and structural ground at the starter-generator, YAAG013.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
- a) Repair the wiring (WDM 24-21-31) (WDM 49-41-11).
- b) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
- c) Install the four nuts on the four terminal studs.
- d) Tighten the four nuts to 125 pound-inches (14.1 newton-meters).
- e) Put the terminal block cover on the starter-generator, YAAG013.
- f) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
- g) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- h) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- i) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - j) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - k) Set the APU master switch to the ON position.
 - l) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - m) If the CDU display does not show this maintenance message, then you corrected the fault.
 - n) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
- a) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - b) Install the four nuts on the four terminal studs.
 - c) Tighten the four nuts to 125 pound-inches (14.1 newton-meters).
 - d) Put the terminal block cover on the starter-generator, YAAG013.
 - e) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - f) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - g) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

Row Col Number Name

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (7) Do this check of the wiring between the power distribution panel 1, P91, and the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
 - (b) Disconnect the electrical connector D11438 from the power distribution panel 1, P91. To disconnect it, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
 - (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
 - (d) Examine the electrical connectors D11438 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11438 or D10896, then do these steps:
 - 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 2) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 3) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D11438 and D10896 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D11438 for the power distribution panel 1, P91, and these sockets for the electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

D11438	D10896A
pin 1	socket 7
pin 5	socket 15
pin 6	socket 16

- 2) Measure the resistance between socket 17 and structural ground at the electrical connector D10896A for the APU generator control unit, G14.

NOTE: The resistance must be less than 5 ohms (short circuit).

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- 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - c) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) Set the APU master switch to the ON position.
 - g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
 - a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- (8) Do this check of the wiring between the power distribution panel 1, P91, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91. To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
 - (d) Examine the electrical connector D11114 and terminal lugs A, B and C on the terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or one or more terminal lugs, then do these steps:
 - 1) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

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- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11114 and the terminal lugs are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D11114A for the start converter unit, M1710, and these terminals on the terminal block TB5002 for the power distribution panel, P91 (SSM 24-21-31):

D11114A	P91
socket 1	terminal A
socket 2	terminal B
socket 3	terminal C

- 3) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).

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- b) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - h) Set the APU master switch to the ON position.
 - i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - j) If the CDU display does not show this maintenance message, then you corrected the fault.
 - k) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory, then do these steps and continue:
- a) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.

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- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (9) Do this BITE check of the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Generator Control Unit BITE Procedure, 24-21 TASK 801.
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (10) Do these steps to replace the auxiliary power breaker, C803:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the auxiliary power breaker, C803. These are the tasks:
 - Breaker Removal, AMM TASK 24-21-41-000-801
 - Breaker Installation, AMM TASK 24-21-41-400-801
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the starter-generator, YAAG013:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- NOTE:** Do not do the installation test for the starter-generator. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) During the APU operational test, examine the starter-generator for signs of oil leakage.
- (g) If you find oil leakage, then repair the problem that you find.
- (h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (i) Set the APU master switch to the ON position.
- (j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (k) Set the APU master switch to the OFF position.
- (12) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (i) Set the APU master switch to the OFF position.

————— END OF TASK —————

808. Start Converter Unit Shows Bad Input Command - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 49-41246 START CONVERTER UNIT SHOWS BAD INPUT COMMAND
 - (b) 49-41305 START CONVERTER UNIT SHOWS BAD INPUT COMMAND
- (2) The start converter unit supplies power to the starter-generator during the APU start cycle and, at rated speed, supplies excitation in the APU power generate mode. This maintenance message shows that the start converter unit receives command data that do not agree or are incorrect. This condition occurs when the start enable signal from the electronic control unit and the voltage regulator enable signal from the APU generator control unit, G14, are true at the same time (28V DC nominal). The start converter unit will go to the generate mode and thus, prevent the start mode. The fault signal goes to the electronic control unit.
- (3) If the voltage regulator enable signal from the APU generator control unit, G14, is true (28V DC nominal) during the APU start cycle, the electronic control unit will stop the APU start operation and the start converter unit will go to the idle mode. Maintenance message 49-41246 will show on the CURRENT STATUS page.

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- (4) If the start enable signal is not removed from the electronic control unit after the starter-generator rotation is more than 75%, the APU start operation will stop and the start converter unit will go to the generate mode. Maintenance message 49-41305 will show on the CURRENT STATUS page.
- (5) The APU FAULT light on the P5 forward overhead panel can show for these maintenance messages.

B. Possible Causes

- (1) Operational problem with the APU start system
- (2) Airplane wiring harness
- (3) Wiring problem between the electronic control unit, M1709, and the start converter unit, M1710
- (4) Wiring problem between the electronic control unit, M1709, and the standby power control unit, M1720
- (5) Wiring problem between the start converter unit, M1710, and the APU generator control unit, G14
- (6) Start converter unit, M1710
- (7) APU generator control unit, G14, on the E2-1 electrical shelf
- (8) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

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D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-21-31)
- (4) (SSM 24-31-11)
- (5) (SSM 49-41-11)
- (6) (WDM 24-21-31)
- (7) (WDM 24-31-11)
- (8) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for this maintenance message 49-61243 on the CURRENT STATUS page.
 - 1) If you find maintenance message 49-61243, then you must do these steps after you do the Fault Isolation Procedure for this message.
 - a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41246 or 49-41305 shows.
 - e) If the CDU display does not show maintenance message 49-41246 or 49-41305, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows maintenance message 49-41246 or 49-41305, then continue.
 - (b) If the CDU display shows these maintenance message(s) on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show these maintenance message(s) on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if maintenance message 49-41246 or 49-41305 shows.
 - 2) If the CDU display shows maintenance message 49-41246 or 49-41305 in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41246 or 49-41305 shows.
 - f) If the CDU display does not show maintenance message 49-41246 or 49-41305, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.

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- h) If the CDU display shows maintenance message 49-41246 or 49-41305, then do the Fault Isolation Procedure below.
- 3) If the CDU display does not show maintenance messages 49-41246 and 49-41305 in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do an operational check of the APU start system:
 - (a) Make sure the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position.
 - (c) If the APU tries to start and the APU speed is between 7% and 25% before the APU stops operating (lite-off condition) with the APU master switch in the ON position, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
- 9) Set the APU master switch to the OFF position.
- (d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (e) If the APU does not start, then do these steps:
 - 1) Make sure the APU master switch is OFF.
 - 2) Replace the APU generator control unit, G14. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801

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- Generator Control Unit Installation, AMM TASK 24-21-81-400-801
 - 3) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
 - 7) Set the APU master switch to the OFF position.
 - (f) If the APU starts and electrical power is supplied to the airplane systems, then do these steps:
 - 1) Make sure the APU master switch is OFF.
 - 2) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE:** Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

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- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
 - 9) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the wiring between the electronic control unit, M1709, and the start converter unit, M1710:
- NOTE:** It is necessary to do a check of the wiring between the electronic control unit and the start converter unit if the APU does not start.
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (d) Examine the electrical connectors D3599 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

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- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D11114 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between this pin of electrical connector D3599B for the electronic control unit, M1709, and this socket of electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11):

D3599B	D11114C
pin B9	socket 7

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).

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- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - h) Set the APU master switch to the ON position.
 - i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - j) If the CDU display does not show this maintenance message, then you corrected the fault.
 - k) Set the APU master switch to the OFF position.
- 3) If the circuit is satisfactory, then do these steps and continue:

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- a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do this check of the wiring between the electronic control unit, M1709, and the standby power control unit, M1720:

NOTE: It is necessary to do a check of the wiring between the electronic control unit and the standby power control unit if the APU does not start.

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Remove the standby power control unit, M1720. To remove it, do this task: SPCU Removal, AMM TASK 24-34-11-000-801.
- (d) Examine the electrical connectors D3599 and D11712. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599 or D11712, then do these steps:
 - 1) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D11712 are satisfactory, then do these steps:

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- 1) Do a check for an open or a short-to-ground circuit between these pins of electrical connector D3599B for the electronic control unit, M1709, and electrical connector D11712B for the standby power control unit, M1720 (SSM 24-31-11) (SSM 49-41-11):

D3599B	D11712B
pin B9	pin 1

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-31-11) (WDM 49-41-11).
 - b) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - g) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - h) Set the APU master switch to the ON position.
 - i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - j) If the CDU display does not show this maintenance message, then you corrected the fault.
 - k) Set the APU master switch to the OFF position.
- 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

- (5) Do this check of the wiring between the start converter unit, M1710, and the APU generator control unit, G14:

NOTE: It is necessary to do a check of the wiring between the start converter unit and the APU generator control unit if the APU starts and electrical power is supplied to the airplane systems.

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- (a) Make sure the APU master switch is OFF.
- (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
- (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (d) Examine the electrical connectors D11114 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11114 or D10896, then do these steps:
 - 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114 and D10896 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

D11114C	D10896A
socket 17	socket 8

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- g) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- h) Set the APU master switch to the ON position.
 - i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - j) If the CDU display does not show this maintenance message, then you corrected the fault.
 - k) Set the APU master switch to the OFF position.
- 3) If the circuit is satisfactory, then do these steps and continue:
- a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (6) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

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- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (i) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU generator control unit, G14. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801
 - Generator Control Unit Installation, AMM TASK 24-21-81-400-801
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue. - (g) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** Do not do the installation test for the electronic control unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- (g) Set the APU master switch to the ON position.
- (h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (i) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

809. Start Converter Unit Shows Interlock Rly Fail - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41247 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL
- (2) The start converter unit monitors the position of the auxiliary contacts in the auxiliary power breaker (APB) for the airplane and compares this position with its internal isolation relay. If the auxiliary contacts show that the auxiliary power breaker or the isolation relay in the start converter unit is in the incorrect position for the APU start mode, then this fault is set. The start converter unit will prevent an APU start and the fault signal goes to the electronic control unit.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Wiring problem between the auxiliary power breaker, C803, and the start converter unit, M1710
- (2) Internal problem with the auxiliary power breaker, C803
- (3) Wiring problem between the auxiliary power breaker, C803, and the APU generator control unit, G14
- (4) Start converter unit, M1710
- (5) BITE problem for the APU generator control unit, G14.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

Row Col Number Name

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B 14 C01424 AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-22-31)
- (4) (SSM 49-41-11)
- (5) (WDM 24-22-31)
- (6) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
 - 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the wiring between the auxiliary power breaker, C803, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.

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- (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
- (c) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
- (d) Examine the electrical connectors D10904 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10904 or D11114, then do these steps:

- 1) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
- 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10904 and D11114 are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D10904 for the auxiliary power breaker, C803, and electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11):

D10904	D11114C
socket 8	socket 38
socket 18	socket 39

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
- 3) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.

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- 4) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (2) Do this check the auxiliary power breaker, C803:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Examine the electrical connector D11114. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D11114 are satisfactory, then do these steps:
 - 1) Do a continuity check from socket 38 to socket 39 of electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11).
 - 2) If there is a problem with the circuit, then do these steps:
 - a) Replace the auxiliary power breaker, C803. These are the tasks:
 - Breaker Removal, AMM TASK 24-21-41-000-801
 - Breaker Installation, AMM TASK 24-21-41-400-801
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - 3) If the circuit is satisfactory, then do these steps and continue:

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- a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (3) Do this check of the wiring between the auxiliary power breaker, C803, and the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (c) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
- (d) Examine the electrical connectors D10904 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10904 or D10896, then do these steps:
- 1) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - 2) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10904 and D10896 are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D10904 for the auxiliary power breaker, C803, and electrical connector D10896A for the APU generator control unit, G14 (SSM 24-22-31):

D10904	D10896A
socket 1	socket 35
socket 11	socket 23
socket 24	socket 36
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-22-31).
 - b) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - c) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- g) Set the APU master switch to the ON position.
- h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- i) If the CDU display does not show this maintenance message, then you corrected the fault.
- j) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- (4) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
 - NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this BITE check of the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Generator Control Unit BITE Procedure, 24-21 TASK 801.
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (h) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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810. Start Converter Unit Shows Start System INOP - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41248 START CONVERTER UNIT SHOWS START SYSTEM INOP
- (2) During the APU start cycle, the start power unit supplies a high voltage dc power to the start converter unit. The start converter unit changes the high voltage dc power to two different forms of output power. One output is a variable voltage that changes with frequency and supplies three-phase power to the main generator terminals. The second output supplies a single-phase, 400 hertz power (approximately 1.5 amps) to the generator exciter field. If the start converter unit finds a failure of its inverter bridge or a failure of its exciter power supply, starting power to the generator will be low as long as this fault continues.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Starter-generator wire harness problem
- (2) Internal problem with the starter-generator, YAAG013
- (3) Wiring problem between the start converter unit, M1710, and the starter-generator, YAAG013
- (4) Wiring problem between the start converter unit, M1710, and the auxiliary power breaker, C803
- (5) Start converter unit, M1710
- (6) Starter-generator, YAAG013.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-21-31)
- (4) (SSM 49-41-11)
- (5) (WDM 24-21-31)
- (6) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this maintenance message 49-41244.
 - 1) If you find maintenance message 49-41244, then do the Fault Isolation Procedure for this message.
 - 2) If you find maintenance message 49-41244, then you must do these steps after you do the Fault Isolation Procedure for maintenance message 49-41244:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41248 shows.
 - d) If the CDU display does not show maintenance message 49-41248, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - f) If the CDU display shows maintenance message 49-41248, then continue.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if maintenance message 49-41244 or 49-41248 shows.
 - 2) If the CDU display shows maintenance message 49-41244 in the last APU cycle, then do these steps:
 - a) Do the Fault Isolation Procedure for maintenance message 49-41244.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.

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- d) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41248 shows.
 - e) If the CDU display does not show maintenance message 49-41248, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows maintenance message 49-41248, then do the Fault Isolation Procedure below.
- 3) If the CDU display shows maintenance message 49-41248 in the last APU cycle, then do these steps:
- a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41248 shows.
 - f) If the CDU display does not show maintenance message 49-41248, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows maintenance message 49-41248, then do the Fault Isolation Procedure below.
- 4) If the CDU display does not show maintenance messages 49-41244 and 49-41248 in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the starter-generator wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the starter-generator wire harness, then do these steps:
NOTE: You can repair or replace the starter-generator wire harness.
 - 1) Repair the starter-generator wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the starter-generator wire harness is satisfactory, then continue.

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- (2) Do this check of the starter-generator, YAAG013:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disconnect the electrical connector P6 from the starter-generator, YAAG013.
- (d) Examine the electrical connector P6. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P6, then do these steps:
 - 1) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - 2) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector P6 is satisfactory, then do these steps:
- 1) Measure the resistance between pin 5 and pin 7 on the starter-generator, YAAG013 (SSM 49-41-11).

NOTE: The resistance must be 2-10 ohms.
 - 2) If the resistance is more than 10 ohms, then do these steps:
 - a) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is 2-10 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - b) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (3) Do this check of the wiring between the start converter unit, M1710, and the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Examine the electrical connector D11114. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D11114 is satisfactory, then do these steps:
 - 1) Measure the resistance between socket 8 and socket 10 of electrical connector D11114B for the start converter unit, M1710 (SSM 24-21-31) (SSM 49-41-11).

NOTE: The resistance must be 2-10 ohms.

 - 2) If the resistance is more than 10 ohms, then do these steps:
 - a) Repair the wiring (WDM 24-21-31) (WDM 49-41-11).

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- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) Set the APU master switch to the ON position.
- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- f) If the CDU display does not show this maintenance message, then you corrected the fault.
- g) Set the APU master switch to the OFF position.
- 3) If the resistance is 2-10 ohms, then do this step and continue:
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (4) Do this check of the wiring between the auxiliary power breaker, C803, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
 - (d) Examine the electrical connectors D10904 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10904 or D11114, then do these steps:
 - 1) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10904 and D11114 are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D10904 for the auxiliary power breaker, C803, and electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11):

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D10904

socket 8

socket 18

D11114C

socket 38

socket 39

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring WDM 49-41-11.
- 3) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message or Interlock Rly Fail message shows on the CDU display.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Perform an APU Start. Do this task: AMM TASK 49-11-00-860-801.
 - f) Look at the CURRENT STATUS page on the CDU display to see if Interlock Rly Fail maintenance message shows.
 - g) If the CDU display shows Interlock Rly Fail maintenance message, then do this task: Start Converter Unit Shows Interlock Rly Fail - Fault Isolation, 49-40 TASK 809.
- (5) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

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- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - NOTE:** It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

END OF TASK

811. Start Converter Unit Shows Start System Inop - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41250 START CONVERTER UNIT SHOWS START SYSTEM INOP
- (2) The start converter unit monitors the amount of current to the starter-generator during an APU start cycle. The start converter unit gives the overcurrent message if one of these conditions occurs:
 - (a) The start converter unit finds that one or more of its output three-phase currents is more than 130% of the nominal value. The protective circuits of the start converter unit will decrease the current as long as this fault continues.
 - (b) The start converter unit finds internal instantaneous currents that are more than 400% of the nominal value. The protective circuits for the start converter unit will decrease the current as long as this fault continues.
 - (c) During an APU start cycle from the aircraft ac bus, the start converter unit finds the dc link current from the start power unit to the start converter unit is more than 140% of the nominal value. The protective circuits of the start converter unit will latch this fault condition but power will be applied continuously to the starter-generator.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

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B. Possible Causes

- (1) Start converter unit, M1710
- (2) Starter-generator wire harness problem
- (3) Starter-generator, YAAG013
- (4) Airplane wire harness problem.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.

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- 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the starter-generator wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

NOTE: It is not necessary to do a general visual inspection of the engine wire harness.
 - (b) If there was a problem with the starter-generator wire harness, then do these steps:

NOTE: You can repair or replace the starter-generator wire harness.

 - 1) Repair the starter-generator wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801



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- Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801

NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the starter-generator wire harness is satisfactory, then continue.
 - (3) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
 - (4) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, the APU engine is satisfactory.

————— **END OF TASK** —————

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812. Start Converter Unit Shows High Temperature - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41251 START CONVERTER UNIT SHOWS HIGH TEMPERATURE
- (2) During the APU start cycle, an internal sensor in the start converter unit monitors the temperature of the power electronics and prevents the start cycle if the temperature is more than the limit. This fault is set when you do more than three starts (start duty cycle), internal cooling fan problem, or a power supply problem to the cooling fan.
- (3) It is recommended that you obey the start duty cycle when you try to start the APU. The start duty cycle for the APU is three times during a 15 minute interval. This 15 minute interval is necessary to cool the temperature of the power electronics and can result in this maintenance message to not show on the CDU display again.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Wiring problem between the start converter unit, M1710, and the E2-2 electrical shelf
- (2) Wiring problem between the E2-2 electrical shelf and the electronic control unit, M1709
- (3) Start converter unit, M1710.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

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D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 49-41-11)
- (4) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this maintenance message 49-41256.
 - 1) If you find maintenance message 49-41256, then do the Fault Isolation Procedure for this message.
 - 2) If you find maintenance message 49-41256, then you must do these steps after you do the Fault Isolation Procedure for maintenance message 49-41256:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41251 shows.
 - d) If the CDU display does not show maintenance message 49-41251, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - f) If the CDU display shows maintenance message 49-41251, then continue.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if maintenance message 49-41251 or 49-41256 shows.
 - 2) If the CDU display shows maintenance message 49-41256 in the last APU cycle, then do these steps:
 - a) Do the Fault Isolation Procedure for maintenance message 49-41256.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41251 shows.
 - e) If the CDU display does not show maintenance message 49-41251, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - g) If the CDU display shows maintenance message 49-41251, then do the Fault Isolation Procedure below.
 - 3) If the CDU display shows maintenance message 49-41251 in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- b) Make sure the STANDBY POWER switch is in the AUTO position.
 - c) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41251 shows.
 - g) If the CDU display does not show maintenance message 49-41251, then there was an intermittent fault.
 - h) Set the APU master switch to the OFF position.
 - i) If the CDU display shows maintenance message 49-41251, then do the Fault Isolation Procedure below.
- 4) If the CDU display does not show maintenance messages 49-41251 and 49-41256 in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the wiring between the start converter unit, M1710, and the E2-2 electrical shelf:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector D40928P from the E2-2 electrical shelf.
 - (d) Examine the electrical connectors D11114 and D40928P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or D40928P, then do these steps:
 - 1) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 6) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114 and D40928P are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D40928P at the E2-2 electrical shelf (SSM 49-41-11):

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D11114C	D40928P
socket 61	socket B03
socket 62	socket A04
socket 63	socket B04
socket 64	socket A05

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

- d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

- (2) Do this check of the wiring between the E2-2 electrical shelf and the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40928P from the E2-2 electrical shelf.
 - (d) Examine the electrical connectors D3599 and D40928P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- (e) If there was a problem with the electrical connector D3599 or D40928P, then do these steps:

- 1) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - 2) Re-install the electronic control unit, M1710. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- 6) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D40928P are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D40928P at the E2-2 electrical shelf and these pins on the electrical connectors D3599A and D3599B for the electronic control unit, M1709 (SSM 49-41-11):

D40928P	D3599B
socket A04	pin D2
socket B03	pin D1
socket B04	pin D3

D40928P	D3599A
socket A05	pin C13
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (3) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

813. Start Converter Shows Voltage Regulator Failed - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41252 START CONVERTER SHOWS VOLTAGE REGULATOR FAILED
- (2) The start converter unit sends the fault message for the voltage regulator when the starter-generator supplies electrical power and one of these conditions occurs:
 - (a) The APU generator control unit sends an overvoltage flag to the start converter unit. The voltage regulator of the start converter unit is commanded at maximum field excitation to the starter-generator.
 - (b) The APU generator control unit sends an undervoltage flag to the start converter unit. The voltage regulator of the start converter unit is commanded at minimum field excitation to the starter-generator.
 - (c) For the above two conditions, the start converter unit will latch this fault and the APU generator control unit will remove the VR ENABLE command and thus, de-energizes the starter-generator.
- (3) A failure of the starter converter unit voltage regulator can cause a secondary failure to the starter-generator. It is recommended that you replace the start converter unit before you start the APU again.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Start converter unit, M1710
- (2) Wiring problem between the start converter unit, M1710, and the APU generator control unit, G14
- (3) Wiring problem between the power distribution panel 1, P91, and the starter-generator, YAAG013
- (4) Wiring problem between the power distribution panel 1, P91, and the APU generator control unit, G14
- (5) Wiring problem between the power distribution panel 1, P91, and the start converter unit, M1710
- (6) BITE problem for the APU generator control unit, G14
- (7) APU generator control unit, G14, on the E2-1 electrical shelf
- (8) Starter-generator, YAAG013.

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SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

(9) APU ECU (Electronic control unit), M1709.

SIA ALL

C. Circuit Breakers

(1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) SSM 24-21-31
- (4) SSM 49-41-11
- (5) WDM 24-21-31
- (6) WDM 49-41-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page or MAINTENANCE HISTORY pages, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page and MAINTENANCE HISTORY pages, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do these steps to replace the start converter unit, M1710:
 - (a) Replace the start converter unit, M1710. These are the tasks:

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- Start Converter Unit Removal, AMM TASK 49-41-61-000-801,
- Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- (b) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (f) Set the APU master switch to the ON position.
- (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (h) Set the APU master switch to the OFF position.
- (2) Do this check of the wiring between the start converter unit, M1710, and the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.

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- (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (d) Examine the electrical connectors D11114 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11114 or D10896, then do these steps:

- 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.

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- (f) If the electrical connectors D11114 and D10896 are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

D11114C	D10896A
socket 28	socket 60
socket 29	socket 59

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE:** Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- h) Set the APU master switch to the ON position.

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- i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - j) If the CDU display does not show this maintenance message, then you corrected the fault.
 - k) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
- a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (3) Do this check of the wiring between the power distribution panel 1, P91, and the starter-generator, YAAG013:
- (a) Make sure the APU master switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91. To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
- (d) Disengage the terminal block cover from the four pins on the starter-generator, YAAG013.
- (e) Remove the terminal block cover.
- (f) Remove the four nuts from the four terminal studs.

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SIA ALL

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- (g) Disconnect the four terminal lugs T1, T2, T3 and T4 from the four terminal studs.

NOTE: The terminal strip and the fanning strip show the identification of the terminal studs for each of the terminal lugs. The terminal lug T4 is also referred to as terminal lug N.

- (h) Examine the four terminal lugs T1, T2, T3 and T4. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (i) Examine the three terminal lugs A, B, and C on terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (j) If there was a problem with one or more terminal lugs, then do these steps:
- 1) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - 2) Install the four nuts on the four terminal studs.
 - a) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - 3) Put the terminal block cover on the starter-generator, YAAG013.
 - 4) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - 5) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - 6) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 7) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 8) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 9) Set the APU master switch to the ON position.

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SIA ALL

49-40 TASK 813

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- 10) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 11) Set the APU master switch to the OFF position.
- (k) If the terminal lugs are satisfactory, then do these steps:
 - 1) Do a wiring check between these terminal lugs on terminal block TB5002 for the power distribution panel 1, P91, and for the starter-generator, YAAG013 (SSM 24-21-31) (SSM 49-41-11):

P91		YAAG013
terminal lug A	.....	terminal lug T1
terminal lug B	.....	terminal lug T2
terminal lug C	.....	terminal lug T3
 - 2) Measure the resistance between terminal lug T4 and structural ground at the starter-generator, YAAG013.

NOTE: The resistance must be less than 5 ohms (short circuit).
 - 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
 - a) Repair the wiring (WDM 24-21-31) (WDM 49-41-11).
 - b) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - c) Install the four nuts on the four terminal studs.
 - d) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - e) Put the terminal block cover on the starter-generator, YAAG013.
 - f) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - g) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - h) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

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SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- i) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - j) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - k) Set the APU master switch to the ON position.
 - l) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - m) If the CDU display does not show this maintenance message, then you corrected the fault.
 - n) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
- a) Re-connect the four terminal lugs T1, T2, T3 and T4 to the related terminal studs.
 - b) Install the four nuts on the four terminal studs.
 - c) Tighten the four nuts to 125 in-lb (14.1 N·m).
 - d) Put the terminal block cover on the starter-generator, YAAG013.
 - e) Engage the terminal block cover to the four pins on the starter-generator, YAAG013.
 - f) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - g) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

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SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (4) Do this check of the wiring between the power distribution panel 1, P91, and the APU generator control unit, G14:
- Make sure the APU master switch is OFF.
 - Disconnect the electrical connector D11438 from the power distribution panel 1, P91. To disconnect it, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
 - Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
 - Examine the electrical connectors D11438 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D11438 or D10896, then do these steps:
 - Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the electrical connectors D11438 and D10896 are satisfactory, then do these steps:
 - Do a wiring check between these pins of electrical connector D11438 for the power distribution panel 1, P91, and these sockets for the electrical connector D10896A for the APU generator control unit, G14 (SSM 24-21-31):

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D11438

pin 1 socket 7
pin 5 socket 15
pin 6 socket 16

D10896A

- 2) Measure the resistance between socket 17 and structural ground at the electrical connector D10896A for the APU generator control unit, G14.
NOTE: The resistance must be less than 5 ohms (short circuit).
- 3) If there is a problem with the wiring and/or the resistance is more than 5 ohms, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - c) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) Set the APU master switch to the ON position.
 - g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) Set the APU master switch to the OFF position.
- 4) If the wiring is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
 - a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - b) Re-connect the electrical connector D11438 to the power distribution panel 1, P91. To re-connect it, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- (5) Do this check of the wiring between the power distribution panel 1, P91, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the three terminal lugs A, B and C from the power distribution panel 1, P91. To disconnect them, do this task: Power Distribution Panel Removal, AMM TASK 24-21-21-000-801.
 - (d) Examine the electrical connector D11114 and terminal lugs A, B and C on the terminal block TB5002 at the power distribution panel 1, P91. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or one or more terminal lugs, then do these steps:

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- 1) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
- 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11114 and the terminal lugs are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D11114A for the start converter unit, M1710, and these terminal lugs on the terminal block TB5002 for the power distribution panel, P91 (SSM 24-21-31):

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D11114A

socket 1	terminal lug A
socket 2	terminal lug B
socket 3	terminal lug C

P91

- 2) If there is a problem with the wiring, then do these steps:
- Repair the wiring (WDM 24-21-31).
 - Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE:** Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- Do this task: APU BITE Procedure, 49-60 TASK 801.
- Set the APU master switch to the ON position.
- Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- j) If the CDU display does not show this maintenance message, then you corrected the fault.
- k) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the three terminal lugs A, B and C to the power distribution panel 1, P91. To re-connect them, do this task: Power Distribution Panel Installation, AMM TASK 24-21-21-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (6) Do this BITE check of the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Generator Control Unit BITE Procedure, 24-21 TASK 801.
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the APU generator control unit, G14, on the E2-1 electrical shelf:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU generator control unit, G14. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801,
 - Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801,
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801.
 - (c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

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- (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (e) Set the APU master switch to the ON position.
- (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (g) Set the APU master switch to the OFF position.

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (9) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

SIA ALL

————— **END OF TASK** —————

814. Start Power Unit Shows Start System INOP - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41253 START POWER UNIT SHOWS START SYSTEM INOP
- (2) During an APU start cycle, the start power unit uses ac power first (if available) or dc power from the airplane battery and changes this power to 270V DC. This power is supplied to the start converter unit. The ac/dc converter and dc/dc converter in the start power unit use monitoring circuits to do a check for correct operation. This fault is set when one of the two converters is defective. If the dc/dc converter is defective and ac power is available, then the APU can start. If the ac/dc converter is defective and dc power is available, then the APU can start. If the DC link circuit is defective in the start converter unit or between the start converter unit and start power unit, the APU will not start on the ac or dc power.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Internal problem with the start converter unit, M1710, and/or the start power unit, M1850
- (2) Airplane wire harness problem
- (3) Wiring between the start power unit, M1850, and start converter unit, M1710
- (4) Start converter unit, M1710

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- (5) Start power unit, M1850
- (6) Voltage problem between the APU START CONV circuit breaker and the start power unit, M1850.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the start converter unit, M1710, and the start power unit, M1850:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Remove the start power unit, M1850. To remove it, do this task: Start Power Unit - Removal, AMM TASK 49-41-71-000-801.
 - (d) Examine the electrical connector D11114 on the start converter unit, M1710, and electrical connector D11478 on the start power unit, M1850. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there are missing pin(s) and/or fire damage to the electrical connector D11114 on the start converter unit, M1710, or electrical connector D11478 on the start power unit, M1850, then do these steps:
 - 1) If there are missing pin(s) and/or fire damage to the electrical connector D11114 on the start converter unit, M1710, then do this step:
 - a) Install a new start converter unit, M1710. To install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - 2) If the electrical connector D11114 on the start converter unit, M1710 is satisfactory, then do this step:
 - a) Re-install the start converter unit, M1710. To install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - 3) If there are missing pin(s) and/or fire damage to the electrical connector D11478 on the start power unit, M1850, then do this step:
 - a) Install a new start power unit, M1850. To install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
 - 4) If the electrical connector D11478 on the start power unit, M1850 is satisfactory, then do this step:
 - a) Re-install the start power unit, M1850. To install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11114 on the start converter unit, M1710, and electrical connector D11478 on the start power unit, M1850 are satisfactory, then do these steps and continue:
 - 1) Re-install the start power unit, M1850. To install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.
 - 2) Re-install the start converter unit, M1710. To install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
 - (d) Set the APU master switch to the OFF position.
- (3) Do this check of the wiring between the start power unit, M1850, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start power unit, M1850. To remove it, do this task: Start Power Unit - Removal, AMM TASK 49-41-71-000-801.
 - (c) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (d) Examine the electrical connectors D11478 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11478 or D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

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- 2) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 6) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11478 and D11114 are satisfactory, then do these steps:
- 1) Do a wiring check between these pins of electrical connector D11478B for the start power unit, M1850, and these sockets of electrical connector D11114B for the start converter unit, M1710 (SSM 49-41-11):

D11478B	D11114B
pin 1	socket 25
pin 2	socket 26
pin 3	socket 18
pin 4	socket 24

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - c) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps:
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - b) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

- (4) Do these steps to replace the start converter unit, M1710:

- (a) Make sure the APU master switch is OFF.

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- (b) Replace the start converter unit, M1710. These are the tasks:
- Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the start power unit, M1850:
- (a) Make sure the APU master switch is OFF.
- (b) Replace the start power unit, M1850. These are the tasks:
- Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801
- NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (6) Do this voltage check between the APU START CONV circuit breaker and the start power unit, M1850:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the start power unit, M1850. To remove it, do this task: Start Power Unit - Removal, AMM TASK 49-41-71-000-801.
- (c) Examine the electrical connector D11478. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D11478, then do these steps:
- 1) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.
- NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D11478 is satisfactory, then do these steps:
 - 1) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- 2) Do a voltage check on the electrical connector D11478B, pin 5 and pin 6, at the start power unit, M1850 (WDM 49-41-11).

NOTE: The voltage must be more than 190V AC.

- 3) Do a voltage check on the electrical connector D11478B, pin 6 and pin 7, at the start power unit, M1850.

NOTE: The voltage must be more than 190V AC.

- 4) If the voltage is less than 190V AC for each pair of pins, then do these steps:
 - a) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- b) Repair the wiring (WDM 49-41-11).
- c) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- d) Do this task: APU BITE Procedure, 49-60 TASK 801.
- e) Set the APU master switch to the ON position.
- f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- g) If the CDU display does not show this maintenance message, then you corrected the fault.
- h) Set the APU master switch to the OFF position.
- 5) If the voltage is more than 190V AC for each pair of pins, then do these steps:
 - a) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

- b) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

————— **END OF TASK** —————

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815. Start Power Unit Shows High Temperature - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41255 START POWER UNIT SHOWS HIGH TEMPERATURE
- (2) During the APU start cycle, internal sensors in the start power unit monitor the temperature of the power electronics and prevent the start cycle if the temperature is more than the limit. This fault is set when you do more than three starts (start duty cycle), internal cooling fan problem, or a power supply problem to the cooling fan.
- (3) It is recommended that you obey the start duty cycle when you try to start the APU. The start duty cycle for the APU is three times during a 15 minute interval. This 15 minute interval is necessary to cool the temperature of the power electronics and can result in this maintenance message to not show on the CDU display again.
- (4) The APU FAULT Light on the Forward Overhead Panel, P5 can show for this maintenance message.

B. Possible Causes

- (1) Start Power Unit, M1850
- (2) Start Converter Unit, M1710
- (3) Wiring problem between the Start Power Unit, M1850, and the Start Converter Unit, M1710.

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- (4) APU Electronic Control Unit (ECU), M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

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D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) SSM 49-41-11
- (4) WDM 49-41-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) shows this maintenance message on the CURRENT STATUS page, then do a check for this maintenance message 49-41256.
 - 1) If you find maintenance message 49-41256, then do the Fault Isolation Procedure for this message and then do these steps:
 - a) Do the APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU Master Switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41255 shows.
 - <1> If the CDU does not show maintenance message 49-41255, then you corrected the fault.
 - <2> If the CDU shows maintenance message 49-41255, then do this step and do the Fault Isolation Procedure below.
 - d) Set the APU Master Switch to the OFF position.
 - (b) If the Control Display Unit (CDU) shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the Control Display Unit (CDU) does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the Control Display Unit (CDU) to see if maintenance message 49-41255 or 49-41256 shows.
 - 2) If the Control Display Unit (CDU) shows maintenance message 49-41256 in the last APU cycle, then do these steps:
 - a) Do the Fault Isolation Procedure for maintenance message 49-41256.
 - b) Do the APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU Master Switch to the ON position.
 - d) Look at the CURRENT STATUS page on the Control Display Unit (CDU) to see if maintenance message 49-41255 shows.
 - <1> If the Control Display Unit (CDU) does not show maintenance message 49-41255, then you corrected the fault.
 - <2> If the Control Display Unit (CDU) shows maintenance message 49-41255, then do this step and do the Fault Isolation Procedure below.
 - e) Set the APU Master Switch to the OFF position.

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- 3) If the Control Display Unit (CDU) shows maintenance message 49-41255 in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU Master Switch to the ON position.
 - e) Look at the CURRENT STATUS page on the Control Display Unit (CDU) to see if maintenance message 49-41255 shows.
 - <1> If the Control Display Unit (CDU) does not show maintenance message 49-41255, then you corrected the fault.
 - <2> If the Control Display Unit (CDU) shows maintenance message 49-41255, then do this step and do the Fault Isolation Procedure below.
 - f) Set the APU Master Switch to the OFF position.
- 4) If the Control Display Unit (CDU) does not show maintenance messages 49-41255 and 49-41256 in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do these steps to replace the Start Power Unit, M1850:
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the Start Power Unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the Control Display Unit (CDU).

 - (c) Do the Repair Confirmation at the end of this task.
- (2) Do these steps to replace the Start Converter Unit, M1710:
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the Start Converter Unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the Control Display Unit (CDU).

- (c) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring between the Start Power Unit, M1850, and the Start Converter Unit, M1710 (WDM 49-41-11):
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Remove the Start Power Unit, M1850. This is the task: Start Power Unit - Removal, AMM TASK 49-41-71-000-801.
 - (c) Remove the Start Converter Unit, M1710. This is the task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (d) Examine the electrical connectors D11478 and D11114. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- 1) If there was a problem with the electrical connector D11478 or D11114, then do these steps:
 - a) Re-install the Start Converter Unit, M1710. This is the task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - b) Re-install the Start Power Unit, M1850. This is the task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the Control Display Unit (CDU).

 - c) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connectors D11478 and D11114 are satisfactory, then do these steps:
 - a) Do a wiring check between the Start Power Unit (SPU), M1850, and the Start Converter Unit (SCU), M1710:

SPU	SCU
D11478A	D11114C
pin 16	socket 57
pin 17	socket 44

- <1> If you find a problem with the wiring, then do these steps:
 - <a> Repair the wiring.
 - Re-install the Start Converter Unit, M1710. This is the task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - <c> Re-install the Start Power Unit, M1850. This is the task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then do these steps:
 - <a> Re-install the Start Converter Unit, M1710. This is the task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - Re-install the Start Power Unit, M1850. This is the task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

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- (4) Do these steps to replace the APU Electronic Control Unit (ECU), M1709:
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the Electronic Control Unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.
- (3) Look at the CURRENT STATUS page on the Control Display Unit (CDU) to see if this maintenance message shows.
 - (a) If the Control Display Unit (CDU) does not show this maintenance message, then you corrected the problem.
 - 1) Set the APU Master Switch to the OFF position.
 - (b) If the Control Display Unit (CDU) still shows this maintenance message, then do this step and the Fault Isolation Procedure at the subsequent step.
 - 1) Set the APU Master Switch to the OFF position.

END OF TASK

816. Start Converter Shows No Cooling Fan Power - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41256 START CONVERTER SHOWS NO COOLING FAN POWER
- (2) The start power unit and start converter unit have high-speed cooling fans to moderate the temperature of the power electronics during the APU start cycle. The ac standby bus inverter from the airplane supplies 115V AC, 400 hertz power to the cooling fans. The start power unit receives 115V AC power for its cooling fans from the start converter unit. The start converter unit monitors the voltage from the inverter and sends a fault message if the voltage is less than the nominal value. When this fault condition occurs, the APU start cycle is permitted but there is less thermal tolerance without the cooling fans. Two or more APU starts can cause an overtemperature condition.
- (3) Maintenance message 49-41256 will show on the CDU display if the STANDBY POWER switch on the P5 forward overhead panel is set to the OFF position during a dc start of the APU. With the STANDBY POWER switch in the OFF position, the ac standby bus inverter is not energized (no 115V AC power is available from the standby bus) and no power is available to the cooling fans. To correct this problem, make sure the STANDBY POWER switch is set to the AUTO position before you do a dc start of the APU.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Voltage problem between the AUX POWER UNIT SCU FAN POWER circuit breaker and the start converter unit, M1710
- (2) Start converter unit, M1710.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 49-41-11)
- (4) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.

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- h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this voltage check between the AUX POWER UNIT SCU FAN POWER circuit breaker and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Examine the electrical connector D11114. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D11114 is satisfactory, then do these steps:
 - 1) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 2) Do a voltage check on the electrical connector D11114C, socket 55 and socket 56, at the start converter unit, M1710 (SSM 49-41-11).

NOTE: The voltage must be more than 110V AC.

- 3) If the voltage is less than 110V AC, then do these steps:

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- a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- b) Repair the wiring (WDM 49-41-11).
- c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- d) Do this task: APU BITE Procedure, 49-60 TASK 801.
- e) Set the APU master switch to the ON position.
- f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- g) If the CDU display does not show this maintenance message, then you corrected the fault.
- h) Set the APU master switch to the OFF position.
- 4) If the voltage is more than 110V AC, then do these steps:
- a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (2) Do these steps to replace the start converter unit, M1710:

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- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

817. Start Command Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41266 START COMMAND SHOWS HIGH CURRENT
- (2) The electronic control unit (ECU) does a check of the start enable output. If there is an overcurrent condition, then there is a short across the start enable wire and the ECU turns the output off.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electronic control unit, M1709
- (3) Wiring between the electronic control unit, M1709, and the start converter unit, M1710
- (4) Wiring between the electronic control unit, M1709, and the standby power control unit, M1720
- (5) Wiring between the standby power control unit, M1720, and the electrical meters, battery and galley power module, P5-13
- (6) Standby power control unit, M1720
- (7) Start converter unit, M1710
- (8) Electrical meters, battery and galley power module, P5-13.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-31-11)
- (4) (SSM 49-41-11)
- (5) (WDM 24-31-11)
- (6) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (2) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (3) Do this check of the wiring between the electronic control unit, M1709, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (d) Examine the electrical connectors D3599 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D11114 are satisfactory, then do these steps:
- 1) Do a check for an open or a short-to-ground circuit between this pin of electrical connector D3599B for the electronic control unit, M1709, and this socket of electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11):

D3599B	D11114C
pin B9	socket 7
 - 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-31-11) (WDM 49-41-11).
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (4) Do this check of the wiring between the electronic control unit, M1709, and the standby power control unit, M1720:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the standby power control unit, M1720. To remove it, do this task: SPCU Removal, AMM TASK 24-34-11-000-801.
 - (d) Examine the electrical connectors D3599 and D11172. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D3599 or D11712, then do these steps:
- 1) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D11712 are satisfactory, then do these steps:
- 1) Do a check for an open or a short-to-ground circuit between these pins of electrical connector D3599B for the electronic control unit, M1709, and electrical connector D11712B for the standby power control unit, M1720 (SSM 24-31-11) (SSM 49-41-11):

D3599B	D11712B
pin B9	pin 1
 - 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-31-11) (WDM 49-41-11).
 - b) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (5) Do this check of the wiring between the standby power control unit, M1720, and the electrical meters, battery and galley power module, P5-13:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electrical meters, battery and galley power module, P5-13. To remove it, do this task: Electrical Meters, Battery and Galley Power Module Removal, AMM TASK 24-21-53-000-801.
 - (c) Remove the standby power control unit, M1720. To remove it, do this task: SPCU Removal, AMM TASK 24-34-11-000-801.
 - (d) Examine the electrical connectors D10596 and D11712. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10596 or D11712, then do these steps:
 - 1) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - 2) Re-install the electrical meters, battery and galley power module, P5-13. To re-install it, do this task: Electrical Meters, Battery and Galley Power Module Installation, AMM TASK 24-21-53-400-801.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10596 and D11712 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between this pin of electrical connector D11712B for the standby power control unit, M1720, and this socket of electrical connector D10596 for the electrical meters, battery and galley power module, P5-13 (SSM 24-31-11):

D11712B

D10596

pin 1 socket 32

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 24-31-11).
 - b) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - c) Re-install the electrical meters, battery and galley power module, P5-13. To re-install it, do this task: Electrical Meters, Battery and Galley Power Module Installation, AMM TASK 24-21-53-400-801.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- g) Set the APU master switch to the ON position.
 - h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
 - 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the standby power control unit, M1720. To re-install it, do this task: SPCU Installation, AMM TASK 24-34-11-400-801.
 - b) Re-install the electrical meters, battery and galley power module, P5-13. To re-install it, do this task: Electrical Meters, Battery and Galley Power Module Installation, AMM TASK 24-21-53-400-801.
- (6) Do these steps to replace the standby power control unit, M1720:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the standby power control unit, M1720. These are the tasks:
 - SPCU Removal, AMM TASK 24-34-11-000-801
 - SPCU Installation, AMM TASK 24-34-11-400-801
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (h) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
 - NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (8) Do these steps to replace the electrical meters, battery and galley power module, P5-13:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electrical meters, battery and galley power module, P5-13. These are the tasks:
 - Electrical Meters, Battery and Galley Power Module Removal, AMM TASK 24-21-53-000-801
 - Electrical Meters, Battery and Galley Power Module Installation, AMM TASK 24-21-53-400-801
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (h) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

818. Start Command Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41267 START COMMAND SHOWS OPEN CIRCUIT
- (2) The electronic control unit (ECU) gets the input from the four BITE circuits in the start converter unit to find if the start enable signal is received by the start converter unit. If the ECU does not receive the correct input, then this fault is set.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem between the start converter unit, M1710, and the E2-2 electrical shelf
- (3) Wiring problem between the E2-2 electrical shelf and the electronic control unit, M1709
- (4) Wiring problem between the start converter unit, M1710, and the E2-1 electrical shelf
- (5) Start converter unit, M1710
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 49-41-11)
- (4) (SSM 49-62-11)
- (5) (WDM 49-41-11)
- (6) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.

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- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the start converter unit, M1710, and the E2-2 electrical shelf:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector D40928P from the E2-2 electrical shelf.
 - (d) Examine the electrical connectors D11114 and D40928P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or D40928P, then do these steps:
 - 1) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.

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- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 6) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114 and D40928P are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D40928P at the E2-2 electrical shelf (SSM 49-41-11):

D11114C	D40928P
socket 61	socket B03
socket 62	socket A04
socket 63	socket B04
socket 64	socket A05
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (3) Do this check of the wiring between the E2-2 electrical shelf and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40928P from the E2-2 electrical shelf.
 - (d) Examine the electrical connectors D3599 and D40928P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D40928P, then do these steps:

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- 1) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - 2) Re-install the electronic control unit, M1710. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 6) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D40928P are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D40928P at the E2-2 electrical shelf and these pins on the electrical connectors D3599A and D3599B for the electronic control unit, M1709 (SSM 49-41-11):

D40928P	D3599B
socket A04	pin D2
socket B03	pin D1
socket B04	pin D3

D40928P	D3599A
socket A05	pin C13

- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - b) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D40928P to the E2-2 electrical shelf.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (4) Do this check of the wiring between the start converter unit, M1710, and the E2-1 electrical shelf:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector D40254P from the E2-1 electrical shelf.
 - (d) Examine the electrical connectors D11114 and D40254P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or D40254P, then do these steps:
 - 1) Re-connect the electrical connector D40254P to the E2-1 electrical shelf.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE:** It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 6) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114 and D40254P are satisfactory, then do these steps:
- 1) Do a check for an open circuit between the socket of electrical connector D11114C for the start converter unit, M1710, and the pin of electrical connector D40254P at the E2-1 electrical shelf (SSM 49-41-11) (SSM 49-62-11):

D11114C	D40254P
socket 3	pin A04
 - 2) Measure the resistance between socket 4 and structural ground on the electrical connector D11114C at the start converter unit, M1710 (SSM 49-41-11).

NOTE: The resistance must be less than 5 ohms (short circuit).
 - 3) If there is a problem with the circuit or the resistance is more than 5 ohms, then do these steps:
 - a) Repair the wiring (WDM 49-41-11) (WDM 49-62-11).
 - b) Re-connect the electrical connector D40254P to the E2-1 electrical shelf.
 - c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE:** It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.

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- f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 4) If the circuit is satisfactory and the resistance is less than 5 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D40254P to the E2-1 electrical shelf.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (5) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
 - NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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819. Start Power Unit Shows Internal Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41297 START POWER UNIT SHOWS INTERNAL FAILURE
- (2) The start power unit accepts ac power (if available) or dc power (if ac power is not available) and changes this power to 270V DC. The start power unit supplies this power to the start converter unit during the APU start cycle. When control power is supplied to the start converter unit through the APU master switch, the start converter unit does a check of the dc power converter in the start power unit. If the dc power converter is not available in the ready "before-you-start" state, then this maintenance message shows that there is a problem with the dc power converter. An APU start with ac power input can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Start power unit, M1850.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Set the APU master switch to the ON position.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
- (c) Set the APU master switch to the OFF position.
- (d) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do these steps to replace the start power unit, M1850:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801
 - Start Power Unit - Installation, AMM TASK 49-41-71-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

820. Start Converter Shows Generator PMG Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41298 START CONVERTER SHOWS GENERATOR PMG FAILURE
- (2) The starter-generator has a permanent magnet generator (PMG) winding which supplies three-phase excitation power to the voltage regulator in the start converter unit. When the APU is on-speed, the starter-generator is excited and the PMG frequency is low, this fault is set by the start converter unit. When this condition occurs, the APU cannot supply electrical power.
- (3) The APU GEN OFF BUS light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Starter-generator wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the starter-generator, YAAG013
- (4) Wiring problem with the starter-generator wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Wiring problem between the start converter unit, M1710, and the APU generator control unit, G14
- (7) Operational problem with the APU electrical system
- (8) Starter-generator, YAAG013

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(9) Start converter unit, M1710.

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

(10) APU ECU (Electronic control unit), M1709.

SIA ALL

C. Circuit Breakers

(1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-21-31)
- (4) (WDM 49-41-11)
- (5) (WDM 24-21-31)
- (6) (WDM 49-41-11)

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E. Initial Evaluation



YOU MUST FOLLOW THIS FAULT ISOLATION FROM THE START TO THE END UNTIL YOU CORRECT THE GENERATOR PMG FAULT. IF YOU DO NOT FOLLOW THIS FAULT ISOLATION PROCEDURE AND YOU DO AN APU START, DAMAGE TO A SERVICEABLE STARTER-GENERATOR OR START CONVERTER UNIT WILL OCCUR.

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for this maintenance message 49-41244 on the CURRENT STATUS page and MAINTENANCE HISTORY pages.
 - 1) If you find maintenance message 49-41244, then do the Fault Isolation Procedure for this maintenance message.
 - 2) If you find maintenance message 49-41244, then you must do these steps after you do the Fault Isolation Procedure for maintenance message 49-41244:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41298 shows.
 - d) If the CDU display does not show maintenance message 49-41298, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - f) If the CDU display shows maintenance message 49-41298, then continue.
 - (b) Do a check for these maintenance messages 49-41245 and 49-41252 on the CURRENT STATUS page and MAINTENANCE HISTORY pages.
 - 1) If you find these two maintenance messages 49-41245 and 49-41252, then you must do these steps:



CAUTION

YOU MUST REPLACE THE STARTER-GENERATOR AND START CONVERTER UNIT BEFORE YOU START THE APU AGAIN.

- a) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801

NOTE: Do not do the installation test for the starter-generator at this time.
- b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- d) Do this task: APU BITE Procedure, 49-60 TASK 801.

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SIA ALL

49-40 TASK 820

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- e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41298 shows.
 - g) If the CDU display does not show maintenance message 49-41298, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - i) If the CDU display shows maintenance message 49-41298, then do the Fault Isolation Procedure below.
- 2) If you find maintenance message 49-41245 or 49-41252, then you must do these steps:
- a) Do the Fault Isolation Procedure for maintenance message 49-41245 or 49-41252.
 - b) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41298 shows.
 - f) If the CDU display does not show maintenance message 49-41298, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows maintenance message 49-41298, then do the Fault Isolation Procedure below.
- (c) If the CDU display shows this maintenance message on the CURRENT STATUS page and/or MAINTENANCE HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.
- (d) If the CDU display does not show this maintenance message on the CURRENT STATUS page and MAINTENANCE HISTORY page for the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the starter-generator wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the starter-generator wire harness, then do these steps:
NOTE: You can repair or replace the starter-generator wire harness.
 - 1) Repair the starter-generator wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801
NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.

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- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the starter-generator wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

EFFECTIVITY
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- (c) Disconnect the electrical connector P6 from the starter-generator, YAAG013.
- (d) Examine the electrical connector P6. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P6, then do these steps:
 - 1) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - 2) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector P6 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of sockets on the starter-generator, YAAG013 (SSM 24-21-31) (SSM 49-41-11):
 - a) Socket 1 and socket 2, specified resistance of less than 10 ohms.
 - b) Socket 2 and socket 3, specified resistance of less than 10 ohms.
 - 2) If the resistance is not in the range specified for each pair of sockets, then do these steps:

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- a) Replace the starter-generator, YAAG013. These are the tasks:

- Starter-Generator Removal, AMM TASK 49-41-21-000-801
- Starter-Generator Installation, AMM TASK 49-41-21-400-801

NOTE: Do not do the installation test for the starter-generator. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- b) Do this task: Auxiliary Power Unit (APU) Cowl Door Installation, AMM TASK 52-48-21-400-801.

NOTE: Do not close the APU cowl door at this time. Use the two hold-open rods to hold the APU cowl door open.

- c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- f) During the APU operational test, examine the starter-generator for signs of oil leakage.
- g) If you find oil leakage, then repair the problem that you find.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- k) If the CDU display does not show this maintenance message, then you corrected the fault.

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- l) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of sockets, then do these steps and continue:
 - a) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - b) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the starter-generator wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01336	APU START CONV

SIA ALL

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (c) Disconnect the electrical connector D11118 (P4) from the APU firewall receptacle D11118 on the 1088 bulkhead.
- (d) Examine the electrical connector D11118 (P4) and APU firewall receptacle D11118. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D11118 (P4) or APU firewall receptacle D11118, then do these steps:
 - 1) Re-connect the electrical connector D11118 (P4) to the APU firewall receptacle D11118 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.

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- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D11118 (P4) and APU firewall receptacle D11118 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D11118 (P4) at the 1088 bulkhead (SSM 24-21-31) (SSM 49-41-11):
 - a) Pin 10 and pin 24, specified resistance of less than 10 ohms.
 - b) Pin 24 and pin 25, specified resistance of less than 10 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801
 - NOTE:** It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D11118 (P4) to the APU firewall receptacle D11118 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

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SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Examine the electrical connector D11114. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- 2) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

EFFECTIVITY
SIA ALL

49-40 TASK 820

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D11114 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of sockets on the electrical connector D11114B at the start converter unit, M1710 (SSM 24-21-31) (SSM 49-41-11):
 - a) Socket 5 and socket 6, specified resistance of less than 10 ohms.
 - b) Socket 6 and socket 13, specified resistance of less than 10 ohms.
 - 2) If the resistance is not in the range specified for each pair of sockets, then do these steps:
 - a) Repair the wiring (WDM 24-21-31) (WDM 49-41-11).
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.
- c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

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SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1 (Continued)

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - g) Set the APU master switch to the ON position.
 - h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of sockets, then do this step and continue:
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (6) Do this check of the wiring between the start converter unit, M1710, and the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
 - (d) Examine the electrical connectors D11114 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D11114 or D10896, then do these steps:
 - 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

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- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D11114 and D10896 are satisfactory, then do these steps:
- 1) Do a wiring check between these sockets of electrical connector D11114C for the start converter unit, M1710, and electrical connector D10896B for the APU generator control unit, G14 (SSM 24-21-31):

D11114C		D10896B
socket 13	.....	socket 21
socket 25	.....	socket 11
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-21-31).
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.

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- c) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- h) Set the APU master switch to the ON position.
- i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- j) If the CDU display does not show this maintenance message, then you corrected the fault.
- k) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
- a) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (7) Do an operational check of the APU electrical system:
- (a) Make sure the APU master switch is OFF.

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- (b) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (c) If the APU engine supplies electrical power to the airplane systems, then do these steps:
- 1) Make sure the APU master switch is OFF.
 - 2) Replace the start converter unit, M1710. These are the tasks:

- Start Converter Unit Removal, AMM TASK 49-41-61-000-801
- Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 7) Set the APU master switch to the ON position.
 - 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then continue.
 - 9) Set the APU master switch to the OFF position.
- (d) If the APU engine does not supply electrical power to the airplane systems, then continue.

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(8) Do these steps to replace the starter-generator, YAAG013:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801

NOTE: Do not do the installation test for the starter-generator. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- (c) Do this task: Auxiliary Power Unit (APU) Cowl Door Installation, AMM TASK 52-48-21-400-801.

NOTE: Do not close the APU cowl door at this time. Use the two hold-open rods to hold the APU cowl door open.

- (d) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 1) During the APU operational test, examine the starter-generator for signs of oil leakage.
 - 2) If you find oil leakage, then repair the problem that you find.
- (g) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (h) Set the APU master switch to the ON position.
- (i) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- 2) If the CDU display shows this maintenance message, then continue.
- (j) Set the APU master switch to the OFF position.
- (9) Do these steps to replace the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801

NOTE: Do not do the installation test for the start converter unit. You must do the APU operational test to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (g) Set the APU master switch to the ON position.
- (h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (i) Set the APU master switch to the OFF position.

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- (10) Do these steps to replace the APU ECU (electronic control unit), M1709:
- Make sure the APU master switch is OFF.
 - Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - After 30 seconds, look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.

SIA ALL

————— **END OF TASK** —————

821. Start Converter Unit Shows Start System INOP - Fault Isolation

A. Description

- This task is for this maintenance message:
 - 49-41254 START CONVERTER UNIT SHOWS START SYSTEM INOP
- During the APU start cycle, the starter-generator operates as a motor driven by the start converter unit. The start converter unit monitors the voltage and current supplied to the exciter field coil of the starter-generator. If the voltage is less than 50% of the nominal value or the current is less than 75% of the nominal value, then the fault is set. The start converter unit will continue to supply starting power to the starter-generator.
- The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- Starter-generator wire harness problem
- Wiring problem between the starter-generator, YAAG013, and the electrical connector D11118/P4 at the 1088 bulkhead
- Wiring problem between the start converter unit, M1710, and the APU firewall receptacle D11118/P4 at the 1088 bulkhead
- Starter-generator, YAAG013
- Start converter unit, M1710.

C. Circuit Breakers

- These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) SSM 49-41-11
- (4) WDM 24-21-31

E. Initial Evaluation



YOU MUST FOLLOW THIS FAULT ISOLATION FROM THE START TO THE END UNTIL YOU CORRECT THE FAULT FOR THE START CONVERTER UNIT. IF YOU DO NOT FOLLOW THIS FAULT ISOLATION PROCEDURE AND YOU DO AN APU START, DAMAGE TO A SERVICEABLE START CONVERTER UNIT WILL OCCUR.

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page and/or MAINTENANCE HISTORY page for the last APU cycle, then do a check for this maintenance message 49-41244 on the CURRENT STATUS page and MAINTENANCE HISTORY page for the last APU cycle.
 - 1) If you find maintenance message 49-41244, then do the Fault Isolation Procedure for this message.
 - 2) If you find maintenance message 49-41244, then you must do these steps after you do the Fault Isolation Procedure for maintenance message 49-41244:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-41254 shows.
 - d) If the CDU display does not show maintenance message 49-41254, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - f) If the CDU display shows maintenance message 49-41254, then continue.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page and/or MAINTENANCE HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page and MAINTENANCE HISTORY page for the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the starter-generator wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the starter-generator wire harness, then do these steps:

NOTE: You can repair or replace the starter-generator wire harness.

 - 1) Repair the starter-generator wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801,
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801.

NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the starter-generator wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the starter-generator, YAAG013, and the electrical connector D11118/P4 on the 1088 bulkhead:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P6 from the starter-generator, YAAG013.
- (d) Disconnect the electrical connector D11118/P4 from the APU firewall receptacle D11118 on the 1088 bulkhead.
- (e) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.



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- (f) Examine the electrical connectors P6 and D11118/P4, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the electrical connector P6 or D11118/P4, then do these steps:

- 1) Re-connect the electrical connector D11118/P4 to the APU firewall receptacle D11118 on the 1088 bulkhead.
- 2) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 7) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 8) Set the APU master switch to the ON position.
 - 9) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 10) Set the APU master switch to the OFF position.
- (h) If the electrical connectors P6 and D11118/P4 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 6 and pin 8 on the electrical connector D11118/P4 (SSM 49-41-11).

NOTE: The resistance must be more than 4 ohms (closed circuit).
 - 2) Install a jumper between socket 5 and socket 7 on the electrical connector P6 at the starter-generator, YAAG013.
 - 3) Measure the resistance between pin 6 and pin 8 on the electrical connector D11118/P4.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is more than 10 ohms, then do these steps:
 - a) Replace the starter-generator wire harness. These are the tasks:
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801,
 - Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801.

NOTE: It is necessary to do the installation test for the starter-generator wire harness to see if this maintenance message shows on the CDU display.

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is less than 10 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D11118/P4 to the APU firewall receptacle D11118 on the 1088 bulkhead.
 - b) Re-connect the electrical connector P6 to the starter-generator, YAAG013.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (3) Do this check of the wiring between the star converter unit, M1710, and the electrical connector D11118/P4 on the 1088 bulkhead:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D11114B from the start converter unit, M1710.
- (d) Disconnect the electrical connector D11118/P4 from the APU firewall receptacle D11118 on the 1088 bulkhead.
- (e) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (f) Examine the electrical connectors D11114B and D11118, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the electrical connector D11114B or D11118/P4, then do these steps:
 - 1) Re-connect the electrical connector D11118/P4 to the APU firewall receptacle D11118/P4 on the 1088 bulkhead.
 - 2) Re-connect the electrical connector D11114B to the start converter unit, M1710.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 7) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 8) Set the APU master switch to the ON position.
- 9) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 10) Set the APU master switch to the OFF position.
- (h) If the electrical connectors D11114B and D11118/P4 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 6 and pin 8 on the electrical connector D11118/P4 (SSM 49-41-11).
- NOTE: The resistance must be more than 100K ohms (open circuit).
- 2) Install a jumper between socket 8 and socket 10 on the electrical connector D11114B at the start converter unit, M1710.
- 3) Measure the resistance between pin 6 and pin 8 on the electrical connector D11118/P4.
- NOTE: The resistance must be 2-10 ohms.
- 4) Remove the jumper.
- 5) If the resistance is more than 10 ohms, then do these steps:
- a) Repair the start converter unit wire harness (AMM PAGEBLOCK 49-11-01/801).
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 6) If the resistance is 2-10 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D11118/P4 to the APU firewall receptacle D11118 on the 1088 bulkhead.

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- b) Re-connect the electrical connector D11114B to the start converter unit, M1710.
- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do these steps to replace the starter-generator, YAAG013:
- NOTE: It is recommended that you replace the starter-generator if the APU does not start and the CDU display shows this maintenance message.
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801,
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801.
- NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801,
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.



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- (f) Set the APU master switch to the OFF position.

————— END OF TASK —————

822. Start Converter Unit Shows Low Battery Power - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41249 START CONVERTER UNIT SHOWS LOW BATTERY POWER
- (2) The dc/dc converter in the start power unit monitors its input terminal voltage and stops a dc (battery) start if the input terminal voltage is not 16.0V DC. The control circuit for the start converter unit controls the current draw of the start system to keep the input terminal voltage for the start power unit to a minimum of 17.3V DC. The start power unit removes the dc/dc input OK signal when the input terminal voltage is less than 16.0V DC. If the input terminal voltage is less than 16.0V DC, the start converter unit will set this fault during a dc start of the APU.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) APU battery system problem
- (2) Wiring problem between the battery, M6, and the start power unit, M1850
- (3) AIR/GND signal problem to the start converter unit, M1710
- (4) Start power unit, M1850
- (5) Start converter unit, M1710.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

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B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-31-11)
- (4) (SSM 49-41-11)
- (5) (WDM 24-31-11)
- (6) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
 - 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a check of the APU battery system:
 - (a) Make sure these switches on the P5 forward overhead panel are set correctly:
 - 1) APU master switch is set to the OFF position
 - 2) BAT switch is set to the ON position

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- 3) STANDBY POWER switch is set to the AUTO position
- 4) DC selector switch is set to the BAT position.
- (b) Look at the DC VOLTS display on the P5 forward overhead panel:
 - 1) If the DC VOLTS display is less than 22 volts, then do this task: Battery Voltage Less Than 22 Volts With BAT Switch at On and No AC Power on the Charger - Fault Isolation, 49-45 TASK 801.
 - 2) If the DC VOLTS display is more than 22 volts, then continue.
- (2) Do this check of wiring between the battery, M6, and the start power unit, M1850:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start power unit, M1850. To remove it, do this task: Start Power Unit - Removal, AMM TASK 49-41-71-000-801.
 - (c) Disconnect the electrical connector D44 from the battery, M6.
 - (d) Examine the electrical connectors D44 and D11798. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D44 or D11798, then do these steps:
 - 1) Re-connect the electrical connector D44 to the battery, M6.
 - 2) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

- a) Do a DC start of the APU. To do it, do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - <1> If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D44 and D11798 are satisfactory, then do these steps:
- 1) Do a check for an open or a short-to-ground circuit between these terminals of electrical connector D44 for the battery, M6, and electrical connector D11798 of the start power unit, M1850 (SSM 24-31-11) (SSM 49-41-11):

D11798

D44

positive terminal positive terminal

- 2) Measure the resistance between negative terminal of electrical connector D11798 for the start power unit, M1850, and the structural ground.

NOTE: The resistance value must not be more than 3.4 milliohms at 68°F (20°C).

- 3) If there is problem with the circuit, then do these steps:
 - a) Repair the wiring (WDM 24-31-11) (WDM 49-41-11).

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- b) Re-connect the electrical connector D44 to the battery, M6.
- c) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.
NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.
- d) Do a DC start of the APU. Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- f) Do this task: APU BITE Procedure, 49-60 TASK 801.
- g) Set the APU master switch to the ON position.
- h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
- 4) If the resistances are as specified, then do this step and continue:
 - a) Re-connect the electrical connector D44 to the battery, M6.
 - b) Re-install the start power unit, M1850. To re-install it, do this task: Start Power Unit - Installation, AMM TASK 49-41-71-400-801.
- (3) Do this check of the AIR/GND signal to the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Examine the electrical connector D11114. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D11114, then do these steps:
 - 1) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - 2) Do a DC start of the APU. To do it, do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D11114 is satisfactory, then do these steps:

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- 1) Measure the resistance between socket 4 and socket 16 of electrical connector D11114C for the start converter unit, M1710 (SSM 24-21-31) (SSM 49-41-11).

NOTE: The resistance must be more than 100K ohms (open circuit).

- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- 3) Measure the resistance between socket 4 and socket 16 of electrical connector D11114C for the start converter unit, M1710.

NOTE: The resistance must be more than 100K ohms (open circuit).

- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

- 5) If the resistances are not as specified, then do these steps:

- a) Repair the wiring (WDM 49-41-11).
- b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- c) Do a DC start of the APU. To do it, do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Set the APU master switch to the ON position.
- g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- h) If the CDU display does not show this maintenance message, then you corrected the fault.
- i) Set the APU master switch to the OFF position.

- 6) If the resistances are as specified, then do this step and continue:

- a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

- (4) Do these steps to replace the start power unit, M1850:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the start power unit, M1850. These are the tasks:
 - Start Power Unit - Removal, AMM TASK 49-41-71-000-801

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- Start Power Unit - Installation, AMM TASK 49-41-71-400-801

NOTE: It is necessary to do the installation test for the start power unit to see if this maintenance message shows on the CDU display.

- (c) Do a DC start of the APU. Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (h) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do a DC start of the APU. Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (h) Set the APU master switch to the OFF position.

— END OF TASK —

823. Start Converter Unit Shows Interlock Rly Fail - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-41306 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL
- (2) The start converter unit monitors the position of the auxiliary contacts in the auxiliary power breaker (APB) for the airplane and compares this position with its internal isolation relay. If the auxiliary contacts show that the auxiliary power breaker or the isolation relay in the start converter unit is in the incorrect position for the APU generate mode, then this fault is set. The start converter unit will prevent an APU start and the fault signal goes to the electronic control unit.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Wiring problem between the auxiliary power breaker, C803, and the start converter unit, M1710
- (2) A problem with the auxiliary power breaker, C803
- (3) A problem with the start converter unit, M1710
- (4) This circuit breaker:

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00803	AUXILIARY POWER BREAKER

- (5) Wiring problem between the auxiliary power breaker, C803, and the APU generator control unit, G14
- (6) Start converter unit, M1710
- (7) BITE problem for the APU generator control unit, G14.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1			
B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-40 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-40 TASK SUPPORT Figure 302)
- (3) (SSM 24-22-31)
- (4) (SSM 49-41-11)

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- (5) (WDM 24-22-31)
- (6) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then do these steps:
 - 1) Look at the MAINTENANCE HISTORY page on the CDU display to see if this maintenance message shows.
 - 2) If the CDU display shows this maintenance message in the last APU cycle, then do these steps:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
 - 3) If the CDU display does not show this maintenance message in the last APU cycle, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the wiring between the auxiliary power breaker, C803, and the start converter unit, M1710:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the start converter unit, M1710. To remove it, do this task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
 - (d) Examine the electrical connectors D10904 and D11114. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10904 or D11114, then do these steps:
 - 1) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - 2) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.

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- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10904 and D11114 are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D10904 for the auxiliary power breaker, C803, and electrical connector D11114C for the start converter unit, M1710 (SSM 49-41-11):

D10904	D11114C
socket 8	socket 38
socket 18	socket 39
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-41-11).
 - 3) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - a) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.

NOTE: It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 4) If the wiring is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - b) Re-install the start converter unit, M1710. To re-install it, do this task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
- (2) Do these steps to replace the auxiliary power breaker, C803:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the auxiliary power breaker, C803. These are the tasks:
 - Breaker Removal, AMM TASK 24-21-41-000-801
 - Breaker Installation, AMM TASK 24-21-41-400-801
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (f) Set the APU master switch to the ON position.
- (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (h) Set the APU master switch to the OFF position.
- (3) Do this check of the wiring between the auxiliary power breaker, C803, and the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the APU generator control unit, G14. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
 - (c) Disconnect the electrical connector D10904 from the auxiliary power breaker, C803. To disconnect it, do this task: Breaker Removal, AMM TASK 24-21-41-000-801.
 - (d) Examine the electrical connectors D10904 and D10896. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10904 or D10896, then do these steps:
 - 1) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - 2) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10904 and D10896 are satisfactory, then do these steps:
 - 1) Do a wiring check between these sockets of electrical connector D10904 for the auxiliary power breaker, C803, and electrical connector D10896A for the APU generator control unit, G14 (SSM 24-22-31):

D10904	D10896A
socket 1	socket 35
socket 11	socket 23
socket 24	socket 36
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 24-22-31).

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- b) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - c) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - g) Set the APU master switch to the ON position.
 - h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - i) If the CDU display does not show this maintenance message, then you corrected the fault.
 - j) Set the APU master switch to the OFF position.
- 3) If the wiring is satisfactory, then do these steps and continue:
- a) Re-connect the electrical connector D10904 to the auxiliary power breaker, C803. To re-connect it, do this task: Breaker Installation, AMM TASK 24-21-41-400-801.
 - b) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
- (4) Do these steps to replace the start converter unit, M1710:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the start converter unit, M1710. These are the tasks:
 - Start Converter Unit Removal, AMM TASK 49-41-61-000-801
 - Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- NOTE:** It is necessary to do the installation test for the start converter unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this BITE check of the APU generator control unit, G14:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Generator Control Unit BITE Procedure, 24-21 TASK 801.
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.

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- (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (h) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

825. High CT5ATP - Fault Isolation

A. Description

- (1) There is no fault code correlated with this task.
- (2) This condition is found during the APU condition monitoring. This fault isolation is part of the corrective action for high CT5ATP.
- (3) CT5ATP is the average corrected APU exhaust gas temperature (T5), measured four times during each main engine start. The CT5ATP is corrected for outside temperature, IGV position, and generator load.
- (4) CT5ATP data is available from the DMM (Data Memory Module) through the CDU (ECU Internal Failure - Fault Isolation, 49-60 TASK 802).

B. Possible Causes

- (1) Obstruction - blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (2) Fuel nozzle (atomizers) clogged or streaking
- (3) P2 - Inlet Pressure Sensor
- (4) T2 (Inlet Temperature) Sensor
- (5) Pt (Total Pressure) Sensor
- (6) Delta P (Pressure) Sensor
- (7) APU EGT Thermocouple 1
- (8) APU EGT Thermocouple 2
- (9) Other Possible Causes (although not as probable):
 - (a) Silver color particles or large quantity of metal particles on the magnetic drain plug
 - (b) APU rotation problem
 - (c) IGV (Inlet Guide Vane) actuator problem
 - (d) APU ECU (Electronic Control Unit)
 - (e) APU FOD (Foreign Object Debris) Damage
 - (f) APU Generator Control Unit (GCU)
 - (g) Fuel Flow Divider
 - (h) Wiring problem between the bus power control unit, G15, and the APU ECU (M1709)

C. Initial Evaluation

- (1) Access the APU BITE test page on the CDU (APU BITE Procedure, 49-60 TASK 801).
 - (a) Select 'Maintenance History'.
 - 1) Make a record of the maintenance message logged.

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- (b) Select the next page to look for additional maintenance messages.
 - 1) Look for other occurrences for each maintenance message.

D. Fault Isolation Procedure

- (1) Examine the APU air inlet duct and compressor inlet plenum for blockage of unwanted materials.
- (2) Do this task: (Fuel Nozzle Inspection, AMM TASK 49-31-14-200-801).
Examine the APU air inlet duct and compressor inlet plenum for blockage of unwanted materials.
- (3) Examine the P2 sensor as follows:
 - (a) Remove the inlet pressure sensor (P2) (AMM TASK 49-52-31-000-801).
 - (b) Examine the orifice in the sensor to make sure it is not blocked.
 - (c) Examine the fitting in the inlet plenum to make sure it is clear.
 - (d) Clean the sensor and connectors as necessary.
NOTE: Do not use compressed air to clean the sensor. Damage to the sensor could occur.
 - (e) Install the inlet pressure sensor (P2) (AMM TASK 49-52-31-400-801)
- (4) Examine the T2 sensor as follows:
 - (a) Remove the inlet temperature sensor (T2) (AMM TASK 49-61-31-000-801).
 - (b) Examine the orifice in the sensor to make sure it is not blocked.
 - (c) Examine the fitting in the inlet plenum to make sure it is clear.
 - (d) Clean the sensor and connectors as necessary.
NOTE: Do not use compressed air to clean the sensor. Damage to the sensor could occur.
 - (e) Install the inlet temperature sensor (AMM TASK 49-61-31-400-801).
- (5) Examine the Total Pressure (Pt) sensor as follows:
 - (a) Remove the total pressure sensor (Pt) (AMM TASK 49-52-32-000-801).
 - (b) Examine the orifice in the sensor to make sure it is not blocked.
 - (c) Examine the fitting in the inlet plenum to make sure it is clear.
 - (d) Clean the sensor and connectors as necessary.
NOTE: Do not use compressed air to clean the sensor. Damage to the sensor could occur.
 - (e) Install the total pressure sensor (Pt) (AMM TASK 49-52-32-400-801).
- (6) Examine the Delta Pressure (DP) sensor as follows:
 - (a) Remove the delta pressure sensor (AMM TASK 49-52-33-000-801).
 - (b) Examine the orifice in the sensor to make sure it is not blocked.
 - (c) Examine the fitting in the inlet plenum to make sure it is clear.
 - (d) Clean the sensor and connectors as necessary.
NOTE: Do not use compressed air to clean the sensor. Damage to the sensor could occur.
 - (e) Install the Delta Pressure sensor (DP) (AMM TASK 49-52-33-400-801).



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- (7) Do this task: EGT1 Thermocouple Disagrees With EGT2 - Fault Isolation, 49-70 TASK 801 and/or this task: EGT1 Thermocouple Shows Open Circuit - Fault Isolation, 49-70 TASK 802 to trouble shoot the EGT1 thermocouple.
- (8) Do this task: EGT2 Thermocouple Shows Open Circuit - Fault Isolation, 49-70 TASK 803 and/or this task: EGT2 Thermocouple Disagrees With EGT1 - Fault Isolation, 49-70 TASK 804 to trouble shoot the EGT2 thermocouple.
- (9) Do this trouble shooting for other possible causes of High CT5ATP:
 - (a) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (b) Do this task: APU Has Too Much Vibration - Fault Isolation, 49-15 TASK 807 to look for a problem with APU rotation.
 - (c) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (d) Do this task: ECU Internal Failure - Fault Isolation, 49-60 TASK 802.
 - (e) Do this task: APU Power Plant Inspection, AMM TASK 49-11-00-200-801, to examine the APU for FOD (Foreign Object Debris) damage.
 - (f) Do this task: FEEDER FAULT For APU GCU - Fault Isolation, 24-21 TASK 814 and/or this task APU Generator will not come on line - Fault Isolation, 24-21 TASK 820 to trouble shoot the APU GCU.
 - (g) Do the Fuel Flow Divider Leak Test (Fuel Flow Divider Installation, AMM TASK 49-31-15-400-801).
 - (h) Examine the wiring between the auxiliary power unit and the APU ECU (WDM 49-62-12).
- (10) Recommendation: Continue to monitor the APU for high CT5ATP.
 - (a) If the CT5ATP readings are still high, do this troubleshooting again.

NOTE: Reference CMP D044A007 for more information about how to monitor high CT5ATP.

———— **END OF TASK** ————

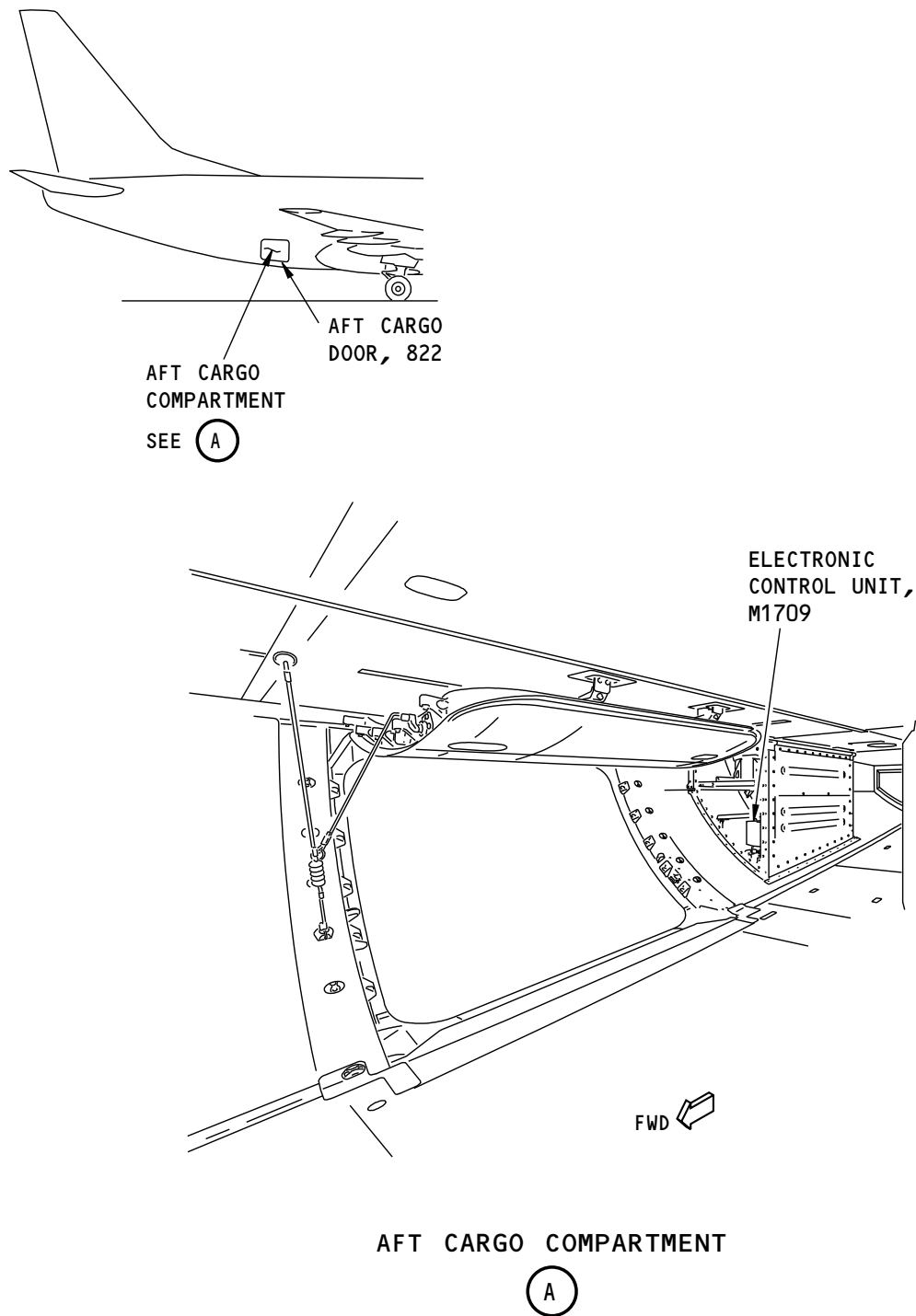
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H19693 S0006745172_V1

APU Ignition and Start System Component Location
Figure 301/49-40-00-990-801 (Sheet 1 of 2)

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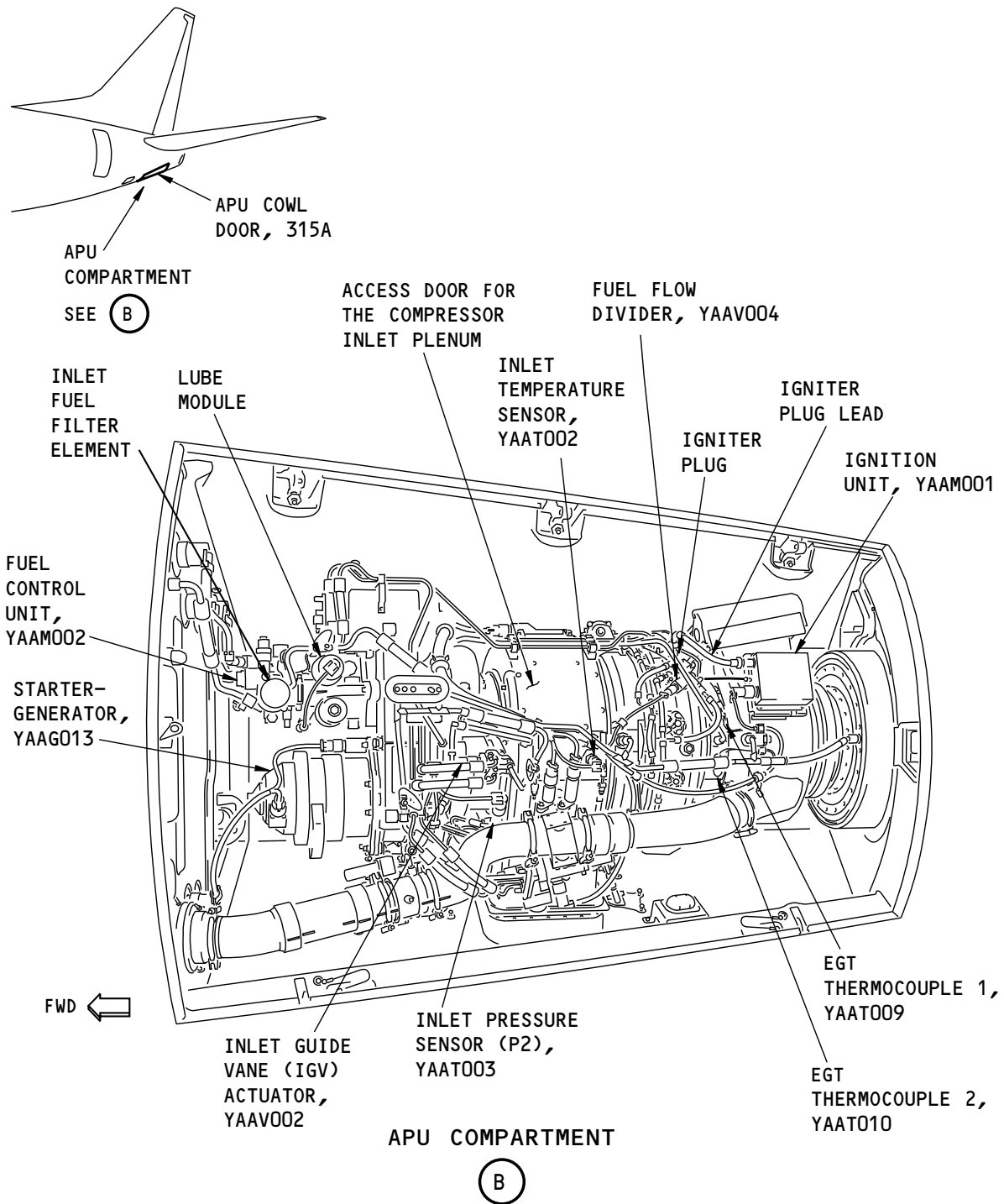
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G44994 S0006745174_V1

APU Ignition and Start System Component Location
Figure 301/49-40-00-990-801 (Sheet 2 of 2)

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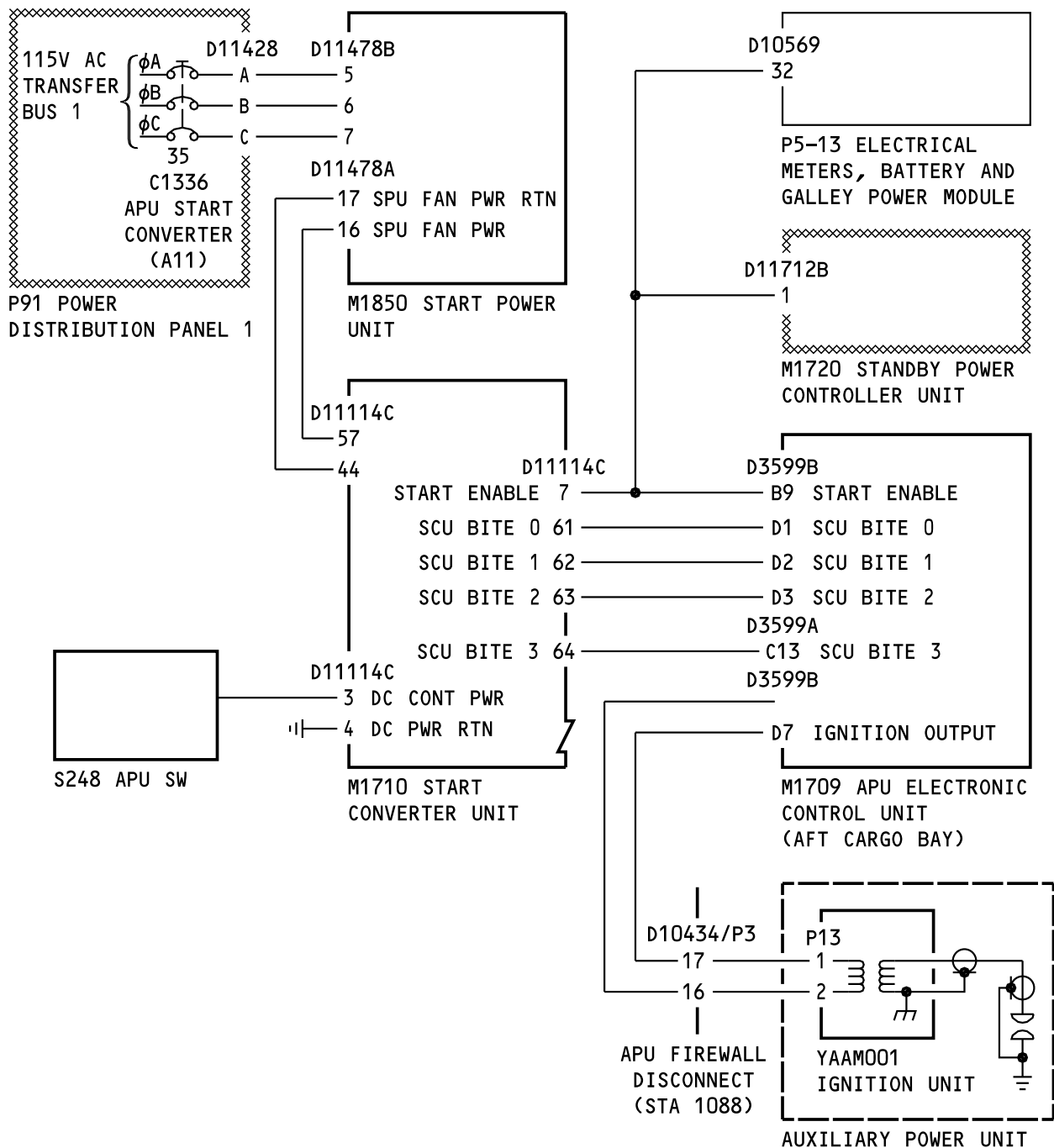
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L33511 S0006745179_V1

APU Ignition and Start System Simplified Schematic
Figure 302/49-40-00-990-802

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801. Battery Voltage Less Than 22 Volts With BAT Switch at On and No AC Power on the Charger - Fault Isolation

A. Description

- (1) The battery voltage shows less than 22 volts on the DC VOLTS display and there is no ac power on the battery charger, M5. The "Charger" indication lamp, on the front panel of the battery charger, is off when there is no 115V AC input power to the battery charger.

NOTE: The DC VOLTS display is on the P5 forward overhead panel. The correct voltage on the DC VOLTS display must be 22-28 volts.

B. Possible Causes

- (1) Low battery charge
- (2) Battery, M6.

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

D. Initial Evaluation

- (1) Do this battery voltage check for the APU start system:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

NOTE: Do not try to start the APU more than one time when the battery voltage is less than 22 volts.
 - (b) If the APU starts correctly, then do these steps:
 - 1) Set the DC selector switch on the P5 forward overhead panel to the BAT position.

NOTE: The DC VOLTS display shows the battery voltage. The correct voltage must be 22-28 volts.
 - 2) Operate the APU until the battery, M6, is fully charged.

NOTE: The time necessary for a fully discharged battery to fully charge is 60-75 minutes.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (c) If the APU does not start, then set the APU master switch to the OFF position and do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do these steps to fully charge the battery, M6:
 - (a) Make sure these switches on the P5 forward overhead panel are set correctly:
 - 1) APU master switch is set to the OFF position
 - 2) BAT switch is set to the ON position
 - 3) STANDBY POWER switch is set to the AUTO position
 - 4) DC selector switch is set to the BAT position.

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- (b) Supply external power. To supply it, do this task: Supply External Power, AMM TASK 24-22-00-860-813
- NOTE: The battery voltage will increase to more than 22 volts when you supply external power to the 115V ac transfer busses. The correct voltage must be 22-28 volts on the DC VOLTS display.
- NOTE: The time necessary for a fully discharged battery to fully charge is 60-75 minutes.
- (c) Remove external power. To remove it, do this task: Remove External Power, AMM TASK 24-22-00-860-814
- (d) Look at the DC VOLTS display:
- 1) If the DC VOLTS display is more than 22 volts, then you corrected the fault.
 - 2) If the DC VOLTS display did not show a voltage increase to more than 22 volts, then continue.
- (e) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.
- (2) Do these steps to replace the battery, M6:
- (a) Replace the battery, M6. These are the tasks:
- Battery Removal, AMM TASK 24-31-11-000-802-002
 - Battery Installation, AMM TASK 24-31-11-400-802-002
- NOTE: It is necessary to do the battery installation test to see if the DC VOLTS display shows 22-28 volts.
- (b) Look at the DC VOLTS display.
- 1) If the DC VOLTS display is more than 22 volts, then you corrected the fault.
- (c) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.

————— **END OF TASK** —————

802. Battery Voltage Less Than 26 Volts With AC Power on the Charger - Fault Isolation

A. Description

- (1) The battery voltage shows less than 26 volts on the DC VOLTS display and there is ac power on the battery charger, M5. The "Charger" indication lamp, on the front panel of the battery charger, is on when there is 115V AC input power to the battery charger.

NOTE: The DC VOLTS and DC AMPS displays are on the P5 forward overhead panel. The correct voltage on the DC VOLTS display must be 26-28 volts. The DC AMPS display must show a positive indication during the operation of the battery charger.

B. Possible Causes

- (1) Maintenance message BAT CHGR INOP shows on the P5-13 module
- (2) Voltage problem with the battery, M6
- (3) Battery, M6.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

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Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00809	BAT CHGR

D. Related Data

- (1) Simplified Schematic (49-45 TASK SUPPORT Figure 303)
- (2) (SSM 24-31-11)
- (3) (WDM 24-31-11)

E. Initial Evaluation

- (1) Do this check of the DC VOLTS and DC AMPS displays:
 - (a) Make sure these switches on the P5 forward overhead panel are set correctly:
 - 1) APU master switch is set to the OFF position
 - 2) BAT switch is set to the ON position
 - 3) STANDBY POWER switch is set to the AUTO position
 - 4) DC selector switch is set to the BAT position.
 - (b) Look at the DC VOLTS and DC AMPS displays on the P5 forward overhead panel:
 - 1) If the DC VOLTS display is less than 26 volts and the DC AMPS display shows a positive indication, then set the BAT switch to the OFF position and do the Fault Isolation Procedure below.
 - 2) If the DC VOLTS display is more than 26 volts and the DC AMPS display shows a positive indication, then there was an intermittent fault.
 - (c) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.

F. Fault Isolation Procedure

- (1) Do this task: P5-13 ELEC Light Message BITE Procedure, 24-31 TASK 801.
 - (a) If maintenance message BAT CHGR INOP shows on the P5-13 module, then do these steps:
 - 1) Do this task: BAT CHGR INOP Message - Fault Isolation, 24-31 TASK 829.
 - 2) Make sure these switches on the P5 forward overhead panel are set correctly:
 - a) APU master switch is set to the OFF position
 - b) BAT switch is set to the ON position
 - c) STANDBY POWER switch is set to the AUTO position
 - d) DC selector switch is set to the BAT position.
 - 3) Look at the DC VOLTS and DC AMPS displays on the P5 forward overhead panel.
 - a) If the DC VOLTS display is more than 26 volts and the DC AMPS display show a positive indication, then you corrected the fault.
 - 4) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.
 - (b) If maintenance message BAT CHGR INOP does not show on the P5-13 module, then continue.
- (2) Do this voltage check of the battery, M6:

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- (a) Open this circuit breaker and install safety tag:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER



WARNING

MAKE SURE THE BATTERY CONNECTOR IS ISOLATED FROM THE AIRPLANE STRUCTURE. A BATTERY POWER VOLTAGE OF 28V DC IS PRESENT AT THE BATTERY CONNECTOR. THE ELECTRICAL SHOCK CAN CAUSE INJURY TO PERSONNEL OR CAUSE DAMAGE TO THE AIRPLANE.

- (b) Disconnect and isolate the battery connector D44 from the battery, M6.
(c) Remove the safety tag and close this circuit breaker:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

- (d) Do a voltage check on the battery connector D44, positive and negative terminals, at the battery, M6 (SSM 24-31-11).

NOTE: The voltage must be 26V-28V DC.

- (e) If the voltage is not 26V-28V DC, then do these steps:

- 1) Open this circuit breaker and install safety tag:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

- 2) Examine the battery connector D44. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
3) Do a continuity check between the positive terminal of connector D44 at the battery, M6, and circuit breaker C00142 on the battery shield, J9 (SSM 24-31-11).

D44	J9
positive terminal	 C00142

- 4) If there is a problem with the circuit, then repair the wiring (WDM 24-31-11).
5) Re-connect the battery connector D44 to the battery, M6.
6) Remove the safety tag and close this circuit breaker:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

- 7) Make sure these switches on the P5 forward overhead panel are set correctly:
a) APU master switch is set to the OFF position
b) BAT switch is set to the ON position
c) STANDBY POWER switch is set to the AUTO position

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- d) DC selector switch is set to the BAT position.
- 8) Look at the DC VOLTS and DC AMPS displays on the P5 forward overhead panel.
 - a) If the DC VOLTS display is more than 26 volts and the DC AMPS display shows a positive indication, then you corrected the fault.
- 9) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.
- (f) If the voltage is 26V-28V DC, then do these steps and continue:
 - 1) Open this circuit breaker and install safety tag:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

- 2) Re-connect the battery connector D44 to the battery, M6.
- 3) Remove the safety tag and close this circuit breaker:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

- (3) Do these steps to replace the battery, M6:
 - (a) Replace the battery, M6. These are the tasks:
 - Battery Removal, AMM TASK 24-31-11-000-802-002
 - Battery Installation, AMM TASK 24-31-11-400-802-002
 - NOTE: It is necessary to do the battery installation test to see if the DC VOLTS display shows more than 26 volts.
 - (b) Look at the DC VOLTS and DC AMPS displays on the P5 forward overhead panel.
 - 1) If the DC VOLTS display is more than 26 volts and the DC AMPS display shows a positive indication, then you corrected the fault.
 - (c) If it is not necessary to do other tasks, then set the BAT switch to the OFF position.

————— **END OF TASK** —————

803. Noise From Starter Generator During Start - Fault Isolation

A. Description

- (1) During the Auxiliary Power Unit (APU) Start Cycle, the Starter Generator operates as a motor driven by the Start Converter Unit.
- (2) A Resolver mounted on the Starter Generator Shaft sends rotor position to the Start Converter Unit.
- (3) If there is a short in the wires to the Resolver or if the wires have an open circuit, then the Starter Generator can operate intermittently.
- (4) The noise from the Starter Generator is caused by the intermittent operation.

B. Possible Causes

- (1) Starter Generator Wire Harness Problem
- (2) Wiring Problem between the Start Converter Unit and the Starter Generator
- (3) Start Converter Unit, M1710

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- (4) Starter Generator, G13

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

SIA ALL

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

SIA ALL

D. Related Data

- (1) Component Location (49-45 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-45 TASK SUPPORT Figure 302)
- (3) WDM 49-41-11
- (4) SSM 49-41-11

E. Initial Evaluation

- (1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (2) Listen to the Starter Generator when the APU starts.
- (3) Operate the APU for a minimum of five minutes.
- (4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (5) If the APU starts and there is no noise from the Starter Generator, then there was an intermittent fault.
- (6) If the APU starts and there is noise from the Starter Generator, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the Starter Generator Wire Harness (Wire Harness Inspection, AMM TASK 49-11-01-200-801).
 - (a) If you find a problem, repair or replace the Starter Generator Wire Harness. These are the applicable tasks:
NOTE: You can repair or replace the Starter Generator Wire Harness as necessary.
 - APU Harness Repair, AMM TASK 49-11-01-300-801
 - Starter-Generator Wire Harness Removal, AMM TASK 49-11-01-000-801

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- Starter-Generator Wire Harness Installation, AMM TASK 49-11-01-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the Starter Generator Wire Harness is satisfactory, then continue.
- (2) Do this check of the wiring between the Start Converter Unit, M1710 and the Starter Generator, G13:
 - (a) Make sure that the APU Master Switch is OFF and attach a DO-NOT-OPERATE Tag.
 - (b) Remove the Start Converter Unit, M1710. This is the task: Start Converter Unit Removal, AMM TASK 49-41-61-000-801.
 - (c) Disconnect the electrical connector P5 from the Starter Generator, G13.
 - (d) Examine the electrical connectors D11114 and P5. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - 1) If you find a problem with a connector, repair it as necessary and do these steps:
 - a) Re-connect the electrical connector P5 to the Starter Generator, G13.
 - b) Re-install the Start Converter Unit, M1710. This is the task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - c) Remove the DO-NOT-OPERATE Tag from the APU Master Switch.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If the electrical connectors D11114 and P5 are satisfactory, then examine the wiring between the APU Start Converter Unit, M1710, and the Starter Generator, G13 as follows (WDM 49-41-11):

START

CONVERTER UNIT

D11114C

socket 41	.....	pin 12
socket 42	.....	pin 11
socket 53	.....	pin 10
socket 54	.....	pin 9
socket 66	.....	pin 8
socket 67	.....	pin 7

STARTER GENERATOR

P5

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect the electrical connector P5 to the APU Starter Generator, G13.
 - <3> Re-install the Start Converter Unit, M1710. This is the task: Start Converter Unit Installation, AMM TASK 49-41-61-400-801.
 - <4> Remove the DO-NOT-OPERATE tag from the APU master switch.
 - <5> Do the Repair Confirmation at the end of this task.
 - b) If you do not find a problem with the wiring, then continue.
- (3) Replace the Start Converter Unit. These are the tasks:

NOTE: Do not do the Installation Test for the Start Converter Unit. You must do the APU Operational Test to complete the Fault Isolation Task for this maintenance.

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- Start Converter Unit Removal, AMM TASK 49-41-61-000-801
- Start Converter Unit Installation, AMM TASK 49-41-61-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the Starter Generator. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (2) Listen to the Starter Generator when the APU starts.
- (3) Operate the APU for a minimum of five minutes.
- (4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (5) If the APU starts and there is no noise from the Starter Generator, then you corrected the problem.
 - (a) Set the APU Master Switch to the OFF position.
- (6) If the APU starts and there is still noise from the Starter Generator, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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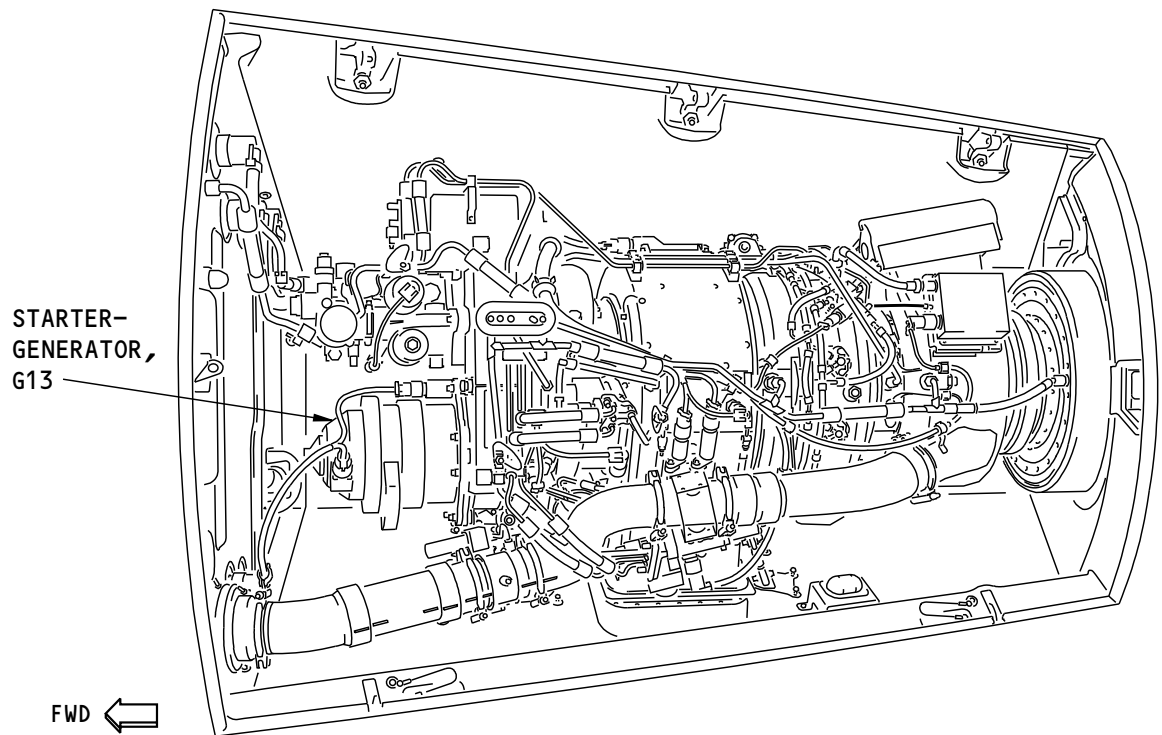
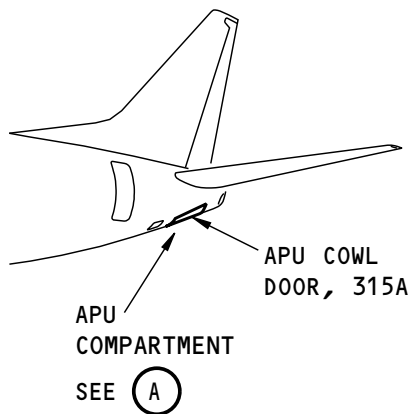
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APU COMPARTMENT

(A)

K02977 S0006745195_V1

APU Start System Component Location
Figure 301/49-45-00-990-801

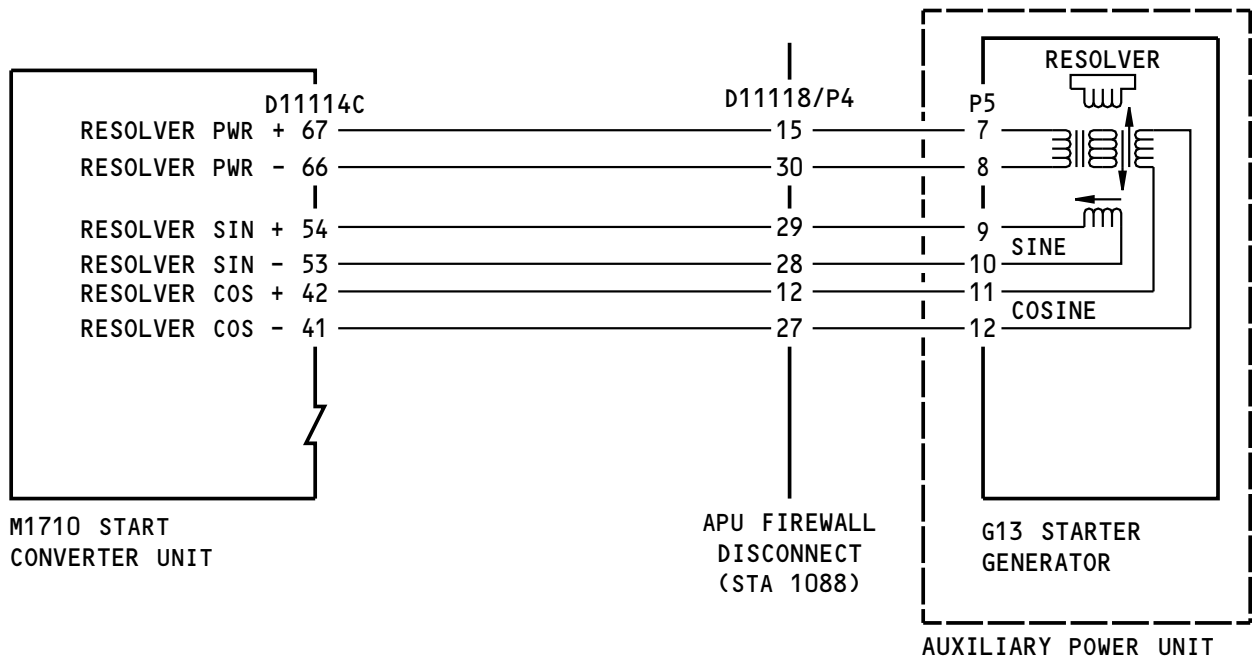
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WDM 49-41-11

SSM 49-41-11

K03006 S0006745196_V1

APU Start System Simplified Schematic
Figure 302/49-45-00-990-802

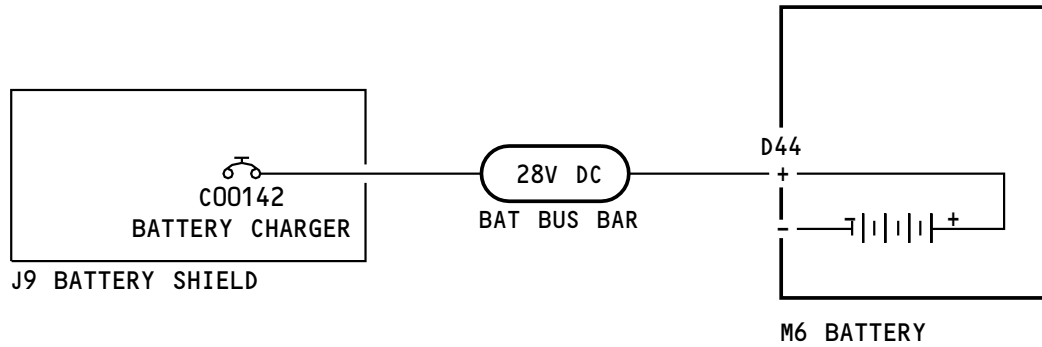
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WDM 24-31-11

SSM 24-31-11

G89050 S0006745197_V1

APU Battery System Simplified Schematic
Figure 303/49-45-00-990-803

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801. Reverse Flow Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52017 REVERSE FLOW SHUTDOWN
- (2) This APU protective shutdown occurs when the corrected flow from the load compressor discharge is less than 0.4 pound for each second (0.2 kilogram for each second) in six seconds. This condition occurs when there are failure problems with the airplane check valve and the APU bleed air valve at the same time. After one second from this condition, the electronic control unit commands the APU bleed air valve to close (if not in the closed position). The APU bleed air valve must close in five seconds to stop a possible reverse flow problem. If the corrected flow of less than 0.4 pound for each second continues, then this fault is set in six seconds from the first occurrence. An up/down counter is used as a timer for the six second interval. This test also does a check of the values for compressor discharge (total) pressure (PT), inlet pressure (P2) and delta pressure (DP) during this condition. If PT/P2 is more than 2.0, then the fault is set. The value of 2.0 makes sure that the load compressor operates satisfactorily in the range of the flow sensor curve. For each flow sensor signal (DP/PT), there are two possible values of corrected flow. The first value is the normal operating range and the second value is higher than the normal operating range. If the load compressor operates at the second value (higher flow range), then the flow sensor signal must not be misinterpreted as an indication of a reverse flow problem.

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (3) This shutdown can also be caused by a failed LVDT. An ac excitation voltage is continuously applied to the LVDT. If the excitation, primary, secondary, or center tapped coil is determined invalid, the position signal becomes invalid. A loss of position signal could result in uncontrollable engine surge.

SIA ALL

- (4) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message. The DUAL BLEED light on the P5 forward overhead panel can show if there was a problem with the bleed air system.

B. Possible Causes

- (1) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (2) Linkage problem with the inlet guide vane (IGV) actuator, YAAV002
- (3) Surge control valve, YAAV003
- (4) Internal problem with the APU check valve
- (5) Delta pressure sensor (DP), YAAT012
- (6) Total pressure sensor (PT), YAAT004
- (7) Blockage of unwanted materials or damage to the tubes for the delta pressure sensor and total pressure sensor
- (8) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: (APU BITE Procedure, 49-60 TASK 801).
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-52284
 - 2) 49-61241
 - 3) 49-61279.
 - 4) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 5) If you find this maintenance message 49-52284, then you must do these steps after you do the Fault Isolation Procedure for this message:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-52017 shows.
 - d) If the CDU display does not show maintenance message 49-52017 again in the last APU cycle, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-52017 again in the last APU cycle, then continue.
 - f) Set the APU master switch to the OFF position.
 - 6) If you find these maintenance messages 49-52236, 49-61241 and 49-61279, then you must do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Set the ISOLATION VALVE switch to the OPEN position.
NOTE: You can find these switches on the P5 forward overhead panel.
 - c) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - d) Make sure that the L PACK and R PACK switches are OFF.
 - e) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
 - f) Set the APU BLEED switch to the OFF position.
 - g) Set the ISOLATION VALVE switch to the CLOSE position.
 - h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - i) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- j) Set the APU master switch to the ON position.
 - k) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-52017 shows.
 - l) If the CDU display does not show maintenance message 49-52017 again in the last APU cycle, then you corrected the fault.
 - m) If the CDU display shows maintenance message 49-52017 again in the last APU cycle, then continue.
 - n) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.

 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.

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- d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 3) Set these switches on the P5 forward overhead panel:
- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (2) Do an operational test of the inlet guide vane (IGV) actuator linkage:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there was a problem with the inlet guide vanes, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If the inlet guide vanes are satisfactory, then continue.
- (3) Do these steps to replace the surge control valve, YAAV003:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801

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- Surge Control Valve Installation, AMM TASK 49-52-41-400-801

NOTE: With the surge control valve removed, visually examine each end of the surge control duct for blockage of unwanted materials and damage that can cause a decrease in airflow. You remove the blockage of unwanted materials or repair the damage that you find.

NOTE: It is necessary to do the installation test for the surge control valve to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (4) Do a visual inspection of the APU check valve:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: APU Check Valve Removal, AMM TASK 36-14-02-000-801.
 - (c) Visually examine each duct end of the APU check valve for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the APU check valve for damage which can cause the APU check valve to be caught in the open position:
 - 1) If you find damage, install a new or serviceable APU check valve. To install it, do this task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - 2) If you did not find damage, re-install the APU check valve. To re-install it, do this task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - (e) If there was blockage of materials or damage to the duct or APU check valve, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.

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- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If there were no blockage of materials and no damage to the duct and APU check valve, then continue.
- (5) Do these steps to replace the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the delta pressure sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
 - NOTE: It is necessary to do the installation test for the delta pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the total pressure sensor (PT), YAAT004:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the total pressure sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
 - NOTE: It is necessary to do the installation test for the total pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (7) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.
 - (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
 - (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
 - (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- 4) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure that the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Set these switches on the P5 forward overhead panel:
- 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.
- NOTE:** The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:
- 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- (l) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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821. Bleed Disabled to Prevent Reverse Flow - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 49-52269 BLEED DISABLED TO PREVENT REVERSE FLOW
 - (b) 49-52292 BLEED DISABLED TO PREVENT REVERSE FLOW
- (2) The bleed air system is de-energized to prevent a load compressor surge. If this failure occurs, the Auxiliary Power Unit (APU) bleed air is not available and continues the APU operation for electrical loads. If this fault is not corrected, a reverse flow condition can occur.
- (3) In cold weather and/or high humidity conditions, it is possible that the bleed air system is not available and these maintenance message(s) show on the CURRENT STATUS page in the Control Display Unit (CDU) display. If this fault occurs during an APU operation, it is possible to correct this fault when you set the APU BLEED switch to the OFF position and then to the ON position.
 - (a) If the APU must be shut down to correct the condition, wait approximately 3-5 minutes before you start the APU again.
- (4) If this fault occurs and the APU is not in operation (shutdown), it is possible to correct this fault when you start and operate the APU again and apply an APU pneumatic load (bleed air system energized).
- (5) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message. The DUAL BLEED light on the Forward Overhead Panel, P5 can show if there was a problem with the bleed air system.

B. Possible Causes

- (1) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU, M1709
- (2) Linkage with the Inlet Guide Vane Actuator (IGVA), YAAV002
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Electrical connector P9 for the Surge Control Valve (SCV), YAAV003
- (6) SCV, YAAV003
- (7) Wiring
- (8) APU Check Valve
- (9) Electrical connector P20 for the Delta Pressure Sensor (DP), YAAT012
- (10) Delta Pressure Sensor (DP), YAAT012
- (11) Electrical connector P19 for the Total Pressure Sensor (PT), YAAT004
- (12) Total Pressure Sensor (PT), YAAT004
- (13) Blockage of unwanted materials or damage to the tubes for the Delta Pressure Sensor (DP), YAAT012 and Total Pressure Sensor (PT), YAAT004
- (14) Electronic Control Unit (ECU), M1709

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.

- (a) If the CDU display shows these maintenance message(s) on the CURRENT STATUS page, then do a check for other related maintenance messages:

NOTE: It is necessary that you operate the APU with the bleed air system energized and do the APU usual shutdown to make sure that these maintenance message(s) do not show on the CURRENT STATUS page after each Fault Isolation Procedure.

- 1) 49-52270
- 2) 49-52272
- 3) 49-52284
- 4) 49-52289
- 5) 49-52290
- 6) 49-61276
- 7) 49-61279.
- 8) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
- 9) If you find these maintenance messages 49-52272, 49-52284 and 49-52290, then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-52269 or 49-52292 shows.
 - d) If the CDU display does not show maintenance message 49-52269 or 49-52292, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-52269 or 49-52292, then continue.

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- f) Set the APU master switch to the OFF position.
- 10) If you find these maintenance messages 49-52270, 49-52289, 49-61276 and 49-61279, then you must do these steps after you do the Fault Isolation Procedure for each message.
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the Forward Overhead Panel, P5.
 - c) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - d) Make sure that the L PACK and R PACK switches are OFF.
 - e) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - f) Set the APU BLEED switch to the OFF position.
 - g) Set the ISOLATION VALVE switch to the CLOSE position.
 - h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - i) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - j) Set the APU master switch to the ON position.
 - k) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-52269 or 49-52292 shows.
 - l) If the CDU display does not show maintenance message 49-52269 or 49-52292, then you corrected the fault.
 - m) If the CDU display shows maintenance message 49-52269 or 49-52292, then continue.
 - n) Set the APU master switch to the OFF position.
- (b) If the CDU display does not show these maintenance message(s) on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
- (c) If the CDU display shows these maintenance message(s), then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do an operational test of the APU:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - (c) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.

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- (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (f) Set the APU master switch to the ON position.
- (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (h) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
 - (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (f) Set the APU master switch to the OFF position.
 - (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (3) Do an operational test of the IGVA, YAAV002 linkage:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there was a problem with the inlet guide vanes, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801

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- APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.

- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.
- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the inlet guide vanes are satisfactory, then continue.
- (4) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
 - (5) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
 - (6) Do a visual inspection of the electrical connector P9 for the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
(d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) Re-connect the electrical connector P9 to the SCV, YAAV003.
(f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
(h) If there was a problem with the electrical connector P9, then do these steps:
 1) Do the Repair Confirmation at the end of this task.
 2) Set the APU master switch to the OFF position.
(i) If the electrical connector P9 is satisfactory, then continue.
(7) Do these steps to replace the SCV, YAAV003:
(a) Make sure that the APU master switch is OFF.
(b) Replace the SCV, YAAV003. These are the tasks:
 • Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 • Surge Control Valve Installation, AMM TASK 49-52-41-400-801

NOTE: With the Surge Control Valve, YAAV003 removed, visually examine each end of the surge control duct for blockage of unwanted materials and damage that can cause a decrease in airflow. You remove the blockage of unwanted materials or repair the damage that you find.

NOTE: It is necessary to do the installation test for the Surge Control Valve, YAAV003 to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
(d) Set the APU master switch to the ON position.
(e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 1) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (8) Do this check of the engine wire harness to the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU, M1709 firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU, M1709 firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU, M1709 firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU, M1709 firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU, M1709 firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-52-31):

APU

D10436 (P2)	RESISTANCE
pin 8 GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- Re-connect the electrical connector D10436 (P2) to the APU, M1709 firewall receptacle D10436 on the 1088 bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (9) Do this check of the airplane wire harness to the SCV, YAAV003:
- Make sure that the APU master switch is OFF.
 - Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** Do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
- Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A

pin B15 GROUND

RESISTANCE

>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

NOTE: If the circuit is satisfactory, then do the installation test for the ECU, M1709 to complete the fault isolation task for this maintenance message.

- 4) If there was a problem with the circuit, then do these steps:
 - a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - c) Do the Repair Confirmation at the end of this task.
 - d) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (10) Do a visual inspection of the APU Check Valve:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: APU Check Valve Removal, AMM TASK 36-14-02-000-801.
 - (c) Visually examine each duct end of the APU Check Valve for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the APU Check Valve for damage which can cause the APU Check Valve to be caught in the open position:

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- 1) If you find damage, then install a new or serviceable APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
- 2) If you did not find damage, then re-install the APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
- (e) If there was blockage of materials or damage to the duct or APU Check Valve, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (f) If there were no blockage of materials and no damage to the duct and APU Check Valve, then continue.
- (11) Do a visual inspection of the electrical connector P20 for the Delta Pressure Sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the Delta Pressure Sensor (DP), YAAT012.
- (d) Examine the electrical connector P20. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P20 to the Delta Pressure Sensor (DP), YAAT012.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P20, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (i) If the electrical connector P20 is satisfactory, then continue.
- (12) Do these steps to replace the Delta Pressure Sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the Delta Pressure Sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801

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- Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801

NOTE: It is necessary to do the installation test for the Delta Pressure Sensor (DP), YAAT012 to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (13) Do a visual inspection of the electrical connector P19 for the Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the Total Pressure Sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P19 to the Total Pressure Sensor (PT), YAAT004.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (h) If there was a problem with the electrical connector P19, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P19 is satisfactory, then continue.
- (14) Do these steps to replace the Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU master switch is OFF.

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- (b) Replace the Total Pressure Sensor (PT), YAAT004. These are the tasks:
- Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
- NOTE: It is necessary to do the installation test for the Total Pressure Sensor (PT), YAAT004 to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (15) Clean and do an inspection of the pneumatic tubes and housings for the Delta Pressure Sensor (DP), YAAT012 and Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU master switch is OFF.
- (b) Remove the sensors and tubes:
- 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the Delta Pressure Sensor (DP), YAAT012 drain tube.

NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the Total Pressure Sensor (PT), YAAT004 drain tube.

NOTE: Reference CMM 49-26-95.
- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
- 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
- (d) Examine the housings for debris build up and residual lubricant.
- NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
- 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow the air through the tubes to remove unwanted materials.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.

NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;

Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.

 - a) If no air comes out of the small orifice drain holes, replace the tube.

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- 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
 - (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the Total Pressure Sensor (PT), YAAT004 drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the Delta Pressure Sensor (DP), YAAT012 drain tube.
 - (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
 - (16) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

 - (c) Remove the safety tags and close these circuit breakers:
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER
-
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do the Repair Confirmation at the end of this task.
 - (f) Set the APU master switch to the OFF position.
- (17) Do these steps to replace the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (2) Set these switches on the Forward Overhead Panel, P5:
 - (a) Set the ISOLATION VALVE switch to the OPEN position.
 - (b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - (c) Make sure that the L PACK and R PACK switches are OFF.
 - (d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
- (3) Set these switches on the Forward Overhead Panel, P5:
 - (a) Set the APU BLEED switch to the OFF position.
 - (b) Set the ISOLATION VALVE switch to the CLOSE position.
- (4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (6) Set the APU master switch to the ON position.
- (7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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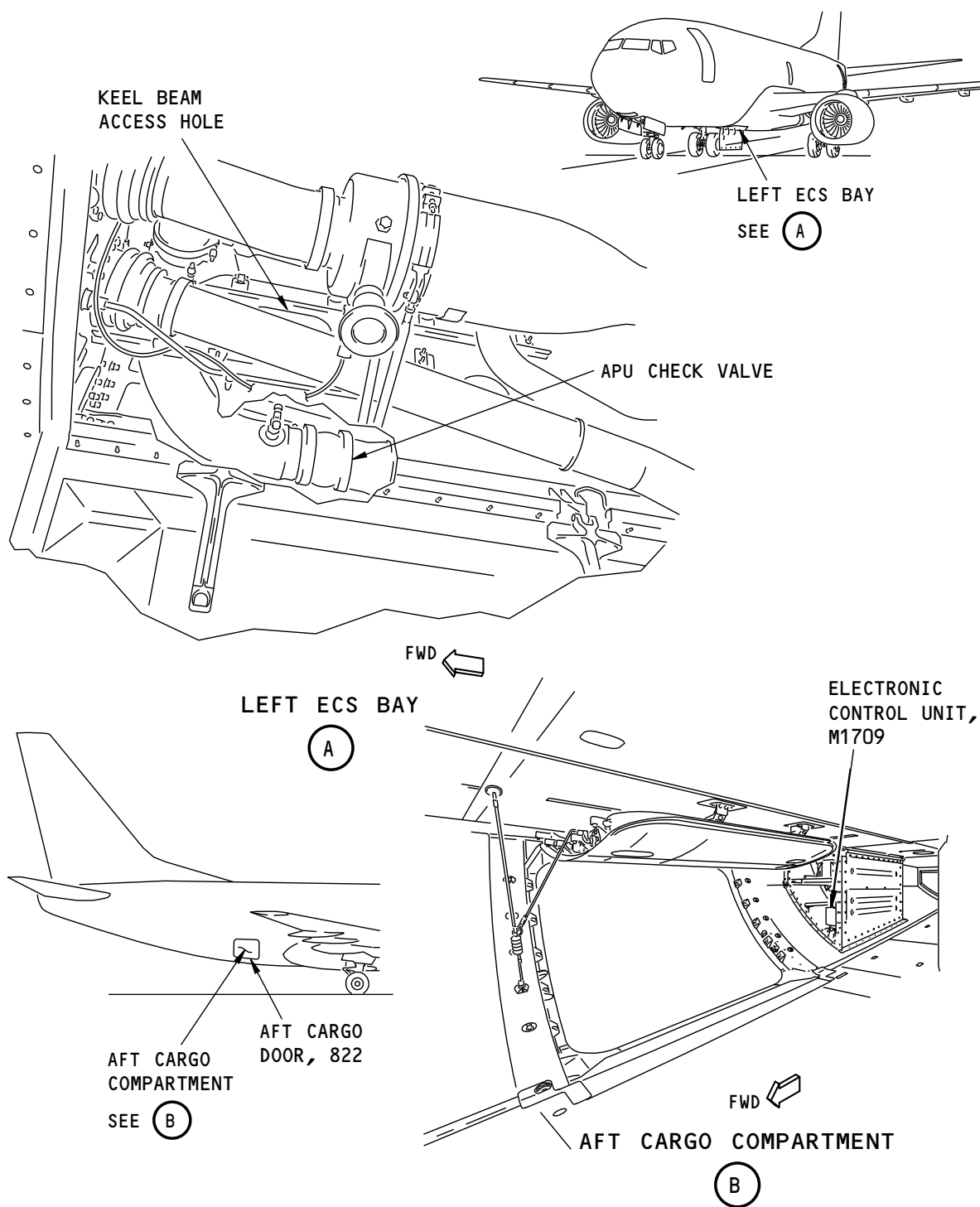
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H19713 S0006745205_V1

APU Cooling Air System Component Location
Figure 301/49-50-00-990-801 (Sheet 1 of 2)

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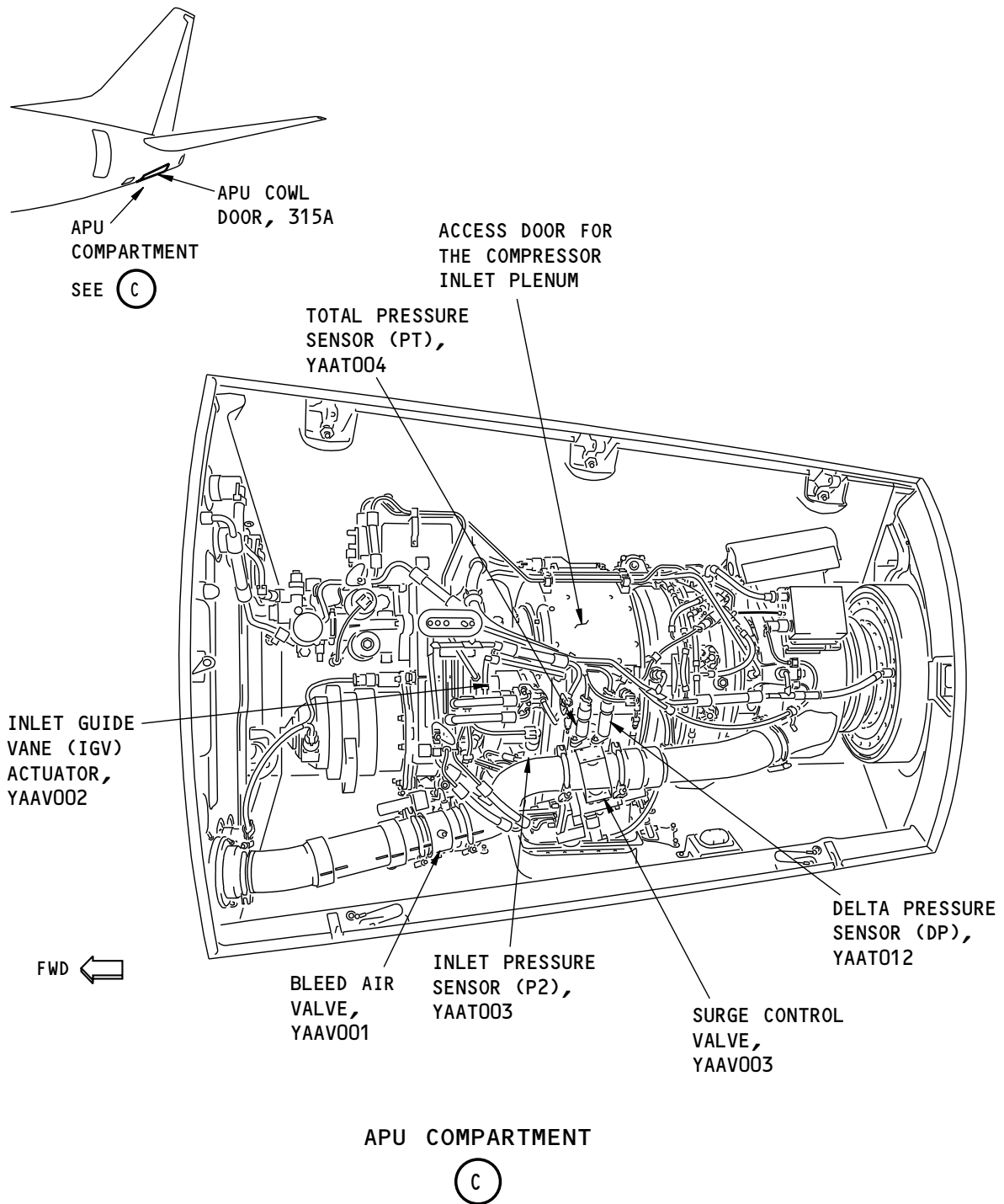
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G46191 S0006745207_V1

APU Cooling Air System Component Location
Figure 301/49-50-00-990-801 (Sheet 2 of 2)

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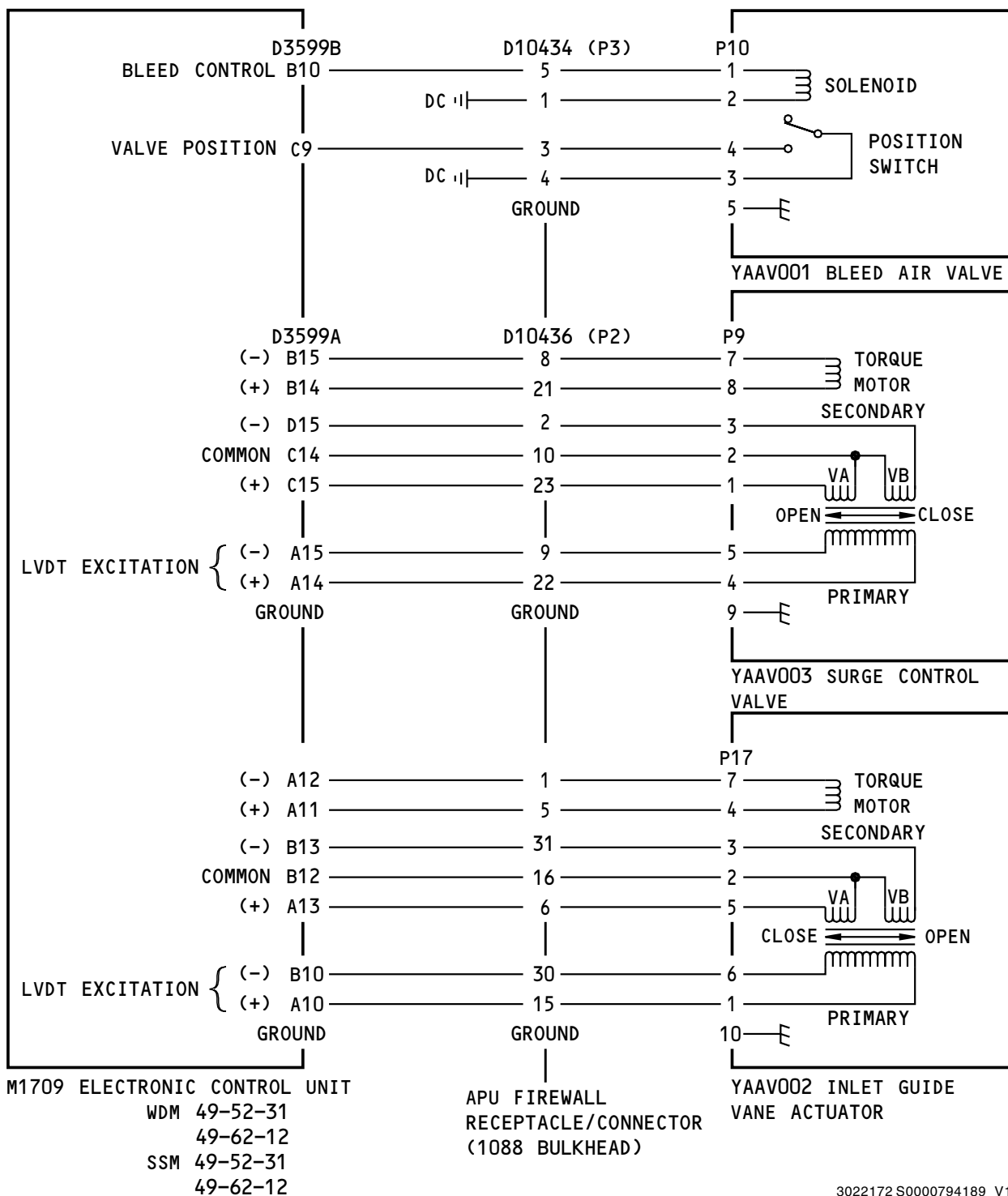
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3022172 S0000794189_V1

APU Cooling Air System Simplified Schematic
Figure 302/49-50-00-990-802 (Sheet 1 of 2)

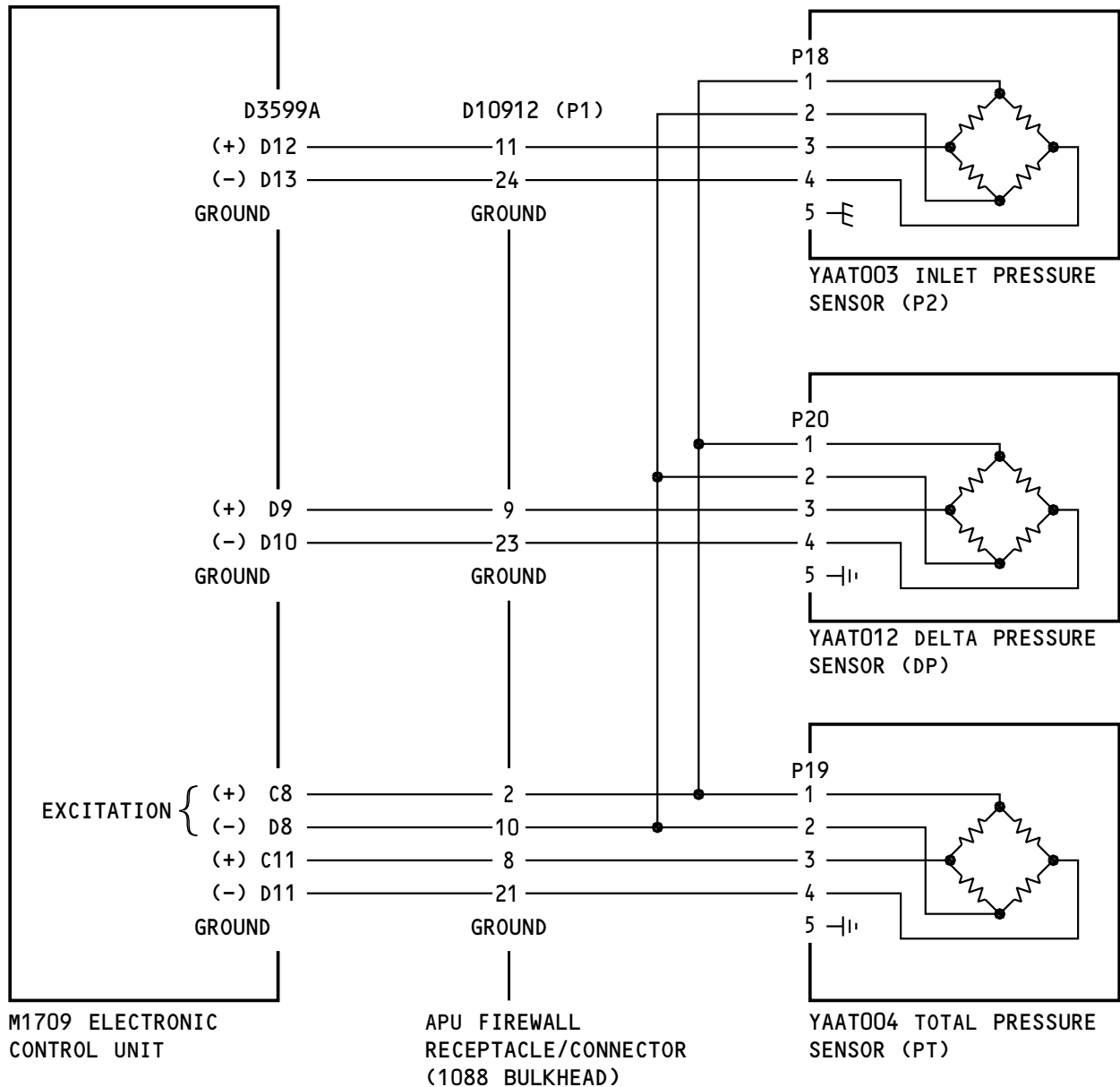
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G46062 S0006745211_V1

APU Cooling Air System Simplified Schematic
Figure 302/49-50-00-990-802 (Sheet 2 of 2)

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801. Bleed Valve Position Disagrees With Command - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52236 BLEED VALVE POSITION DISAGREES WITH COMMAND
- (2) This fault is set when there is a problem with the position switch for the bleed air valve or the bleed air valve. The position switch of the bleed air valve must not be open when bleed air is not commanded. The bleed air valve must be closed when bleed air is not commanded.

NOTE: The bleed duct pressure will be 0-6 psig when the APU bleed switch is in the OFF position, because the bleed air valve is not fully sealed.
- (3) The DUAL BLEED light on the P5 forward overhead panel will show if the position switch for the bleed air valve is open and engine bleed air is energized.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Operational problem with the position switch for the bleed air valve, YAAV001
- (4) Internal problem with the bleed air valve, YAAV001
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Bleed air valve, YAAV001
- (8) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

3) Do this task: APU BITE Procedure, 49-60 TASK 801.

4) Make sure the APU master switch is OFF for a minimum of five minutes.

5) Set the APU master switch to the ON position.

6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

7) Set the APU master switch to the OFF position.

- (c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

(a) Make sure the APU master switch is OFF.

(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (c) If there was a problem with the airplane wire harness, then do these steps:

1) Do this task: APU BITE Procedure, 49-60 TASK 801.

2) Make sure the APU master switch is OFF for a minimum of five minutes.

3) Set the APU master switch to the ON position.

4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

5) Set the APU master switch to the OFF position.

- (d) If the airplane wire harness is satisfactory, then continue.

- (3) Do an operational test of the position switch for the bleed air valve, YAAV001:

(a) Make sure the APU master switch is OFF.

(b) Make sure the APU BLEED switch on the P5 forward overhead panel is OFF.

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- (c) Look at the two indications on the position switch for the bleed air valve.

NOTE: There are two indications on the position switch to show the position of the bleed air valve. You can find the OPEN and CLOSED indications on the top and bottom of the bleed air valve.

- (d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

- (e) During the APU operation, look at the two indications on the position switch for the bleed air valve.

NOTE: The position switch for the bleed air valve must show CLOSED.

- (f) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

- (g) If the position switch for the bleed air valve shows OPEN, then do these steps:

- 1) Replace the bleed air valve, YAAV001. These are the tasks:

- Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
- Bleed Air Valve Installation, AMM TASK 49-52-11-400-801

- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.

- 3) Make sure the APU master switch is OFF for a minimum of five minutes.

- 4) Set the APU master switch to the ON position.

- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

- 6) Set the APU master switch to the OFF position.

- (h) If the position switch for the bleed air valve shows CLOSED, then continue.

- (4) Do this check of the bleed air valve, YAAV001:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.

- (d) Examine the electrical connector P10. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- (e) If there was a problem with the electrical connector P10, then do these steps:

- 1) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.

- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Make sure the APU master switch is OFF for a minimum of five minutes.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector P10 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the bleed air valve, YAAV001 (SSM 49-52-31):
 - a) Pin 3 and pin 4, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 4 and pin 5, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the bleed air valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Make sure the APU master switch is OFF for a minimum of five minutes.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
- 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Make sure the APU master switch is OFF for a minimum of five minutes.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10434 (P3) (SSM 49-52-31):
 - a) Pin 3 and pin 4, specified resistance of more than 100K ohms (open circuit).

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- b) Pin 3 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Make sure the APU master switch is OFF for a minimum of five minutes.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 4 and structural ground on the APU firewall receptacle D10434.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 4) If the resistance is more than 5 ohms, then do these steps:
 - a) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Make sure the APU master switch is OFF for a minimum of five minutes.
- g) Set the APU master switch to the ON position.
- h) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- i) If the CDU display does not show this maintenance message, then you corrected the fault.
- j) Set the APU master switch to the OFF position.
- 5) If the resistance is in the range specified for each pair of pins on the electrical connector D10434 (P3) and less than 5 ohms from socket 4 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:

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- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Make sure the APU master switch is OFF for a minimum of five minutes.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C9 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Make sure the APU master switch is OFF for a minimum of five minutes.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the bleed air valve, YAAV001:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the bleed air valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Make sure the APU master switch is OFF for a minimum of five minutes.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (g) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Make sure the APU master switch is OFF for a minimum of five minutes.
 - (e) Set the APU master switch to the ON position.
 - (f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (g) Set the APU master switch to the OFF position.

END OF TASK

802. Bleed Air Valve Circuit Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52237 BLEED AIR VALVE CIRCUIT SHOWS OPEN CIRCUIT
- (2) This fault is set when there is an open in the solenoid driver circuit for the bleed air valve. The electronic control unit does a check of the voltage at the high side solenoid driver for the bleed air valve. An open in the solenoid driver circuit shows the voltage is between 4.6V and 11.0V DC. The APU bleed air is not available during the APU operation.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the bleed air valve, YAAV001
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the bleed air valve, YAAV001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.
- (d) Examine the electrical connector P10. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P10, then do these steps:
 - 1) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P10 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 2 on the bleed air valve, YAAV001 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the bleed air valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 80 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
- 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 1 and pin 5 on the electrical connector D10434 (P3) (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 1 and structural ground on the APU firewall receptacle D10434.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 4) If the resistance is more than 5 ohms, then do these steps:
- a) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) Set the APU master switch to the ON position.
 - g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) Set the APU master switch to the OFF position.
- 5) If the resistance is less than 80 ohms on the electrical connector D10434 (P3) and less than 5 ohms from socket 1 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- Make sure the APU master switch is OFF.
 - Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the electrical connector D3599 is satisfactory, then do these steps:
 - Measure the resistance between pin B10 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - If there was a problem with the circuit, then do these steps:
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- Make sure the APU master switch is OFF.
 - Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

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- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— END OF TASK ————

803. Bleed Valve Position Disagrees With Command - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52238 BLEED VALVE POSITION DISAGREES WITH COMMAND
- (2) This fault is set when the bleed air valve does not open when commanded open. The electronic control unit does a check of the open position of the bleed air valve when commanded open. This test does a check of the values for total pressure (PT) and inlet pressure (P2) during this condition. If the value of PT is subtracted from the value of P2 (PT - P2) and the result is more than 10 psia, then the fault is set and the bleed air valve is possibly not open.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P10 for the bleed air valve, YAAV001
- (4) Bleed air valve, YAAV001
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic(49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)

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(4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:

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- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P10 for the bleed air valve, YAAV001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.
- (d) Examine the electrical connector P10. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P10, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.

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- d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 3) Set these switches on the P5 forward overhead panel:
- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (i) If the electrical connector P10 is satisfactory, then continue.
- (4) Do these steps to replace the bleed air valve, YAAV001:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the bleed air valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
- NOTE: It is necessary to do the installation test for the bleed air valve to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.

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- (d) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.
- (e) Examine the electrical connectors D10434 (P3) and P10 and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10434 (P3) or P10 or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - 2) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 7) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 10) Set the APU master switch to the ON position.
- 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 12) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10434 (P3) and P10 and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Install a jumper between socket 3 and socket 4 on the electrical connector P10 at the bleed air valve, YAAV001 (SSM 49-52-31).

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- 2) Measure the resistance between pin 3 and pin 4 on the electrical connector D10434 (P3) at the 1088 bulkhead.

NOTE: The resistance must be less than 10 ohms.

- 3) Remove the jumper.

- 4) If the resistance is more than 10 ohms, then do these steps:

- a) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- b) Do this task: APU BITE Procedure, 49-60 TASK 801.

- c) Set the APU master switch to the ON position.

- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- e) If the CDU display does not show this maintenance message, then you corrected the fault.

- f) Set the APU master switch to the OFF position.

- 5) Measure the resistance between socket 4 and structural ground on the APU firewall receptacle D10434 at the 1088 bulkhead.

NOTE: The resistance must be less than 5 ohms (short circuit).

- 6) If the resistance is more than 5 ohms, then do these steps:

- a) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).

- b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

- c) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.

- d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO-NOT-OPERATE tag from the APU master switch.

- f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

- g) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the P5 forward overhead panel.

- h) Make sure the engines 1 and/or 2 BLEED switches are OFF.

- i) Make sure the L PACK and R PACK switches are OFF.

- j) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

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- k) Set the APU BLEED switch to the OFF position.
 - l) Set the ISOLATION VALVE switch to the CLOSE position.
 - m) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - n) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - o) Set the APU master switch to the ON position.
 - p) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - q) If the CDU display does not show this maintenance message, then you corrected the fault.
 - r) Set the APU master switch to the OFF position.
- 7) If the resistance is less than 10 ohms between pin 3 and pin 4 on the electrical connector D10434 (P3) and less than 5 ohms from socket 4 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
- a) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Set these switches on the P5 forward overhead panel:
- Set the ISOLATION VALVE switch to the OPEN position.
 - Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - Make sure the L PACK and R PACK switches are OFF.
 - Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 7) Set these switches on the P5 forward overhead panel:
- Set the APU BLEED switch to the OFF position.
 - Set the ISOLATION VALVE switch to the CLOSE position.
- 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 10) Set the APU master switch to the ON position.
- 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- If the CDU display does not show this maintenance message, then you corrected the fault.
- 12) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
- Install a jumper between socket 3 and socket 4 on the APU firewall receptacle D10434 at the 1088 bulkhead (SSM 49-52-31).
 - Measure the resistance between pin C9 and structural ground on the electrical connector D3599B at the electronic control unit, M1709.
- NOTE: The resistance must be less than 10 ohms.
- Remove the jumper.
 - If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- 6) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

NOTE: If the circuit is satisfactory, then do the installation test for the electronic control unit to complete the fault isolation task for this maintenance message.

- 7) If there was a problem with the circuit, then do these steps:
- a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
- c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- d) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the P5 forward overhead panel.

- e) Make sure the engines 1 and/or 2 BLEED switches are OFF.
- f) Make sure the L PACK and R PACK switches are OFF.
- g) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- h) Set the APU BLEED switch to the OFF position.
- i) Set the ISOLATION VALVE switch to the CLOSE position.
- j) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- k) Do this task: APU BITE Procedure, 49-60 TASK 801.
- l) Set the APU master switch to the ON position.

- m) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- n) If the CDU display does not show this maintenance message, then you corrected the fault.

- o) Set the APU master switch to the OFF position.

- 8) If the circuit is satisfactory, then continue.

- (7) Do these steps to replace the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.

- (b) Replace the electronic control unit, M1709. These are the tasks:

- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Set these switches on the P5 forward overhead panel:
- 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.
- NOTE:** The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:
- 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (l) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

804. Bleed Air Valve Circuit Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-52240 BLEED AIR VALVE CIRCUIT SHOWS HIGH CURRENT
- (2) This fault is set when there is a short across the solenoid driver for the bleed air valve. The electronic control unit does a check of a current in the high side driver for the bleed air valve. If the electronic control unit senses an overcurrent condition in the solenoid circuit and the driver is set to on, then there is a short across the solenoid driver and the driver is set to off immediately. The APU bleed air is not available during the APU operation.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the bleed air valve, YAAV001
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the bleed air valve, YAAV001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.
- (d) Examine the electrical connector P10. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P10, then do these steps:
 - 1) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P10 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the bleed air valve, YAAV001 (SSM 49-52-31):
 - a) Pin 1 and pin 2, specified resistance of more than 20 ohms.
 - b) Pin 1 and pin 5, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the bleed air valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10434 (P3) (SSM 49-52-31):
 - a) Pin 1 and pin 5, specified resistance of more than 20 ohms.
 - b) Pin 5 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:

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- a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 1 and structural ground on the APU firewall receptacle D10434.
- NOTE:** The resistance must be less than 5 ohms (short circuit).
- 4) If the resistance is more than 5 ohms, then do these steps:
- a) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) Set the APU master switch to the ON position.
 - g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - h) If the CDU display does not show this maintenance message, then you corrected the fault.
 - i) Set the APU master switch to the OFF position.
- 5) If the resistance is in the range specified for each pair of pins on the electrical connector D10434 (P3) and less than 5 ohms from socket 1 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B10 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 20 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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801. IGV Actuator LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52183 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE

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- (2) This fault is set when there is an open in the linear variable differential transformer (LVDT) excitation circuit. An excitation voltage is applied continuously to the LVDT in the inlet guide vane (IGV) actuator. An open in the LVDT excitation circuit and a loss of the position signal shows the voltage is more than 3.5 V DC and the current is less than 3 mA.

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- (3) With the loss of the position signal, the position of the inlet guide vanes is fully closed and APU bleed air is not available during the APU operation.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the IGV actuator, YAAV002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic(49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

3) Do this task: APU BITE Procedure, 49-60 TASK 801.

4) Set the APU master switch to the ON position.

5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

6) Set the APU master switch to the OFF position.

(c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

(a) Make sure the APU master switch is OFF.

(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

(c) If there was a problem with the airplane wire harness, then do these steps:

1) Do this task: APU BITE Procedure, 49-60 TASK 801.

2) Set the APU master switch to the ON position.

3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

4) Set the APU master switch to the OFF position.

(d) If the airplane wire harness is satisfactory, then continue.

- (3) Do this check of the IGV actuator, YAAV002:

(a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGV actuator, YAAV002.
- (d) Examine the electrical connector P17. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 6 on the IGV actuator, YAAV002 (SSM 49-52-31).

NOTE: The resistance must be less than 300 ohms.
 - 2) If the resistance is more than 300 ohms, then do these steps:
 - a) Replace the IGV actuator, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 300 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 15 and pin 30 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be less than 300 ohms.

- 2) If the resistance is more than 300 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 300 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A10 and pin B10 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 300 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

802. IGV Actuator LVDT Shows Low Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52186 IGV ACTUATOR LVDT SHOWS LOW SIDE GROUNDED

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- (2) This fault is set when there is a short to ground in the Linear Variable Differential Transformer (LVDT) excitation circuit. An excitation voltage is applied continuously to the LVDT in the Inlet Guide Vane Actuator (IGVA). A short to ground in the LVDT excitation circuit and a loss of the position signal shows the voltage is less than 2.5V DC and the current is less than 3 mA. With the loss of the position signal, the position of the inlet guide vanes is fully closed and Auxiliary Power Unit (APU) bleed air is not available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) IGVA, YAAV002
- (2) Electronic Control Unit (ECU), M1709
- (3) Engine wire harness
- (4) Airplane wire harness
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGVA, YAAV002:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

IGVA	IGVA	
P17	P17	RESISTANCE
pin 6	pin 10	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

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- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-52-31):

APU

D10436 (P2)

	RESISTANCE
pin 30 GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):
- | ECU
D3599A | | RESISTANCE |
|---------------|--------|------------|
| pin B10 | GROUND | >100 KΩ |
- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
 - 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the problem.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.

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- (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

803. IGV Actuator LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
(a) 49-52187 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE

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- (2) The ac excitation voltage is continuously applied to the LVDT. The excitation circuit furnishes a BITE voltage and a measurement related to the current to the software. If excitation voltage is low and the secondary voltages are low the LVDT excitation circuit is failed shorted.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
(2) Airplane wire harness problem
(3) Internal problem with the IGV actuator, YAAV002
(4) Wiring problem with the engine wire harness
(5) Wiring problem with the airplane wire harness
(6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
(2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
(3) (SSM 49-52-31)
(4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
(a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

3) Do this task: APU BITE Procedure, 49-60 TASK 801.

4) Set the APU master switch to the ON position.

5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

6) Set the APU master switch to the OFF position.

(c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

(a) Make sure the APU master switch is OFF.

(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

(c) If there was a problem with the airplane wire harness, then do these steps:

1) Do this task: APU BITE Procedure, 49-60 TASK 801.

2) Set the APU master switch to the ON position.

3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

- a) If the CDU display does not show this maintenance message, then you corrected the fault.

4) Set the APU master switch to the OFF position.

(d) If the airplane wire harness is satisfactory, then continue.

- (3) Do this check of the IGV actuator, YAAV002:

(a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGV actuator, YAAV002.
- (d) Examine the electrical connector P17. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 6 on the IGV actuator, YAAV002 (SSM 49-52-31).
NOTE: The resistance must be more than 50 ohms.
 - 2) If the resistance is less than 50 ohms, then do these steps:
 - a) Replace the IGV actuator, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 50 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 15 and pin 30 on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-52-31).

NOTE: The resistance must be more than 50 ohms.
 - 2) If the resistance is less than 50 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 50 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A10 and pin B10 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 50 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

804. IGV Actuator LVDT Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52189 IGV ACTUATOR LVDT SHOWS OPEN CIRCUIT

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- (2) The LVDT demodulator circuit furnishes two bit voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If the sum of the secondary voltages are out of limits or secondary voltages are low the fault is set.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the IGV actuator, YAAV002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

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- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGV actuator, YAAV002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGV actuator, YAAV002.
- (d) Examine the electrical connector P17. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the IGV actuator, YAAV002 (SSM 49-52-31):
- a) Pin 2 and pin 3, specified resistance of less than 100 ohms.
- b) Pin 2 and pin 5, specified resistance of less than 100 ohms.
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the IGV actuator, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
a) If the CDU display does not show this maintenance message, then you corrected the fault.
7) Set the APU master switch to the OFF position.
(f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) (SSM 49-52-31):
 - a) Pin 6 and pin 16, specified resistance of less than 100 ohms.
 - b) Pin 16 and pin 31, specified resistance of less than 100 ohms.
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin A13 and pin B12, specified resistance of less than 100 ohms.
 - b) Pin B12 and pin B13, specified resistance of less than 100 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

805. IGV Actuator Position Disagrees With Command - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 49-52190 IGV ACTUATOR POSITION DISAGREES WITH COMMAND
 - (b) 49-52191 IGV ACTUATOR POSITION DISAGREES WITH COMMAND

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- (2) This fault is set when there is a problem with the IGVA, YAAV002 or the IGVA, YAAV002 linkage. The ECU, M1709 does a check if there is sufficient fuel pressure to move the IGVA, YAAV002. If the stroke position error is more than 5% for 10 seconds, then the fault is set. If the inlet guide vanes are permanently set in the open position, an APU start and operation problem can occur. If this failure occurs, the APU continues to operate with the inlet guide vanes at the failed position.
- (3) In cold weather and/or high humidity conditions, it is possible that the bleed air system is not available and these maintenance message(s) show on the CURRENT STATUS page in the CDU display. If this fault occurs during an APU operation, it is possible to correct this fault when you set the APU BLEED switch to the OFF position and then to the ON position.
 - (a) If the APU must be shut down to correct the condition, wait approximately 3-5 minutes before you start the APU again.
- (4) If this fault occurs and the APU is not in operation (shutdown), it is possible to correct this fault when you start and operate the APU again and apply an APU pneumatic load (bleed air system energized).
- (5) The APU FAULT light on the Forward Overhead Panel, P5 will show for this maintenance message if you do not start the APU again.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) Fuel supply and return tubes for the IGVA, YAAV002
- (4) Linkage with the IGVA, YAAV002
- (5) IGVA, YAAV002
- (6) Bleed Valve, YAAV001
- (7) ECU, M1709
- (8) APU
- (9) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

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E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do an operational test of the APU:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - (c) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do the Repair Confirmation at the end of this task.
 - (f) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.

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- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do the Repair Confirmation at the end of this task.
 - 6) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (4) Do a general visual inspection of the fuel supply and return tubes for the IGVA, YAAV002:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Visually examine the fuel supply and return tubes for the IGVA, YAAV002 for leakage, loose connections and damage.
 - (c) If there was leakage, loose connections or damage, then do these steps:
 - 1) Repair or replace the fuel supply and return tubes for the IGVA, YAAV002.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 4) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 6) Do the Repair Confirmation at the end of this task.
 - 7) Set the APU master switch to the OFF position.
 - (d) If there were no leakage, loose connections and damage, then continue.
- (5) Do an operational test of the IGVA, YAAV002 linkage:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.

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- (c) If there was a problem with the inlet guide vanes, then do these steps:
- 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
- (d) If the inlet guide vanes are satisfactory, then continue.
- (6) Do these steps to replace the IGVA, YAAV002:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801

NOTE: It is necessary to do the installation test for the IGVA to see if this maintenance message shows on the CDU display.
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the Bleed Valve, VAA001:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the Bleed Valve, VAA001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - (c) Do the Repair Confirmation at the end of this task.
- (8) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (i) Do the Repair Confirmation at the end of this task.
 - (j) Set the APU master switch to the OFF position.
- (9) Do this check of the IGVA, YAAV002:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.

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- b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
- c) Make sure that the L PACK and R PACK switches are OFF.
- d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- 6) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 8) Do the Repair Confirmation at the end of this task.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

IGVA	IGVA	RESISTANCE
P17	P17	
pin 4	pin 10	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- NOTE: It is necessary to do the installation test for the IGVA to see if this maintenance message shows on the CDU display.
- b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (10) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 5) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 6) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 8) Do the Repair Confirmation at the end of this task.
 - 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-52-31):

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APU

D10436 (P2)

pin 5 GROUND

RESISTANCE

>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - NOTE:** It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (11) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - NOTE:** Do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 5) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 6) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 8) Do the Repair Confirmation at the end of this task.
 - 9) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A

	<u>RESISTANCE</u>
pin A11 GROUND	>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the ECU, M1709. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

NOTE: If the circuit is satisfactory, then do the installation test for the ECU, M1709 to complete the fault isolation task for this maintenance message.

- 4) If there was a problem with the circuit, then do these steps:
 - a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
- c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- d) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the Forward Overhead Panel, P5.

- e) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
- f) Make sure that the L PACK and R PACK switches are OFF.
- g) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- h) Set the APU BLEED switch to the OFF position.
- i) Set the ISOLATION VALVE switch to the CLOSE position.
- j) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- k) Do the Repair Confirmation at the end of this task.
- l) Set the APU master switch to the OFF position.

5) If the circuit is satisfactory, then continue.

(12) Do these steps to replace the APU:

- (a) Make sure that the APU master switch is OFF.
- (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.

- (c) Do the Repair Confirmation at the end of this task.
- (d) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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806. IGV Actuator LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52192 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE

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- (2) The LVDT demodulator circuit furnishes two bit voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If the secondary voltage is out of the limit, then the fault is set.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) IGVA, YAAV002
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGVA, YAAV002:
 - (a) Make sure that the APU master switch is OFF and install a DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task,
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
- 1) Do a resistance check at the IGVA, YAAV002 as follows (WDM 49-52-31):

<u>IGVA</u>		<u>IGVA</u>	<u>RESISTANCE</u>
<u>P17</u>		<u>P17</u>	
pin 2	.....	pin 3	10-120 Ω
pin 2	.....	pin 5	10-120 Ω
pin 3	.....	pin 10	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
- a) Replace the IGVA, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- b) Do the Repair Confirmation at the end of this task.
- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO NOT OPERATE tag, STD-858.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch.
- a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (WDM 49-52-31):

APU

D10436 (P2)	D10436 (P2)	RESISTANCE
pin 6	pin 16	10-100 Ω
pin 16	pin 31	10-100 Ω

D10436 (P2)	RESISTANCE
pin 31	GROUND >100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.

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- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO NOT OPERATE tag, STD-858 from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A	D3599A	RESISTANCE
pin A13	pin B12	10-100 Ω
pin B12	pin B13	10-100 Ω

D3599A	RESISTANCE
pin B13 GROUND	>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.

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- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

807. IGV Actuator LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52193 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) The LVDT demodulator circuit furnishes two bit voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If the secondary voltage is out of the limit, then the fault is set.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) IGVA, YAAV002
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGVA, YAAV002:

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- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task,
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

IGVA	IGVA	
P17	P17	RESISTANCE
pin 2	pin 3	10-120 Ω
pin 2	pin 5	10-120 Ω
pin 5	pin 10	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
a) Do the Repair Confirmation at the end of this task.
4) Set the APU master switch to the OFF position.
(f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

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APU

D10436 (P2)	D10436 (P2)	RESISTANCE
pin 6	pin 16	10-100 Ω
pin 16	pin 31	10-100 Ω

D10436 (P2)		RESISTANCE
pin 6	GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

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ECU

D3599A

pin A13
pin B12

D3599A

pin B12
pin B13

RESISTANCE

10-100 Ω
10-100 Ω

D3599A

pin A13

GROUND

RESISTANCE

>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

808. IGV Actuator Torque Motor Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52194 IGV ACTUATOR TORQUE MOTOR SHOWS OPEN CIRCUIT

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- (2) For this test, the IGV actuator torque motor is commanded. The ECU measures both the torque motor drive current and the resulting voltage across the torque motor load. If the voltage bit is high and the current bit is low, the load is open.

SIA ALL

- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the IGV actuator, YAAV002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic(49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

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- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGV actuator, YAAV002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGV actuator, YAAV002.
- (d) Examine the electrical connector P17. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
- 1) Measure the resistance between pin 4 and pin 7 on the IGV actuator, YAAV002 (SSM 49-52-31).
- NOTE:** The resistance must be less than 100 ohms.
- 2) If the resistance is more than 100 ohms, then do these steps:
- a) Replace the IGV actuator, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 100 ohms, then do these steps and continue:
- a) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 5 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be less than 100 ohms.
 - 2) If the resistance is more than 100 ohms, then do these steps:

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- a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 100 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A11 and pin A12 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 100 ohms.

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- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
- 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

809. IGV Actuator Torq Motor Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52195 IGV ACTUATOR TORQ MOTOR SHOWS SHORT CIRCUIT

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- (2) For this test, the IGV actuator torque motor is commanded. The ECU measures both the torque motor drive current and the resulting voltage across the torque motor load. If the current is normal and the voltage bit is low, then the load is shorted.

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- (3) A short across the coil of the torque motor will not open the inlet guide vanes. The APU bleed air is not available during the APU operation.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem

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- (3) Internal problem with the IGV actuator, YAAV002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGV actuator, YAAV002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGV actuator, YAAV002.
- (d) Examine the electrical connector P17. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 4 and pin 7 on the IGV actuator, YAAV002 (SSM 49-52-31).

NOTE: The resistance must be more than 15 ohms.
 - 2) If the resistance is less than 15 ohms, then do these steps:
 - a) Replace the IGV actuator, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 15 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGV actuator, YAAV002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 5 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be more than 15 ohms.
 - 2) If the resistance is less than 15 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is more than 15 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A11 and pin A12 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 15 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.

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- c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- d) If the CDU display does not show this maintenance message, then you corrected the fault.
- e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

810. IGV Actuator Torq Motor Shows Low Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52196 IGV ACTUATOR TORQ MOTOR SHOWS LOW SIDE GROUNDED
- (2) This fault is set when there is a short to ground in the torque motor circuit for the IGVA. The ECU does a check of the voltage and current in the torque motor for the IGVA. A short to ground in the torque motor circuit shows the voltage is less than 3.0V DC and the current is less than 20 mA. The APU bleed air is not available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) IGVA, YAAV002
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGVA, YAAV002:

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- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task,
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
 - 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

IGVA	IGVA	
P17	P17	RESISTANCE
pin 7	pin 10	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
(d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
a) Do the Repair Confirmation at the end of this task.
4) Set the APU master switch to the OFF position.
(f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

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APU

D10436 (P2)

pin 1 GROUND

RESISTANCE

>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A

pin A12 GROUND

RESISTANCE

>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).

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- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

811. IGV Actuator LVDT Shows High Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52301 IGV ACTUATOR LVDT SHOWS HIGH SIDE GROUNDED
- (2) This fault is set when there is an open or short to ground in the high side driver of the LVDT for the IGVA. An excitation voltage is applied continuously to the LVDT. An open or short to ground in the high side driver of the LVDT circuit and a loss of the position signal shows the voltage is less than 0.8V DC and the current is less than 3 mA. With the loss of the position signal, the position of the inlet guide vanes is fully closed. If this failure occurs, the APU bleed air is not available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) IGVA, YAAV002
- (4) ECU, M1709
- (5) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (c) If there was a problem with the airplane wire harness, then do these steps:
- 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the IGVA, YAAV002:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
- 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task,
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
- 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

IGVA	IGVA	RESISTANCE
P17	P17	
pin 1	pin 10	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
 - b) Do the Repair Confirmation at the end of this task.

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- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.

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- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

		RESISTANCE
pin 15	GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
- Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- Make sure that the APU master switch is OFF.
 - Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
 - If the electrical connector D3599 is satisfactory, then do these steps:
 - Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

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ECU

D3599A

pin A10 GROUND

RESISTANCE

>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. Surge Control Valve LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52188 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE

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- (2) An ac excitation voltage is continuously applied to the LVDT. The excitation circuitry provides voltages to the software which indicate the amplitude of the excitation voltage and the current flow through the circuit. If the excitation voltage is normal and the secondary voltages are low the LVDT primary circuit is open.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Internal problem with the surge control valve, YAAV003
- (2) Electronic control unit, M1709
- (3) Engine wire harness problem
- (4) Airplane wire harness problem.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do this check of the surge control valve, YAAV003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 4 and pin 5 on the surge control valve, YAAV003 (SSM 49-52-31).

NOTE: The resistance must be less than 100 ohms.
 - 2) If the resistance is more than 100 ohms, then do these steps:
 - a) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801,
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 100 ohms, then do these steps and continue:
- a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (2) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (3) Do a general visual inspection of the engine wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802,
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (4) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then the surge control valve LVDT is satisfactory.

————— **END OF TASK** —————

802. Surge Valve Torque Motor Shows Low Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52280 SURGE VALVE TORQUE MOTOR SHOWS LOW SIDE GROUNDED
- (2) This fault is set when there is a ground in the torque motor circuit for the Surge Control Valve (SCV). The Electronic Control Unit (ECU) does a check of the voltage and current in the torque motor for the SCV. A ground in the torque motor circuit shows the voltage is between 0.3V and 1.0V DC and the current is less than 20 mA. If this failure occurs, the positions of the SCV is fully open and the inlet guide vanes is fully closed. The Auxiliary Power Unit (APU) bleed air is not available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (c) If there was a problem with the airplane wire harness, then do these steps:
- 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the SCV, YAAV003:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
- 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

SCV	SCV	RESISTANCE
P9	P9	
pin 7	pin 9	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do the Repair Confirmation at the end of this task.

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- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.

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- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU		RESISTANCE
D10436 (P2)		
pin 8	GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:

- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do the Repair Confirmation at the end of this task.
- c) Set the APU master switch to the OFF position.

- 3) If the resistance is in the specified range, then do these steps and continue:

- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure that the APU master switch is OFF.
- (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do the Repair Confirmation at the end of this task.
- 3) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

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ECU

D3599A

pin B15 GROUND

RESISTANCE

>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

803. Surge Control Valve LVDT Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52281 SURGE CONTROL VALVE LVDT SHOWS OPEN CIRCUIT

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- (2) The LVDT demodulator circuit furnishes two bit voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If these secondary voltages are outside the limits, or the sum of the secondary voltages is outside the limits, then the fault is set. If the excitation is OK, then the fault indicates an open secondary center-tap. The position signal is invalid if this fault occurs. With loss of the position signal, the actuator can only be controlled to either end-stop.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the surge control valve, YAAV003
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the surge control valve, YAAV003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the surge control valve, YAAV003 (SSM 49-52-31):
 - a) Pin 1 and pin 2, specified resistance of less than 200 ohms.
 - b) Pin 2 and pin 3, specified resistance of less than 200 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) (SSM 49-52-31):
 - a) Pin 2 and pin 10, specified resistance of less than 200 ohms.
 - b) Pin 10 and pin 23, specified resistance of less than 200 ohms.
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:

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- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin C14 and pin C15, specified resistance of less than 200 ohms.

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- b) Pin C14 and pin D15, specified resistance of less than 200 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

END OF TASK

804. Surge Control Valve LVDT Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52282 SURGE CONTROL VALVE LVDT SHOWS SHORT CIRCUIT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) An AC excitation voltage is continuously applied to the LVDT. The excitation circuit furnishes a BITE voltage and a voltage measurement related to current. If the excitation voltage is low and the secondary voltage is low then the LVDT excitation circuit is failed shorted. The position signal is invalid if this fault occurs. With loss of the position signal, the actuator can only be controlled to either end-stop. Electric operation is unaffected. A failed surge valve position flag causes the position fault to be disabled.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the surge control valve, YAAV003
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the surge control valve, YAAV003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 4 and pin 5 on the surge control valve, YAAV003 (SSM 49-52-31).

NOTE: The resistance must be more than 20 ohms.
 - 2) If the resistance is less than 20 ohms, then do these steps:
 - a) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 20 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 9 and pin 22 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be more than 20 ohms.
 - 2) If the resistance is less than 20 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is more than 20 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A14 and pin A15 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 20 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

805. Surge Control Valve LVDT Shows Low Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52283 SURGE CONTROL VALVE LVDT SHOWS LOW SIDE GROUNDED
- (2) This fault is set when there is a short to ground in the low side of the Linear Variable Differential Transformer (LVDT) primary coil circuit for the SCV. An excitation voltage is applied continuously to the LVDT. A short to ground in the low side of the LVDT primary coil circuit shows the voltage is between 0.8V and 2.5V DC and the current is less than 3 mA. With the loss of the position signal, the positions of the SCV is fully open and the inlet guide vanes is fully closed. If this failure occurs, low or no APU bleed air is available during the SCV operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (c) If there was a problem with the airplane wire harness, then do these steps:
- 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the SCV, YAAV003:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
- 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

SCV	SCV	RESISTANCE
P9	P9	
pin 5	pin 9	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do the Repair Confirmation at the end of this task.

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- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.

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- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU		RESISTANCE
D10436 (P2)		
pin 9	GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:

- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do the Repair Confirmation at the end of this task.
- c) Set the APU master switch to the OFF position.

- 3) If the resistance is in the specified range, then do these steps and continue:

- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure that the APU master switch is OFF.
- (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do the Repair Confirmation at the end of this task.
- 3) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

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ECU

D3599A

pin A15 GROUND

RESISTANCE

>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

806. Surge Valve Position Disagrees With Command - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52284 SURGE VALVE POSITION DISAGREES WITH COMMAND
- (2) This fault is set when the position of the SCV does not agree with the commanded position. The ECU does a check if there is sufficient fuel pressure to move the SCV. If the stroke position error is more than 10 degrees for 20 seconds, then the fault is set. If there is a surge in the bleed air system, the inlet guide vanes are commanded close and the SCV opens (or stays in its permanent position). The APU bleed air is not available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) Fuel supply and return tubes for the SCV, YAAV003
- (4) SCV, YAAV003
- (5) ECU, M1709
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do the Repair Confirmation at the end of this task.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do an inspection of the fuel supply and return tubes for the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Examine the fuel supply and return tubes for the SCV, YAAV003 for leakage and damage.
 - (c) If there was leakage or damage, then do these steps:
 - 1) Replace the fuel supply and return tube(s) or repair the problems that you find.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 4) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.

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- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) Do the Repair Confirmation at the end of this task.
- 7) Set the APU master switch to the OFF position.
- (d) If there were no leakage and no damage, then continue.
- (4) Do these steps to replace the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - NOTE:** It is necessary to do the installation test for the surge control valve to see if this maintenance message shows on the CDU display.
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE:** Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.**NOTE:** The bleed duct pressure must be more than 10 psig.
 - (g) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.

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- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (i) Do the Repair Confirmation at the end of this task.
 - (j) Set the APU master switch to the OFF position.
- (6) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 6) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- 8) Do the Repair Confirmation at the end of this task.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

RESISTANCE

pin 21 GROUND >100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (7) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: Do not do the installation test for the ECU. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Set these switches on the Forward Overhead Panel, P5:
- a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 6) Set these switches on the Forward Overhead Panel, P5:
- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 8) Do the Repair Confirmation at the end of this task.
- 9) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A

pin B14 GROUND

RESISTANCE

>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: Do not do the installation test for the ECU. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 6) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 7) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
- 8) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 9) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 10) Do the Repair Confirmation at the end of this task.
- 11) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

807. Surge Control Valve LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52285 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) The LVDT demodulator circuit furnishes two voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If these secondary voltages are outside of the limits, then the fault is set. The position signal is invalid if this fault occurs. With loss of the position signal, the actuator can only be controlled to either end-stop.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- 3) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

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SCV P9	SCV P9	RESISTANCE
pin 1	pin 2	50-200 Ω
pin 1	pin 9	>100 K Ω
pin 2	pin 3	50-200 Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do the Repair Confirmation at the end of this task.
5) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU		APU	
D10436 (P2)		D10436 (P2)	RESISTANCE
pin 2	.....	pin 10	50-200 Ω
pin 10	.....	pin 23	50-200 Ω

APU			
D10436 (P2)			RESISTANCE
pin 23	.....	GROUND	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do the Repair Confirmation at the end of this task.
c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:

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- (a) Make sure that the APU master switch is OFF.
- (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU D3599A		ECU D3599A	RESISTANCE
pin C14	.....	pin C15	50-200 Ω
pin C14	.....	pin D15	50-200 Ω

ECU D3599A		RESISTANCE
pin C15	 GROUND	>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
 - 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- (a) If the CDU display does not show this maintenance message, then you corrected the problem.
- (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

808. Surge Control Valve LVDT Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52286 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE

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- (2) The LVDT demodulator circuit furnishes two voltage signals that indicate the peak voltages developed across the center tapped coils of the LVDT secondary windings. If these secondary voltages are outside of the limits, then the fault is set. The position signal is invalid if this fault occurs. With loss of the position signal, the actuator can only be controlled to either end-stop.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

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E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the SCV, YAAV003:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.

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- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
- 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

SCV		SCV	
P9		P9	RESISTANCE
pin 1	.....	pin 2	50-200 Ω
pin 2	.....	pin 3	50-200 Ω
pin 3	.....	pin 9	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:

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- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU D10436 (P2)	APU D10436 (P2)	RESISTANCE
pin 2	pin 10	50-200 Ω
pin 10	pin 23	>100 K Ω
pin 10	pin 23	50-200 Ω

APU D10436 (P2)	RESISTANCE
pin 23	GROUND >100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:

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- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do the Repair Confirmation at the end of this task.
- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU		ECU	RESISTANCE
D3599A		D3599A	
pin C14	.....	pin C15	50-200 Ω
pin C14	.....	pin D15	50-200 Ω

ECU		RESISTANCE
D3599A		
pin D15	 GROUND	>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 4) If there was a problem with the circuit, then do these steps:
 - a) Do the Repair Confirmation at the end of this task.
 - b) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

809. Surge Valve Torque Motor Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52287 SURGE VALVE TORQUE MOTOR SHOWS OPEN CIRCUIT
- (2) This fault is set when there is an open across the coil of the torque motor in the surge control valve. The electronic control unit does a check of the voltage and current in the torque motor for the surge control valve. An open across the coil of the torque motor shows the voltage is high and the current is low. If this failure occurs, the position of the surge control valve is fully open and the inlet guide vane is fully closed. Low or no APU bleed air is available during the APU operation.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the surge control valve, YAAV003
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the surge control valve, YAAV003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 7 and pin 8 on the surge control valve, YAAV003 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 80 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:

- 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 8 and pin 21 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If the resistance is more than 80 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 80 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B14 and pin B15 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.

- (6) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— END OF TASK —————

810. Surge Valve Torque Motor Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52288 SURGE VALVE TORQUE MOTOR SHOWS SHORT CIRCUIT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) The ECU measures both the torque motor drive current and the resulting voltage across the torque motor load. If voltage is high and current is low a fault is declared.

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- (3) If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. Low or no APU bleed air is available during the APU operation.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the surge control valve, YAAV003
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the surge control valve, YAAV003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 7 and pin 8 on the surge control valve, YAAV003 (SSM 49-52-31).

NOTE: The resistance must be more than 10 ohms.
 - 2) If the resistance is less than 10 ohms, then do these steps:
 - a) Replace the surge control valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is more than 10 ohms, then do these steps and continue:
- a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 8 and pin 21 on the electrical connector D10436 (P2) (SSM 49-52-31).

NOTE: The resistance must be more than 10 ohms.
 - 2) If the resistance is less than 10 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 10 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.

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- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B14 and pin B15 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be more than 10 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.



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- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

811. Surge Control Valve LVDT Shows High Side Grounded - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52302 SURGE CONTROL VALVE LVDT SHOWS HIGH SIDE GROUNDED
- (2) This fault is set when there is an open or short to ground in the high side driver circuit of the LVDT in the SCV. An excitation voltage is applied continuously to the LVDT. An open or short to ground in the high side driver circuit of the LVDT and a loss of the position signal shows the voltage is less than 0.8V DC and the current is less than 3 mA. With the loss of the position signal, the position of the SCV is fully open. If this failure occurs, low or no APU bleed air is available during the APU operation.
- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the SCV, YAAV003:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the SCV, YAAV003.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do the Repair Confirmation at the end of this task.
5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

SCV	SCV	
P9	P9	RESISTANCE
pin 4	pin 9	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
- a) Replace the SCV, YAAV003. These are the tasks:
- Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
- b) Do the Repair Confirmation at the end of this task.
c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- a) Re-connect the electrical connector P9 to the SCV, YAAV003.
b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU

D10436 (P2)

pin 22 GROUND

RESISTANCE

>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- Make sure that the APU master switch is OFF.
- Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
- If the electrical connector D3599 is satisfactory, then do these steps:
 - Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU

D3599A

	RESISTANCE
pin A14 GROUND	>100 K Ω

- If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - If there was a problem with the circuit, then do these steps:
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
 - If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
- Make sure that the APU master switch is OFF.
 - Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.

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G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. Inlet Pressure Sensor Disagrees With Bus Data - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52219 INLET PRESSURE SENSOR DISAGREES WITH BUS DATA
- (2) This fault is set when the air data for the inlet pressure sensor (P2) on the APU and the airplane sensor do not agree with each other. There is a problem with the inlet pressure sensor when the air data for the airplane sensor is correct. If the difference of the values from the inlet pressure sensor and the airplane sensor is more than 2 psia, then this fault is set. If this failure occurs, the air data for the inlet pressure sensor is replaced with the corrected air data from the airplane and continues the APU operation. An APU start and operation problem at altitude can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P18 for the inlet pressure sensor (P2), YAAT003
- (4) Inlet pressure sensor (P2), YAAT003
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

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- (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: This maintenance message can show for a flight condition only. If you do the Fault Isolation Procedure below, then you cannot complete the repair confirmation to not show this maintenance message on the CURRENT STATUS page for a ground operation condition.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

(a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

(b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

2) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

3) Do this task: APU BITE Procedure, 49-60 TASK 801.

4) Set the APU master switch to the ON position.

5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

a) If the CDU display does not show this maintenance message, then you corrected the fault.

6) Set the APU master switch to the OFF position.

(c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

(a) Make sure the APU master switch is OFF.

(b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

(c) If there was a problem with the airplane wire harness, then do these steps:

1) Do this task: APU BITE Procedure, 49-60 TASK 801.

2) Set the APU master switch to the ON position.

3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

a) If the CDU display does not show this maintenance message, then you corrected the fault.

4) Set the APU master switch to the OFF position.

(d) If the airplane wire harness is satisfactory, then continue.

- (3) Do a visual inspection of the electrical connector P18 for the inlet pressure sensor (P2), YAAT003:

(a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
(d) Examine the electrical connector P18. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
(f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
(h) If there was a problem with the electrical connector P18, then do these steps:
 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 2) Set the APU master switch to the ON position.
 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 a) If the CDU display does not show this maintenance message, then you corrected the fault.
 4) Set the APU master switch to the OFF position.
(i) If the electrical connector P18 is satisfactory, then continue.
(4) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
 (a) Make sure the APU master switch is OFF.
 (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 • Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 • Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
 (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 (d) Set the APU master switch to the ON position.
 (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 1) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (e) Examine the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P18 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912 are satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
 - a) Pin 11 and pin 24, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 24 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D10912 (P1) or D3599 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D12 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 4) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 5) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 6) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

802. Inlet Pressure Sensor Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52221 INLET PRESSURE SENSOR SHOWS OUT OF RANGE HIGH
- (2) This fault is set when there is a short to ground in the inlet pressure sensor circuit or the air data for the inlet pressure sensor (P2) is more than 18 psia. A short to ground at the negative (-) lead can cause a high differential voltage of 5.0V DC at the sensor input to the electronic control unit. The pressure range for the sensor conditioning circuit is between -2.0 psia and +21.8 psia. If this failure occurs, the air data for the inlet pressure sensor is replaced with the corrected air data from the airplane and continues the APU operation. An APU start and operation problem at altitude can occur.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message if you have a start and operation problem at altitude.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P18 for the inlet pressure sensor (P2), YAAT003
- (4) Inlet pressure sensor (P2), YAAT003
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)

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(4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P18 for the inlet pressure sensor (P2), YAAT003:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (d) Examine the electrical connector P18. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P18, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P18 is satisfactory, then continue.
- (4) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (e) Examine the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P18 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.

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(g) If the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912 are satisfactory, then do these steps:

- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
 - a) Pin 11 and pin 24, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 24 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 3 and socket 4 on the electrical connector P18 at the inlet pressure sensor (P2), YAAT003.
- 3) Measure the resistance between pin 11 and pin 24 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.

- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

(6) Do this check of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or D3599 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D12 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 11 and socket 24 on the APU firewall receptacle D10912 at the 1088 bulkhead.
 - 3) Measure the resistance between pin D12 and pin D13 on the electrical connector D3599A.
NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- b) Set the APU master switch to the ON position.
- c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- d) If the CDU display does not show this maintenance message, then you corrected the fault.
- e) Set the APU master switch to the OFF position.
- 9) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

803. Inlet Pressure Sensor Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52222 INLET PRESSURE SENSOR SHOWS OUT OF RANGE LOW

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- (2) This fault is set if P2 reads below the test limit. The minimum possible P2 reading in operation is 1.96 psia at 43,000 feet, minus 2 percent sensor and ECU tolerance, providing margin from nuisance trips. The conditioner circuit range is -3.0 to 20.0 psia so BITE limit can be read without saturating.

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- (3) If this failure occurs, the air data for the inlet pressure sensor is replaced with the corrected air data from the airplane and continues the APU operation. An APU start and operation problem at altitude can occur.
- (4) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message if you have a start and operation problem at altitude.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P18 for the inlet pressure sensor (P2), YAAT003
- (4) Inlet pressure sensor (P2), YAAT003
- (5) Wiring problem with the engine wire harness

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- (6) Wiring problem with the airplane wire harness
- (7) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.

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- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P18 for the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (d) Examine the electrical connector P18. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P18, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.

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- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P18 is satisfactory, then continue.
- (4) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (e) Examine the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P18 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
- a) Pin 11 and pin 24, specified resistance of more than 100K ohms (open circuit).
- b) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).
- c) Pin 24 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 3 and socket 4 on the electrical connector P18 at the inlet pressure sensor (P2), YAAT003.
- 3) Measure the resistance between pin 11 and pin 24 on the electrical connector D10912 (P1).
- NOTE: The resistance must be less than 10 ohms.
- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.

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- f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10912 (P1) or D3599 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10912 (P1) and D3599 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):

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- a) Pin D12 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 11 and socket 24 on the APU firewall receptacle D10912 at the 1088 bulkhead.
 - 3) Measure the resistance between pin D12 and pin D13 on the electrical connector D3599A.
NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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804. Delta Pressure Sensor Shows Out of Range Drift - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52270 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT
- (2) This fault is set when there is a short to ground in the delta pressure sensor circuit or there is a problem with the delta pressure sensor. If the APU speed is less than 7% and the delta pressure indication is more than 2.0 psid, then the fault is set. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) Water (moisture condensation) and ice in the static pressure tube and total pressure tube can cause maintenance message 49-52270 to show on the CDU display. Evidence of diaphragm damage to the delta pressure sensor was caused by ice or water formed by condensation of moisture in the two pressure tubes. To prevent water accumulation in the two pressure tubes, Honeywell SB 131-49-7541 changed the two pressure tubes by adding a 0.020 inch (0.5 mm) diameter hole at the lowest point of the drip loop to drain the water from the tubes. You can find the troubleshooting task to check for blockage of unwanted materials (water or ice) or damage to the tubes in the possible causes list.
- (4) In cold weather and/or high humidity conditions, it is possible that the bleed air system is not available and maintenance message 49-52270 shows on the CURRENT STATUS page in the CDU display. If the no bleed air fault occurs during an APU operation, it is possible to correct this fault when you set the APU BLEED switch to the OFF position and then to the ON position. If the no bleed air fault occurs and the APU is not in operation (shutdown), it is possible to correct this fault when you start and operate the APU again and apply an APU pneumatic load (bleed air system energized).
- (5) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P20 for the delta pressure sensor (DP), YAAT012
- (4) Delta pressure sensor (DP), YAAT012
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Voltage problem with the airplane wire harness
- (8) Voltage problem with the engine wire harness
- (9) Blockage of unwanted materials or damage to the tubes for the delta pressure sensor and total pressure sensor
- (10) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do an operational test of the APU:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - (c) Set these switches on the P5 forward overhead panel:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
 - (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (f) Set the APU master switch to the ON position.
 - (g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then there was an intermittent fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (h) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.

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- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (4) Do a visual inspection of the electrical connector P20 for the delta pressure sensor (DP), YAAT012:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.

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- (d) Examine the electrical connector P20. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P20, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P20 is satisfactory, then continue.
- (5) Do these steps to replace the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the delta pressure sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P20 from the delta pressure sensor, YAAT012.
- (e) Examine the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P20 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 9 and pin 23, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 23 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P20 at the delta pressure sensor, YAAT012.

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- 3) Measure the resistance between pin 9 and pin 23 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.

- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
- Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.
 - Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
- Make sure that the APU master switch is OFF.
 - Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:

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- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin D9 and pin D10, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 9 and socket 23 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin D9 and pin D10 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (8) Do a voltage check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.

- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
(f) Set the APU master switch to the ON position.
(g) Do a voltage check on the APU firewall receptacle D10912, socket 2 and socket 10, at the 1088 bulkhead (SSM 49-52-31).

NOTE: The voltage must be 9.7V - 10.3V DC.

- (h) If the voltage is not 9.7V - 10.3V DC, then do these steps:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Repair the wiring problems that you find (WDM 49-52-31).
- 4) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 6) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 7) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 8) Set the APU master switch to the ON position.
- 9) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 10) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V - 10.3V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (9) Do a voltage check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P20, pin 1 to pin 2, at the delta pressure sensor (DP), YAAT012 (SSM 49-52-31).
NOTE: The voltage must be 9.7V-10.3V DC.
- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (10) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.
 - (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
 - (f) Install the sensors and tubes:

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- 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
- 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
- (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
- (11) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

805. Delta Pressure Sensor Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52271 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE HIGH
- (2) This fault is set when there is a short to ground in the delta pressure sensor circuit or there is a problem with the delta pressure sensor. The electronic control unit does a check of the delta pressure indication. The pressure range for the sensor conditioning circuit is between -2.6 psid and +29.1 psid. A short to ground in the delta pressure sensor circuit shows the delta pressure indication is more than 28.0 psid. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P20 for the delta pressure sensor (DP), YAAT012
- (4) Delta pressure sensor (DP), YAAT012
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Voltage problem with the airplane wire harness
- (8) Voltage problem with the engine wire harness
- (9) Blockage of unwanted materials or damage to the tubes for the delta pressure sensor and total pressure sensor
- (10) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic(49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this related maintenance message:
 - 1) 49-52270.
 - 2) If you find the above maintenance message, then do the Fault Isolation Procedure for this message.
 - 3) Do these steps after you do the Fault Isolation Procedure for this message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Set the ISOLATION VALVE switch to the OPEN position.
NOTE: You can find these switches on the P5 forward overhead panel.
 - c) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - d) Make sure that the L PACK and R PACK switches are OFF.

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- e) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
- f) Set the APU BLEED switch to the OFF position.
- g) Set the ISOLATION VALVE switch to the CLOSE position.
- h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- j) Set the APU master switch to the ON position.
- k) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-52271 shows.
- l) If the CDU display does not show maintenance message 49-52271, then you corrected the fault.
- m) If the CDU display shows maintenance message 49-52271, then continue.
- n) Set the APU master switch to the OFF position.
- (b) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.

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- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P20 for the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Examine the electrical connector P20. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P20, then do these steps:
- 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (i) If the electrical connector P20 is satisfactory, then continue.
- (4) Do these steps to replace the delta pressure sensor (DP), YAAT012:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the delta pressure sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801

NOTE: It is necessary to do the installation test for the delta pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:

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- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P20 from the delta pressure sensor, YAAT012.
- (e) Examine the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P20 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 7) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 9) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 10) Set the APU master switch to the ON position.
 - 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 12) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 9 and pin 23, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 23 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P20 at the delta pressure sensor, YAAT012.
 - 3) Measure the resistance between pin 9 and pin 23 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (6) Do this check of the airplane wire harness:

- Make sure that the APU master switch is OFF.
- Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:

- Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- Set these switches on the P5 forward overhead panel:
 - Set the ISOLATION VALVE switch to the OPEN position.
 - Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - Make sure that the L PACK and R PACK switches are OFF.

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- d) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
- 7) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 10) Set the APU master switch to the ON position.
- 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 12) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin D9 and pin D10, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 9 and socket 23 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin D9 and pin D10 on the electrical connector D3599A.
NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
NOTE: If there was a problem with the circuit, then do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
NOTE: If the circuit is satisfactory, then do the installation test for the electronic control unit to complete the fault isolation task for this maintenance message.
- 8) If there was a problem with the circuit, then do these steps:

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- a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
d) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the P5 forward overhead panel.

- e) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
f) Make sure that the L PACK and R PACK switches are OFF.
g) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- h) Set the APU BLEED switch to the OFF position.
i) Set the ISOLATION VALVE switch to the CLOSE position.
j) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
k) Do this task: APU BITE Procedure, 49-60 TASK 801.
l) Set the APU master switch to the ON position.
m) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
n) If the CDU display does not show this maintenance message, then you corrected the fault.
o) Set the APU master switch to the OFF position.

- 9) If the circuit is satisfactory, then continue.

- (7) Do a voltage check of the airplane wire harness:

- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.

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- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
(f) Set the APU master switch to the ON position.
(g) Do a voltage check on the APU firewall receptacle D10912, socket 2 and socket 10, at the 1088 bulkhead (SSM 49-52-31).

NOTE: The voltage must be 14.0V-16.0V DC.

- (h) If the voltage is not 9.7–10.3V DC, then do these steps:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Repair the wiring problems that you find (WDM 49-52-31).
- 4) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 6) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 7) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 8) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.

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- d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- 9) Set these switches on the P5 forward overhead panel:
- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 10) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 11) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 12) Set the APU master switch to the ON position.
- 13) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 14) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (8) Do a voltage check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P20, pin 1 to pin 2, at the delta pressure sensor (DP), YAAT012 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (9) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.
 - (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.

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- a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
 - (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
 - (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
 - (10) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.

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- 4) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (l) Set the APU master switch to the OFF position.

END OF TASK

806. Delta Pressure Sensor Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52272 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE LOW
- (2) This fault is set when there is a short in the delta pressure sensor circuit or a problem with the delta pressure sensor. If the APU speed is more than 95% and the delta pressure indication is less than -2.0 psid, then the fault is set. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P20 for the delta pressure sensor (DP), YAAT012
- (4) Delta pressure sensor (DP), YAAT012
- (5) Wiring problem with the engine wire harness
- (6) Voltage problem with the engine wire harness
- (7) Blockage of unwanted materials or damage to the tubes for the delta pressure sensor and total pressure sensor
- (8) Wiring problem with the airplane wire harness
- (9) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.

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- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.
 - NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P20 for the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Examine the electrical connector P20. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.

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- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P20, then do these steps:
- 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P20 is satisfactory, then continue.
- (4) Do these steps to replace the delta pressure sensor (DP), YAAT012:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the delta pressure sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801

NOTE: It is necessary to do the installation test for the delta pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P20 from the delta pressure sensor, YAAT012.
- (e) Examine the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P20 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- 7) Set these switches on the P5 forward overhead panel:

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- a) Set the APU BLEED switch to the OFF position.
- b) Set the ISOLATION VALVE switch to the CLOSE position.
- 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 10) Set the APU master switch to the ON position.
- 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 12) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 9 and pin 23, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 23 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P20 at the delta pressure sensor, YAAT012.
 - 3) Measure the resistance between pin 9 and pin 23 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P20 to the delta pressure sensor, YAAT012.

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- b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do a voltage check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P20, pin 1 to pin 2, at the delta pressure sensor (DP), YAAT012 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802

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- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:

- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.

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- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
- (d) Examine the housings for debris build up and residual lubricant.

NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.

 - 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.

NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.

NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;

Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.

 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
- (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
- (8) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.



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- (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:

- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure that the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 7) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
 - 8) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 9) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 10) Set the APU master switch to the ON position.
 - 11) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 12) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin D9 and pin D10, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D10 and structural ground, specified resistance of more than 100K ohms (open circuit).

- 2) Install a jumper between socket 9 and socket 23 on the APU firewall receptacle D10912 at the 1088 bulkhead.

- 3) Measure the resistance between pin D9 and pin D10 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.

- 4) Remove the jumper.
- 5) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
- 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.

NOTE: If the circuit is satisfactory, then do the installation test for the electronic control unit to complete the fault isolation task for this maintenance message.

- 8) If there was a problem with the circuit, then do these steps:
 - a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - d) Set the ISOLATION VALVE switch to the OPEN position.

NOTE: You can find these switches on the P5 forward overhead panel.

- e) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - f) Make sure that the L PACK and R PACK switches are OFF.
 - g) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- h) Set the APU BLEED switch to the OFF position.

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- i) Set the ISOLATION VALVE switch to the CLOSE position.
 - j) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - k) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - l) Set the APU master switch to the ON position.
 - m) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - n) If the CDU display does not show this maintenance message, then you corrected the fault.
 - o) Set the APU master switch to the OFF position.
- 9) If the circuit is satisfactory, then continue.
- (9) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure that the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.
- NOTE:** The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
 - (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (j) Set the APU master switch to the ON position.

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- (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (l) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

807. Delta Pressure Sensor Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52273 DELTA PRESSURE SENSOR SHOWS CIRCUIT FAILURE

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- (2) A bit signal that indicates the common-mode output voltage of the balanced-bridge sensor (normally 5 Vdc) is used for this fault. A bit value indicates the bridge voltage is out of range or the excitation voltage is low. This pressure measurement is used in calculating corrected flow for the surge control system.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P20 for the delta pressure sensor (DP), YAAT012
- (4) Delta pressure sensor (DP), YAAT012
- (5) Wiring problem with the engine wire harness
- (6) Voltage problem with the engine wire harness
- (7) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (8) Total pressure sensor problem
- (9) Wiring problem with the airplane wire harness
- (10) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P20 for the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Examine the electrical connector P20. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P20, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P20 is satisfactory, then continue.
- (4) Do these steps to replace the delta pressure sensor (DP), YAAT012:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the delta pressure sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (e) Examine the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P20 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P20 and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 9 and pin 23, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 23 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P20 at the delta pressure sensor (DP), YAAT012.
 - 3) Measure the resistance between pin 9 and pin 23 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

d) Remove the DO-NOT-OPERATE tag from the APU master switch.

(6) Do a voltage check of the engine wire harness:

- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P20, pin 1 to pin 2, at the delta pressure sensor (DP), YAAT012 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.

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- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin D9 and pin D10, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D10 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 9 and socket 23 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin D9 and pin D10 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.

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- (f) Set the APU master switch to the OFF position.
- (9) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.
 - (e) Clean the tubes and sensor housing as follows:
 - 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
 - (f) Install the sensors and tubes:
 - 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
 - (g) Do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- 4) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

808. Total Pressure Sensor Shows Out of Range Drift - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52289 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT
- (2) This fault is set when there is a short to ground in the total pressure sensor circuit or there is a problem with the total pressure sensor. If the APU speed is less than 7% and the difference between the total pressure and inlet pressure is more than 4.0 psia, then the fault is set. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Blockage of unwanted materials or damage to the tubes for the delta pressure sensor and total pressure sensor
- (2) Engine wire harness problem
- (3) Airplane wire harness problem
- (4) Electrical connector P19 for the total pressure sensor (PT), YAAT004
- (5) Total pressure sensor (PT), YAAT004
- (6) Wiring problem between the engine wire harness and the total pressure sensor (PT), YAAT004
- (7) Voltage problem with the engine wire harness
- (8) Electrical connector P18 for the inlet pressure sensor (P2), YAAT003
- (9) Inlet pressure sensor (P2), YAAT003
- (10) Wiring problem between the engine wire harness and the inlet pressure sensor (P2), YAAT003
- (11) Wiring problem with the airplane wire harness
- (12) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (SSM 49-62-12)
- (5) (WDM 49-52-31)
- (6) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this related maintenance message:
 - 1) 49-52219.
 - 2) If you find maintenance message 49-52219, then you must do these steps after you do the Fault Isolation Procedure for this message:
 - a) If the CDU display does not show maintenance message 49-52289 on the CURRENT STATUS page, then you corrected the fault.
 - b) If the CDU display shows maintenance message 49-52289 on the CURRENT STATUS page, then continue.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Clean and do an inspection of the pneumatic tubes and housings for the delta pressure sensor and total pressure sensor:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the delta pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the total pressure sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.

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- (e) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60-90 psig (414-620 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small orifice drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
- 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the total pressure sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the delta pressure sensor drain tube.
- (g) Do these steps:
- 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - b) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - 4) Set the APU master switch to the OFF position.
- (2) Do a general visual inspection of the engine wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (4) Do a visual inspection of the electrical connector P19 for the total pressure sensor (PT), YAAT004:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P19, then do these steps:

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- 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 2) Set the APU master switch to the ON position.
- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P19 is satisfactory, then continue.
- (5) Do these steps to replace the total pressure sensor (PT), YAAT004:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the total pressure sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do this check of the engine wire harness to the total pressure sensor (PT), YAAT004:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (e) Examine the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P19 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.

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- 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 8 and pin 21, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 21 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P19 at the total pressure sensor (PT), YAAT004.
 - 3) Measure the resistance between pin 8 and pin 21 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do a voltage check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P19, pin 1 to pin 2, at the total pressure sensor (PT), YAAT004 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

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- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
- 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.

- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:

- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (8) Do a visual inspection of the electrical connector P18 for the inlet pressure sensor (P2), YAAT003:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (d) Examine the electrical connector P18. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P18, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P18 is satisfactory, then continue.
- (9) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (10) Do this check of the engine wire harness to the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (e) Examine the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P18 or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
 - a) Pin 11 and pin 24, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).

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- c) Pin 24 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 3 and socket 4 on the electrical connector P18 at the inlet pressure sensor (P2), YAAT003.
- 3) Measure the resistance between pin 11 and pin 24 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.

- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (11) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.

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- (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D12 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 11 and socket 24 on the APU firewall receptacle D10912 at the 1088 bulkhead.
 - 3) Measure the resistance between pin D12 and pin D13 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.

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- e) Set the APU master switch to the OFF position.
- 9) If the circuit is satisfactory, then continue.
- (12) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

809. Total Pressure Sensor Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52290 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE HIGH
- (2) This fault is set when there is a short to ground in the total pressure sensor circuit or there is a problem with the total pressure sensor. If the APU speed is more than 95% and the total pressure indication is more than 80 psia, then the fault is set. The pressure range for the sensor conditioning circuit is between -9.9 psia and +109.2 psia. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P19 for the total pressure sensor (PT), YAAT004
- (4) Total pressure sensor (PT), YAAT004
- (5) Electronic control unit, M1709
- (6) Wiring problem with the engine wire harness
- (7) Wiring problem with the airplane wire harness.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this related maintenance message:
 - 1) 49-52289.
 - 2) If you find this maintenance message, then do the Fault Isolation Procedure for this message.
 - 3) Do these steps after you do the Fault Isolation Procedure for this maintenance message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Set the ISOLATION VALVE switch to the OPEN position.
NOTE: You can find these switches on the P5 forward overhead panel.
 - c) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - d) Make sure the L PACK and R PACK switches are OFF.
 - e) Set the APU BLEED switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig.
 - f) Set the APU BLEED switch to the OFF position.
 - g) Set the ISOLATION VALVE switch to the CLOSE position.
 - h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - i) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - j) Set the APU master switch to the ON position.
 - k) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-52290 shows.
 - l) If the CDU display does not show maintenance message 49-52290, then you corrected the fault.
 - m) If the CDU display shows maintenance message 49-52290, then continue.
 - n) Set the APU master switch to the OFF position.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:

- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.

- (c) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:

- 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.

- 3) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P19 for the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P19, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
 - 3) Set these switches on the P5 forward overhead panel:

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- a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 4) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
 - i) If the electrical connector P19 is satisfactory, then continue.
- (4) Do these steps to replace the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the total pressure sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801

NOTE: It is necessary to do the installation test for the total pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must energize the bleed air system first to complete the fault isolation task for this maintenance message.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Set these switches on the P5 forward overhead panel:
 - 1) Set the ISOLATION VALVE switch to the OPEN position.
 - 2) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - 3) Make sure the L PACK and R PACK switches are OFF.
 - 4) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
- (g) Set these switches on the P5 forward overhead panel:
 - 1) Set the APU BLEED switch to the OFF position.
 - 2) Set the ISOLATION VALVE switch to the CLOSE position.
- (h) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (l) Set the APU master switch to the OFF position.
- (6) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P19, then do these steps:
 - 1) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Set these switches on the P5 forward overhead panel:
- Set the ISOLATION VALVE switch to the OPEN position.
 - Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - Make sure the L PACK and R PACK switches are OFF.
 - Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 6) Set these switches on the P5 forward overhead panel:
- Set the APU BLEED switch to the OFF position.
 - Set the ISOLATION VALVE switch to the CLOSE position.
- 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 8) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 9) Set the APU master switch to the ON position.
- 10) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- If the CDU display does not show this maintenance message, then you corrected the fault.
- 11) Set the APU master switch to the OFF position.
- (f) If the electrical connector P19 is satisfactory, then do these steps:
- Measure the resistance between socket 3 and structural ground on the electrical connector P19 at the total pressure sensor (PT), YAAT004 (SSM 49-52-31).
- NOTE: The resistance must be more than 100K ohms (open circuit).
- 2) If the resistance is less than 100K ohms, then do these steps:
- Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
- Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is more than 100K ohms (open circuit), then do these steps and continue:
 - a) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.
 - c) Make sure the L PACK and R PACK switches are OFF.
 - d) Set the APU BLEED switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig.
- 6) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 7) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 8) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 9) Set the APU master switch to the ON position.
- 10) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 11) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between socket 8 and structural ground on the APU firewall receptacle D10912 at the 1088 bulkhead (SSM 49-52-31).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 6) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 7) Set these switches on the P5 forward overhead panel:
 - a) Set the ISOLATION VALVE switch to the OPEN position.
 - b) Make sure the engines 1 and/or 2 BLEED switches are OFF.

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- c) Make sure the L PACK and R PACK switches are OFF.
- d) Set the APU BLEED switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig.
- 8) Set these switches on the P5 forward overhead panel:
 - a) Set the APU BLEED switch to the OFF position.
 - b) Set the ISOLATION VALVE switch to the CLOSE position.
- 9) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 10) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 11) Set the APU master switch to the ON position.
- 12) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 13) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

810. Total Pressure Sensor Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52291 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE LOW
- (2) This fault is set when there is a short in the total pressure sensor circuit or there is a problem with the total pressure sensor. If the APU speed is more than 50% and the total pressure indication is less than -5.0 psia, then the fault is set. The pressure range for the sensor conditioning circuit is between -9.9 psia and +109.2 psia. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P19 for the total pressure sensor (PT), YAAT004
- (4) Total pressure sensor (PT), YAAT004
- (5) Wiring problem with the engine wire harness
- (6) Voltage problem with the engine wire harness
- (7) Wiring problem with the airplane wire harness
- (8) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do a check for this related maintenance message:
 - 1) 49-52289.
 - 2) If you find this maintenance message, then do the Fault Isolation Procedure for this message.
 - 3) Do these steps after you do the Fault Isolation Procedure for this maintenance message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if maintenance message 49-52291 shows.
 - f) If the CDU display does not show maintenance message 49-52291, then you corrected the fault.
 - g) If the CDU display shows maintenance message 49-52291, then continue.
 - h) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P19 for the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P19, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (i) If the electrical connector P19 is satisfactory, then continue.
- (4) Do these steps to replace the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the total pressure sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
 - NOTE:** It is necessary to do the installation test for the total pressure sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.

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- (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (e) Examine the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P19 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 7) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 8) Set the APU master switch to the ON position.
- 9) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 10) Set the APU master switch to the OFF position.

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(g) If the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912 are satisfactory, then do these steps:

- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 8 and pin 21, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 21 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 3 and socket 4 on the electrical connector P19 at the total pressure sensor (PT), YAAT004.
- 3) Measure the resistance between pin 8 and pin 21 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.

- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do a voltage check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P19, pin 1 to pin 2, at the total pressure sensor (PT), YAAT004 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
- 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- NOTE:** It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V - 10.3V DC, then do these steps and continue:

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- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin C11 and pin D11, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 8 and socket 21 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin C11 and pin D11 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 6) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— END OF TASK ————

811. Total Pressure Sensor Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52102 TOTAL PRESSURE SENSOR SHOWS CIRCUIT FAILURE

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- (2) A bit signal that indicates the common-mode output voltage of the balanced-bridge sensor (normally 5 Vdc) is used for this fault. An open (-) lead on the sensor measurement return can cause the PT value used by the ECU to drift high. Because of the faster verify time, this fault will be active prior to and inhibit PT_HIGH_RUN if the signal were to open while the APU was running. If the (-) lead on the sensor measurement side were to open when the APU is providing bleed air to the airplane, the high PT value could also cause BLEED_SHUTOFF_RV or REVFLOW_BLEED_OFF. The reverse flow faults have faster verify time and would be active before the PT_SENSOR fault but would not inhibit the PT_SENSOR fault. The system affect is the same with either fault occurring first, bleed air is disabled by opening surge valve and closing IGV's. A bit value indicates the bridge voltage is too low or high or bridge excitation voltage is too low indicating the ECU driver circuit is not functioning properly.

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- (3) If this failure occurs, the position of the surge control valve is fully open and the inlet guide vane is fully closed. The APU bleed air is not available during the APU operation. If this fault is not corrected, a surge in the load compressor discharge can occur.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P19 for the total pressure sensor (PT), YAAT004
- (4) Total pressure sensor (PT), YAAT004
- (5) Wiring problem with the engine wire harness
- (6) Voltage problem with the engine wire harness
- (7) Wiring problem with the airplane wire harness
- (8) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:

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- (a) Make sure the APU master switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P19 for the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Examine the electrical connector P19. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P19, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 4) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P19 is satisfactory, then continue.
- (4) Do these steps to replace the total pressure sensor (PT), YAAT004:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the total pressure sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (e) Examine the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P19 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 6) Set the APU master switch to the ON position.
 - 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P19 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-52-31):
 - a) Pin 8 and pin 21, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 8 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 21 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 3 and socket 4 on the electrical connector P19 at the total pressure sensor (PT), YAAT004.
 - 3) Measure the resistance between pin 8 and pin 21 on the electrical connector D10912 (P1).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.

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- b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do a voltage check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P19 from the total pressure sensor (PT), YAAT004.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P19, pin 1 to pin 2, at the total pressure sensor (PT), YAAT004 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.

- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P19 to the total pressure sensor (PT), YAAT004.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31):
 - a) Pin C11 and pin D11, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 8 and socket 21 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin C11 and pin D11 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Repair the wiring (WDM 49-52-31).
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.
 - 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

812. Inlet Pressure Sensor Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-52303 INLET PRESSURE SENSOR SHOWS CIRCUIT FAILURE

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- (2) This fault is set when there is an open or short to ground in the inlet pressure sensor circuit. The electronic control unit does a check of the voltage across the balanced bridge of the inlet pressure sensor. A bit value indicates the bridge voltage is too low or high or the bridge excitation voltage is too low, indicating the ECU driver circuit is not functioning properly. If this failure occurs, the air data for the inlet pressure sensor is replaced with the corrected air data from the airplane and continues the APU operation. An APU start and operation problem at altitude can occur.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P18 for the inlet pressure sensor (P2), YAAT003
- (4) Inlet pressure sensor (P2), YAAT003
- (5) Wiring problem with the engine wire harness
- (6) Voltage problem with the engine wire harness
- (7) Wiring problem with the airplane wire harness
- (8) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-50 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-50 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (SSM 49-62-12)
- (5) (WDM 49-52-31)
- (6) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.

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- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do a visual inspection of the electrical connector P18 for the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (d) Examine the electrical connector P18. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P18, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.

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- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P18 is satisfactory, then continue.
- (4) Do these steps to replace the inlet pressure sensor (P2), YAAT003:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet pressure sensor (P2), YAAT003. These are the tasks:
 - Inlet Pressure Sensor Removal, AMM TASK 49-52-31-000-801
 - Inlet Pressure Sensor Installation, AMM TASK 49-52-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P18 from the inlet pressure sensor (P2), YAAT003.
- (e) Examine the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10912 (P1) or P18 or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - 2) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10912 (P1) and P18 and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
- a) Pin 11 and pin 24, specified resistance of more than 100K ohms (open circuit).
- b) Pin 11 and structural ground, specified resistance of more than 100K ohms (open circuit).
- c) Pin 24 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 3 and socket 4 on the electrical connector P18 at the inlet pressure sensor (P2), YAAT003.
- 3) Measure the resistance between pin 11 and pin 24 on the electrical connector D10912 (P1).
- NOTE: The resistance must be less than 10 ohms.
- 4) Remove the jumper.
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.

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- f) Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P18 to the inlet pressure sensor (P2), YAAT003.
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do a voltage check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P20 from the delta pressure sensor (DP), YAAT012.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P20, pin 1 to pin 2, at the delta pressure sensor (DP), YAAT012 (SSM 49-52-31).

NOTE: The voltage must be 9.7V-10.3V DC.
- (h) If the voltage is not 9.7V-10.3V DC, then do these steps:

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- 1) Set the APU master switch to the OFF position.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (i) If the voltage is 9.7V-10.3V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P20 to the delta pressure sensor (DP), YAAT012.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (e) If there was a problem with the electrical connector D3599 or D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D12 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 11 and socket 24 on the APU firewall receptacle D10912.
 - 3) Measure the resistance between pin D12 and pin D13 on the electrical connector D3599A.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Repair the wiring (WDM 49-62-12).
 - b) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Set the APU master switch to the ON position.
 - f) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - g) If the CDU display does not show this maintenance message, then you corrected the fault.
 - h) Set the APU master switch to the OFF position.

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- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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801. Smoke or Flame in APU Exhaust - Fault Isolation

A. Description

- (1) There was smoke or a flame in the APU exhaust.

B. Possible Causes

- (1) Fluids or unwanted materials in the air inlet duct and compressor inlet plenum for the APU

NOTE: This can be the result of quick successive APU starts without sufficient cool down time in between the start attempts. If you attempt to start the APU immediately after a shutdown it will increase the chance of flame in the tailpipe because of residual fuel coming in contact with the hot surface of the APU exhaust duct. After a normal APU shutdown, unburned fuel can remain in the combustor. It will take approximately one to two minutes for this fuel to drain. Make sure you follow the steps shown in APU Starting and Operation, AMM TASK 49-11-00-860-801.

NOTE: Intermittent power interruption to the start converter unit or the start power unit during an APU start may cause the APU to spool down while the fuel is being pumped to the APU.

- (2) Clogged APU drain mast and APU drains

NOTE: If the APU drain is blocked, the unburned fuel will remain in the APU. At the next APU start this fuel will be mixed with hot APU exhaust air and will be pushed out of the tailpipe in the form of a flame.

- (3) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (4) Oil cooler
- (5) Acceleration problem during an APU start
- (6) Low APU battery power

NOTE: If the battery power is too low, the APU could be over fueled to turn the power section. The fuel rich exhaust air can ignite into flame as it leaves the APU exhaust. The APU can also experience an auto shutdown due to over temperature (fault code 49-31016) because of low battery power.

- (7) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)

E. Fault Isolation Procedure

- (1) Do a general visual inspection of the air inlet duct and compressor inlet plenum for the APU:
 - (a) Make sure the APU master switch is OFF.

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- (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.
- (c) Visually examine the air inlet duct for fluids and blockage of unwanted materials:
 - 1) If you find fluids in the air inlet duct, then remove the fluids and clean the area.
 - 2) If you find blockage of unwanted materials, then remove the blockage.
- (d) Visually examine the compressor inlet plenum for fluids and blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for fluids and blockage of unwanted materials.
 - a) If you find fluids in the compressor inlet plenum, then remove the fluids and clean the area.
 - b) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the OFF position.
- (g) If there were fluids or blockage of materials in the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
 - a) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (h) If there were no fluids and no blockage of materials in the air inlet duct and compressor inlet plenum for the APU, then continue.
- (2) Do these steps to inspect the APU drain mast and APU drains:
 - (a) Visually examine the APU drain mast for blockage of unwanted materials. To examine it, do this task: Drain Mast Inspection Procedure, AMM TASK 49-16-11-200-801.
 - (b) Visually examine the APU drains and clean the APU drain tubes, drain seal and drain mast. To examine and clean them, do this task: Clean the APU Drains, AMM TASK 49-16-11-100-801.
 - (c) If there was blockage of unwanted materials in the APU drain mast and APU drains, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
 - a) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.

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- 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (d) If there was no blockage of unwanted materials in the APU drain mast and APU drains, then continue.
- (3) Do these steps to inspect the magnetic drain plug:
 - (a) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (b) If you do not find metal particles on the magnetic drain plug, then continue.
- (4) Do a general visual inspection of the oil cooler:
 - (a) Visually examine the oil cooler for oil leakage. To examine it, do this task: Oil Cooler Inspection, AMM TASK 49-91-41-200-801.
 - (b) If there was oil leakage from the oil cooler, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
 - a) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - (c) If there was no oil leakage from the oil cooler, then continue.
- (5) Do a check for maintenance message 49-41010 on the FAULT HISTORY page if there is an acceleration problem during an APU start:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (c) Set the APU master switch to the ON position.
 - (d) Look at the FAULT HISTORY page on the control display unit (CDU) display to see if maintenance message 49-41010 shows.
 - 1) If the CDU display shows maintenance message 49-41010, then you must do these steps while you do the Fault Isolation Procedure for this message:
 - a) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
 - b) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.
 - 2) If the CDU display does not show maintenance message 49-41010, then you must do these steps while you do the Fault Isolation Procedure for maintenance message 49-41010:

NOTE: It is not necessary to do a check for blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU or replace the APU again if you have done these tasks in this fault isolation procedure.

NOTE: It is not necessary to do the APU BITE procedure and to do a check for maintenance message 49-41010.

 - a) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
 - b) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.
 - (e) Set the APU master switch to the OFF position.

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- (f) If there is no acceleration problem during an APU start, then continue.
- (6) Do this troubleshooting task for low battery power: Start Converter Unit Shows Low Battery Power - Fault Isolation, 49-40 TASK 822.
- (7) Do these steps to replace the APU:
- (a) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE:** It is necessary to do the installation test for the APU to see if there is smoke or a flame in the APU exhaust.
- 1) During the APU start and operation, visually examine the APU exhaust for smoke or a flame.
- a) If you did not see smoke or a flame in the APU exhaust, then you corrected the fault.

————— **END OF TASK** —————

802. Fumes or Smoke in Cabin During APU Operation - Fault Isolation

A. Description

- (1) There were fumes or smoke in the cabin during an APU operation.

B. Possible Causes

- (1) Fluids or unwanted materials in the air inlet duct, compressor inlet plenum for the APU and eductor inlet duct
- (2) Wind conditions blew the APU exhaust gases into the APU air inlet or exhaust gases from a different airplane blew into the APU air inlet
- (3) Clogged combustor drain or drain tube for the combustor drain
- (4) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)

E. Fault Isolation Procedure

- (1) Do a general visual inspection of the air inlet duct, compressor inlet plenum for the APU and the eductor inlet duct:
- (a) Make sure the APU master switch is OFF.
- (b) Set the APU master switch to the ON position and install a DO-NOT-OPERATE tag.

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- (c) Visually examine the air inlet duct for fluids and blockage of unwanted materials:
 - 1) If you find fluids in the air inlet duct, then remove the fluids and clean the area.
 - 2) If you find blockage of unwanted materials, then remove the blockage.
- (d) Visually examine the compressor inlet plenum for fluids and blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for fluids and blockage of unwanted materials:
 - a) If you find fluids in the compressor inlet plenum, then remove the fluids and clean the area.
 - b) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Visually examine the eductor inlet duct for fluids and blockage of unwanted materials:
 - 1) If you find fluids in the eductor inlet duct, then remove the fluids and clean the area.
 - 2) If you find blockage of unwanted materials, then remove the blockage.
- (f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (g) Set the APU master switch to the OFF position.
- (h) If there were fluids or blockage of materials in the air inlet duct, compressor inlet plenum for the APU or eductor inlet duct, then do these steps:
 - 1) Do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, AMM TASK 21-00-01-100-801.
NOTE: It is necessary to supply pressure to the pneumatic system with the APU. This supply pressure source will isolate the fumes or smoke to the APU system.
 - 2) During the APU and air conditioning operation, visually examine the cabin for fumes or smoke.
 - a) If you do not find fumes or see smoke in the cabin, then you corrected the fault.
 - (i) If there were no fluids and no blockage of materials in the air inlet duct, compressor inlet plenum for the APU and the eductor inlet duct, then continue.
- (2) Do a check of the wind conditions and for a different airplane in operation:
 - (a) Visually examine if there were wind conditions at the rear of the airplane that can blow the APU exhaust gases into the APU air inlet during the APU operation.
 - (b) Visually examine if there were exhaust gases from a different airplane that can blow these gases into the APU air inlet during the APU operation.
 - (c) If there were wind conditions at the rear of the airplane or exhaust gases from a different airplane that can blow these gases into the APU air inlet during the APU operation, then do these steps:

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- 1) Make sure these condition(s) do not occur when you operate the APU again.
- 2) Do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, AMM TASK 21-00-01-100-801.
NOTE: It is necessary to supply pressure to the pneumatic system with the APU. This supply pressure source will isolate the fumes or smoke to the APU system.
- 3) During the APU and air conditioning operation, visually examine the cabin for fumes or smoke.
 - a) If you do not find fumes or see smoke in the cabin, then you corrected the fault.
 - (d) If there were no wind conditions at the rear of the airplane and no exhaust gases from a different airplane that can blow these gases into the APU air inlet during the APU operation, then continue.
- (3) Do these steps to clean the combustor drain and drain tube for the combustor drain:
 - (a) Clean the combustor drain and drain tube for the combustor drain. To clean them, do this task: Clean the APU Drains, AMM TASK 49-16-11-100-801.
 - (b) Do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, AMM TASK 21-00-01-100-801.
NOTE: It is necessary to supply pressure to the pneumatic system with the APU. This supply pressure source will isolate the fumes or smoke to the APU system.
 - (c) During the APU and air conditioning operation, visually examine the cabin for fumes or smoke.
 - 1) If you do not find fumes or see smoke in the cabin, then you corrected the fault.
 - 2) If you find fumes or see smoke in the cabin, then continue.
- (4) Do these steps to replace the APU:
NOTE: An inspection of the middle drain on the drain mast for oil leakage will show a problem with the load compressor seal. There is no oil leakage limit from the middle drain. If there is a problem with the load compressor seal, you must replace the APU.
 - (a) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - (b) Do this task: Oil Contamination Removal from Air Conditioning and Pneumatic Systems, AMM TASK 21-00-01-100-801.
NOTE: It is necessary to supply pressure to the pneumatic system with the APU. This supply pressure source will isolate the fumes or smoke to the APU system.
 - (c) During the APU and air conditioning operation, visually examine the cabin for fumes or smoke.
 - 1) If you do not find fumes or see smoke in the cabin, then you corrected the fault.

———— **END OF TASK** ————

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803. DUAL BLEED Light On, APU BLEED Switch at Off - Fault Isolation

A. Description

- (1) The DUAL BLEED Light is ON when the APU BLEED Switch is OFF. The DUAL BLEED Light is on the Forward Overhead Panel, P5.
- (2) The DUAL BLEED Light comes ON for either of these conditions:
 - Engine 1 BLEED switch ON and the Auxiliary Power Unit (APU) Bleed Air Valve (BAV), YAAV001 open
 - Engine 2 BLEED switch ON, the Isolation Valve OPEN, and the APU BAV, YAAV001 open
- (a) It is necessary to supply pressure to the pneumatic system with the APU for the DUAL BLEED Light to come ON.

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- (3) A short to ground internal to solenoid A for either the Left or Right Flow Control and Shutoff Valves, V18 or V19 respectively, will result in the APU Electronic Control Unit (ECU) commanding the BAV, YAAV001, to open even though the APU BLEED Switch is OFF (SSM 21-51-11, SSM 21-51-21).

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B. Possible Causes

- (1) BAV Position Switch
- (2) BAV, YAAV001
- (3) Bleed Air Isolation Valve, V16

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- (4) Left (Right) Flow Control and Shutoff Valve, V18 (V19)

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- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-55 TASK SUPPORT Figure 302)

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- (3) SSM 21-51-11
- (4) SSM 21-51-21

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- (5) SSM 36-11-11
- (6) SSM 49-52-31

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- (7) WDM 21-51-11
- (8) WDM 21-51-21

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- (9) WDM 36-11-11
- (10) WDM 49-52-31

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for this maintenance message 49-52236 on the CURRENT STATUS page of the Control Display Unit (CDU) Display.
 - (b) If you find maintenance message 49-52236, then do the Fault Isolation Procedure for this message to correct the problem.
 - (c) If you did not find maintenance message 49-52236, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the BAV Position Switch:
 - (a) Make sure the APU Master Switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P10 from the BAV, YAAV001.
- (d) Examine the electrical connector P10. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - 1) If there was a problem with the electrical connector P10, then do these steps:
 - a) Re-connect the electrical connector P10 to the BAV, YAAV001.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connector P10 is satisfactory, then do these steps:
- a) Measure the resistance between these pairs of pins on the BAV, YAAV001 receptacle as follows (SSM 49-52-31):

BLEED AIR VALVE RECEPTACLE		BLEED AIR VALVE RECEPTACLE	
pin 3	.....	pin 4	>100K Ω
pin 4	.....	pin 5	>100K Ω

- <1> If the resistance is not in the specified range for each pair of pins, then do these steps:
- <a> Replace the BAV, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - Do the Repair Confirmation at the end of this task.
- <2> If the resistance is in the specified range for each pair of pins, then do these steps and continue:
- <a> Re-connect the electrical connector P10 to the BAV, YAAV001.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- <c> Remove the DO-NOT-OPERATE tag from the APU Master Switch.
- (2) Replace the BAV, YAAV001. These are the tasks:
- Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the Bleed Air Isolation Valve, V16:
- (a) Make sure the APU Master Switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Make sure the ISOLATION VALVE Switch is CLOSE.

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- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

- (d) Disconnect the electrical connector D398 from the Bleed Air Isolation Valve, V16.
- (e) Examine the electrical connector D398. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 1) If there was a problem with the electrical connector D398, then do these steps:
- Re-connect the electrical connector D398 to the Bleed Air Isolation Valve, V16.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU Master Switch.
 - Do the Repair Confirmation at the end of this task.
- 2) If the electrical connector D398 is satisfactory, then do this step:
- Measure the resistance between these pins of the Bleed Air Isolation Valve, V16 receptacle as follows (WDM 36-11-11):

NOTE: The resistance must be more than 100K Ω (open circuit).

BLEED AIR ISOLATION VALVE RECEPTACLE	BLEED AIR ISOLATION VALVE RECEPTACLE
pin 4	pin 5 >100K Ω

- <1> If the resistance is less than 100K Ω , then do these steps:
- <a> Replace the Bleed Air Isolation Valve, V16. These are the tasks:
- Bleed Air Isolation Valve Removal, AMM TASK 36-13-04-000-801
 - Bleed Air Isolation Valve Installation, AMM TASK 36-13-04-400-801
- Do the Repair Confirmation at the end of this task.

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<2> If the resistance is more than 100K Ω (open circuit), then do these steps and continue:

<a> Re-connect the electrical connector D398 to the Bleed Air Isolation Valve, V16.

 Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

<c> Remove the DO-NOT-OPERATE tag from the APU Master Switch.

(4) Do this check of the wiring between the Electrical Shelf, E4-1 and the Bleed Air Isolation Valve, V16:

(a) Make sure the APU Master Switch is OFF and install a DO-NOT-OPERATE tag.

(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

(c) Disconnect the electrical connector D398 from the Bleed Air Isolation Valve, V16.

(d) Disconnect the electrical connector D43018P from the Electrical Shelf, E4-1.

(e) Examine the electrical connectors D43018P and D398. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

1) If there was a problem with the electrical connector D43018P or D398, then do these steps:

a) Re-connect the electrical connector D43018P to the Electrical Shelf, E4-1.

b) Re-connect the electrical connector D398 to the Bleed Air Isolation Valve, V16.

c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
- e) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connectors D43018P and D398 are satisfactory, then do these steps:
 - a) Measure the resistance between these pairs of pins on the electrical connector D43018P at the Electrical Shelf, E4-1 (WDM 36-11-11):

E4-1 SHELF	E4-1 SHELF	
D43018P	D43018P	
pin B3	pin B4	>100K Ω

- b) Measure the resistance between these pins on the electrical connector D43018P at the Electrical Shelf, E4-1 and Structure Ground as follows (WDM 36-11-11):

E4-1 SHELF		
D43018P		
pin B3	GND	>100K Ω
pin B4	GND	>100K Ω

- c) Install a jumper between socket 4 and socket 5 on the electrical connector D398 at the Bleed Air Isolation Valve, V16.
 - d) Measure the resistance between these pins on the electrical connector D43018P as follows (WDM 36-11-11):

NOTE: The resistance must be less than 100 Ω .

E4-1 SHELF	E4-1 SHELF	
D43018P	D43018P	
pin B3	pin B4	<100K Ω

- e) Remove the jumper.
 - <1> If there is a problem with the circuit, then do these steps:
 - <a> Repair the wiring (WDM 36-11-11).
 - Re-connect the electrical connector D43018P to the Electrical Shelf, E4-1.
 - <c> Re-connect the electrical connector D398 to the Bleed Air Isolation Valve, V16.
 - <d> Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

<e> Remove the DO-NOT-OPERATE tag from the APU Master Switch.

<f> Do the Repair Confirmation at the end of this task.

<2> If there is no problem with the circuit, then do these steps and continue:

<a> Re-connect the electrical connector D43018P to the Electrical Shelf, E4-1.

 Re-connect the electrical connector D398 to the Bleed Air Isolation Valve, V16.

<c> Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	14	C00033	AUX POWER UNIT CONT

<d> Remove the DO-NOT-OPERATE tag from the APU Master Switch.

(5) Replace the Bleed Air Isolation Valve, V16. These are the tasks:

- Bleed Air Isolation Valve Removal, AMM TASK 36-13-04-000-801
- Bleed Air Isolation Valve Installation, AMM TASK 36-13-04-400-801

(a) Do the Repair Confirmation at the end of this task.

SIA 702-714

(6) Do this check of the wiring (WDM 21-51-11, WDM 21-51-21, WDM 49-52-31):

- (a) Make sure the APU Master Switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

(c) Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

(d) Disconnect the electrical connector D646 from the Air Conditioning Panel, P5-10.

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- (e) Disconnect the electrical connector D392 from the Left Pack Flow Control and Shutoff Valve, V18.
- (f) Disconnect the electrical connector D394 from the Right Pack Flow Control and Shutoff Valve, V19.
- (g) Examine the electrical connectors D646, D3599B, D392 and D394. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - 1) If there was a problem with the electrical connector D646, D3599B, D392 or D394, then do these steps:
 - a) Re-connect the electrical connector D646 to the Air Conditioning Panel, P5-10.
 - b) Re-connect the electrical connector D392 to the Left Pack Flow Control and Shutoff Valve, V18.
 - c) Re-connect the electrical connector D394 to the Right Pack Flow Control and Shutoff Valve, V19.
 - d) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

- f) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
- g) Do the Repair Confirmation at the end of this task.
- (h) If the electrical connectors D646, D3599B, D392 and D394 are satisfactory, then do a wiring check as follows:

NOTE: Make sure that there are no shorts to Structure Ground.

**AIR
CONDITIONING
PANEL, P5-10**

D646

pin 13 pin C4

**APU
ELECTRONIC
CONTROL UNIT
MODULE,
M1709**

D3599B

**AIR
CONDITIONING
PANEL, P5-10**

D646

pin 13 pin 2

**L PACK VLV
FLOW CONT
AND SOV, V18**

D392

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**AIR
CONDITIONING
PANEL, P5-10**

D646

pin 13

**R PACK VLV
FLOW CONT
AND SOV, V19**

D394

pin 2

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the electrical connector D646 to the Air Conditioning Panel, P5-10.
 - c) Re-connect the electrical connector D392 to the Left Pack Flow Control and Shutoff Valve, V18.
 - d) Re-connect the electrical connector D394 to the Right Pack Flow Control and Shutoff Valve, V19.
 - e) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

- g) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
 - h) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do these steps and continue:
 - a) Re-connect the electrical connector D646 to the Air Conditioning Panel, P5-10.
 - b) Re-connect the electrical connector D392 to the Left Pack Flow Control and Shutoff Valve, V18.
 - c) Re-connect the electrical connector D394 to the Right Pack Flow Control and Shutoff Valve, V19.
 - d) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

- f) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
- (7) Replace the applicable Left (Right) Flow Control and Shutoff Valve, V18 (V19). These are the tasks:
 - Right Flow Control and Shutoff Valve - Removal, AMM TASK 21-51-01-000-805-002 or Left Flow Control and Shutoff Valve - Removal, AMM TASK 21-51-01-000-802-002
 - Left Flow Control and Shutoff Valve - Installation, AMM TASK 21-51-01-400-805-002 or Right

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Flow Control and Shutoff Valve - Installation, AMM TASK 21-51-01-400-802-002

- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.

NOTE: The Engine 1 BLEED Switch must be set to the ON position.

- (a) During the pneumatic operation of the APU, look at the DUAL BLEED Light.

NOTE: The DUAL BLEED Light comes ON if the Engine 1 BLEED and APU BLEED Switches are set to the ON position.

- (b) Set the APU BLEED Switch to the OFF position.

- 1) If the DUAL BLEED Light goes OFF, then you corrected the problem.
- 2) If the DUAL BLEED Light still ON, then continue the Fault Isolation Procedure at the subsequent step.

- (c) Do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

————— **END OF TASK** —————

804. Duct Pressure is Zero, The APU is the Bleed Source - Fault Isolation

A. Description

- (1) The duct pressure is zero during an Air Conditioning System (ACS) and APU operation. The duct pressure gage on the Forward Overhead Panel, P5 shows 0 psig (0 kPa) - 2 psig (14 kPa).

B. Possible Causes

- (1) Maintenance message BLEED DISABLED TO PREVENT REVERSE FLOW shows on the CDU
- (2) Air leakage from the bleed air ducts on the airplane
- (3) BLEED COMMAND SW and/or BLEED AIR VALVE indication problems on the INPUT MONITORING page for the bleed air system
- (4) LEFT PACK and RIGHT PACK indication problems on the INPUT MONITORING page for the bleed air system
- (5) Wiring problem between the E4-1 Electrical Shelf and the Air Conditioning Panel, P5-10
- (6) Wiring problem between the receptacle D40554J and electrical connector D458B and/or between the receptacle D40562J and electrical connector D458A on the E4-1 Electrical Shelf
- (7) Air Conditioning Accessory Unit (ACAU) Relay 1, M324
- (8) Wiring problem between the E4-1 Electrical Shelf and the ECU, M1709
- (9) APU Check Valve
- (10) Operational problems with the Inlet Guide Vane Actuator (IGVA), YAAV002
- (11) BAV, YAAV001
- (12) Surge Control Valve (SCV), YAAV003
- (13) IGVA, YAAV002
- (14) Delta Pressure Sensor (DP), YAAT012

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- (15) Total Pressure Sensor (PT), YAAT004
- (16) Blockage of unwanted materials or damage to the tubes for the Delta Pressure Sensor and Total Pressure Sensor
- (17) ECU, M1709
- (18) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	14	C00033	AUX POWER UNIT CONT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-55 TASK SUPPORT Figure 302)
- (3) SSM 21-51-11
- (4) SSM 21-51-21
- (5) SSM 49-52-31
- (6) WDM 21-51-11
- (7) WDM 21-51-21
- (8) WDM 49-52-31

E. Initial Evaluation

- (1) Do this duct pressure check for the APU bleed air system:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE Switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - 3) Make sure that the L PACK and R PACK Switches are OFF.

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- 4) Set the APU BLEED Switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
- 5) Set the three switches for the cabin temperature control to the AUTO position.
- 6) Set the L PACK and R PACK Switches to the AUTO position.
- (c) Let the APU Exhaust Gas Temperature (EGT) become stable (one to two minutes).
- (d) Set the L PACK and R PACK Switches to the HIGH position.
- (e) Let the APU EGT become stable (one to two minutes).
- (f) Set these switches, on the Forward Overhead Panel, P5, to remove the pneumatic load:
 - 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
- (g) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (h) If the duct pressure is satisfactory, then there was an intermittent fault.
- (i) If the duct pressure is not satisfactory, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for these maintenance message(s) on the CURRENT STATUS page of the CDU display:
 - 49-52269
 - 49-52292
 - (b) If you find the above maintenance message(s), then do the Fault Isolation Procedure for each message to correct the problem.
NOTE: The two maintenance messages have the same Fault Isolation Procedure.
 - (c) If you did not find the above maintenance message(s), then continue.
- (2) Do an air leakage check on the bleed air ducts for the airplane:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE Switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - 3) Make sure that the L PACK and R PACK Switches are OFF.
 - 4) Set the APU BLEED Switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
 - 5) Set the three switches for the cabin temperature control to the AUTO position.
 - 6) Set the L PACK and R PACK Switches to the AUTO position.
 - (c) Let the APU EGT become stable (one to two minutes).
 - (d) Set the L PACK and R PACK Switches to the HIGH position.
 - (e) Let the APU EGT become stable (one to two minutes).
 - (f) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.

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- (g) If there is air leakage, then do these steps to repair the leakage:
- 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 6) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 7) Repair the cause of the air leakage.
 - 8) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 9) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 10) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE Switch to the OPEN position.
 - b) Set the APU BLEED Switch to the ON position.
 - 11) Let the APU EGT become stable (one to two minutes).
 - 12) Set the L PACK and R PACK Switches to the HIGH position.
 - 13) Let the APU EGT become stable (one to two minutes).
 - 14) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.
 - 15) If there is air leakage, then do the leakage repair again.
 - 16) If there is no air leakage, then do these steps:
 - a) Set the L PACK and R PACK Switches to the OFF position.
 - b) Set the three switches for the cabin temperature control to the OFF position.
 - c) Set the APU BLEED Switch to the OFF position.
 - d) Set the ISOLATION VALVE Switch to the CLOSE position.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) If the duct pressure is satisfactory, then you corrected the problem.
- (h) If there is no air leakage, then continue.
- (3) Do a check of the BLEED COMMAND SW and BLEED AIR VALVE indications on the INPUT MONITORING page for the bleed air system:
- (a) Make sure that the ISOLATION VALVE Switch is CLOSE.
 - (b) Make sure that the L PACK and R PACK Switches are OFF.
 - (c) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - (d) Make sure that the APU BLEED Switch is OFF.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set the ISOLATION VALVE Switch to the OPEN position.
 - (g) Set the APU BLEED Switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).

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- (h) Do this task: APU Operation Limits, AMM TASK 49-11-00-710-802.
- (i) Get access to the INPUT MONITORING page from the MAIN MENU page.
NOTE: You push the Line Select Key (LSK) adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.
- (j) Make sure that the CDU shows the third page of four pages (3/4) for the INPUT MONITORING data.
- (k) Look at the BLEED COMMAND SW indication during the APU operation.
- (l) If the BLEED COMMAND SW indication shows OFF, then do these steps:
 - 1) Set the APU BLEED Switch to the OFF position.
 - 2) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 5) Remove the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- 6) Examine the electrical connector D646. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 7) If there was a problem with the electrical connector D646, then do these steps:
 - a) Re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - d) Do the Repair Confirmation at the end of this task.
- 8) If the electrical connector D646 is satisfactory, then do these steps:
- a) Set the APU BLEED Switch to the ON position.
 - b) Measure the resistance between these pins of the electrical connector P1 on the Air Conditioning Panel, P5-10 as follows (SSM 21-51-11):

AIR CONDITIONING PANEL P1	AIR CONDITIONING PANEL P1	
pin 13	pin 4	< 100 Ω

- c) Measure the resistance between this socket of the electrical connector D646 and Structure Ground as follows (SSM 21-51-11):

AIR CONDITIONING PANEL D646		
socket 4	GND	< 100 Ω

- d) Set the APU BLEED Switch to the OFF position.
- e) If the resistance is not in the range specified, then replace the Air Conditioning Panel, P5-10 or repair the wiring (WDM 21-51-11, WDM 21-51-21).
- f) If the resistance is in the range specified, then re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- g) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L

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F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- h) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- i) Do the Repair Confirmation at the end of this task.
- (m) If the BLEED COMMAND SW indication shows ON, then do these steps:
- 1) During the APU operation, look at the BLEED AIR VALVE indication.
NOTE: You can find the BLEED AIR VALVE indication on the third page of four pages (3/4) for the INPUT MONITORING data.
 - a) Make sure that the BLEED AIR VALVE indication shows OPEN.
 - 2) During the APU operation, look at the two indications on the position switch for the BAV.
NOTE: There are two indications on the position switch to show the position of the BAV. You can find the OPEN and CLOSED indications on the top and bottom of the BAV.
 - a) Make sure that the position switch for the BAV shows OPEN.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 5) Make sure that the BLEED AIR VALVE indication shows CLOSE.
 - 6) Make sure that the position switch for the BAV shows CLOSED.
NOTE: The bleed duct pressure will be 0 psig (0 kPa) - 6 psig (41 kPa) when the APU BLEED Switch is in the OFF position because the BAV is not fully sealed.
 - 7) If the BLEED AIR VALVE indication and/or the position switch for the BAV do not show the correct values, then do these steps:
 - a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - b) Replace the BAV, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
 - c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 8) If the BLEED AIR VALVE indication and the position switch for the BAV show the correct values, then do this step and continue:
 - a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (4) Do a check of the LEFT PACK and RIGHT PACK indications on the INPUT MONITORING page for the bleed air system:
- (a) Make sure that the engines 1 and 2 are OFF.
 - (b) Make sure that the ISOLATION VALVE Switch is CLOSE.
 - (c) Make sure that the L PACK and R PACK Switches are OFF.

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- (d) Make sure that the engines 1 and/or 2 BLEED Switches are ON.
- (e) Make sure that the APU BLEED Switch is OFF.
- (f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (g) Set the ISOLATION VALVE Switch to the OPEN position.
- (h) Set the APU BLEED Switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
- (i) Set the three switches for the cabin temperature control to the AUTO position.
- (j) Set the L PACK and R PACK Switches to the AUTO position.
- (k) Let the APU EGT become stable (one to two minutes).
- (l) Do this task: APU Operation Limits, AMM TASK 49-11-00-710-802.
- (m) Get access to the INPUT MONITORING page from the MAIN MENU page.
NOTE: You push the LSK adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.
- (n) Make sure that the CDU shows the second page of four pages (2/4) for the INPUT MONITORING data.
- (o) Look at the LEFT PACK and RIGHT PACK indications during the APU operation.
NOTE: The LEFT PACK and RIGHT PACK indications must show LOW.
- (p) Set the L PACK and R PACK Switches to the HIGH position.
NOTE: The LEFT PACK and RIGHT PACK indications must show HIGH.
- (q) Let the APU EGT become stable (one to two minutes).
- (r) If the LEFT PACK and/or RIGHT PACK indications do not show the correct values at each switch position, then do these steps:
 - 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 5) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 7) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 8) Replace the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- 9) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 10) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 11) Do the Repair Confirmation at the end of this task.
- (s) If the LEFT PACK and RIGHT PACK indications show the correct values at each switch position, then do these steps and continue:
 - 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (5) Do this check of the wiring between the E4-1 Electrical Shelf and the Air Conditioning Panel, P5-10:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- (c) Remove the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- (d) Disconnect the electrical connector D40554P from the receptacle D40554J at the E4-1 Electrical Shelf.
- (e) Disconnect the electrical connector D40562P from the receptacle D40562J at the E4-1 Electrical Shelf.
- (f) Examine the electrical connectors D646, D680, D40554P and D40562P. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the electrical connector D646, D680, D40554P or D40562P, then do these steps:
 - 1) Re-connect the electrical connector D40562P to the receptacle D40562J at the E4-1 Electrical Shelf.
 - 2) Re-connect the electrical connector D40554P to the receptacle D40554J at the E4-1 Electrical Shelf.
 - 3) Re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
 - 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) Do the Repair Confirmation at the end of this task.
- (h) If the electrical connectors D646, D680, D40554P and D40562P are satisfactory, then do these steps:
 - 1) Re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
NOTE: Do not close the circuit breakers at this time.
 - 2) Set the APU BLEED Switch to the ON position.

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- 3) Measure the resistance between this socket and Structure Ground on the electrical connector D40554P as follows (WDM 21-51-11):

E4-1 SHELF

D40554P

socket B03 GND < 100 Ω

- 4) Set the APU BLEED Switch to the OFF position.
5) Disconnect the electrical connector D40550P from the receptacle D40550J at the Right Load Control Center Panel, P6-4.
6) Install a jumper between pin 26 and Structure Ground on the electrical connector D40550P.
7) Set the L PACK Switch to the AUTO position.
8) Measure the resistance between this socket and Structure Ground on the electrical connector D40554P as follows (WDM 21-51-11):

E4-1 SHELF

D40554P

socket B10 GND < 100 Ω

- 9) Set the L PACK Switch to the OFF position.
10) Remove the jumper.
11) Re-connect the electrical connector D40550P to the receptacle D40550J.
12) Disconnect the electrical connector D40558P from the receptacle D40558J at the Right Load Control Center Panel, P6-4.
13) Install the jumper between pin 8 and Structure Ground on the electrical connector D40558P.
14) Set the R PACK Switch to the AUTO position.
15) Measure the resistance between this pin and Structure Ground on the electrical connector D40562P as follows (WDM 21-51-21):

E4-1 SHELF

D40562P

pin A3 GND < 100 Ω

- 16) Set the R PACK Switch to the OFF position.
17) Remove the jumper.
18) Re-connect the electrical connector D40558P to the receptacle D40558J.
19) If there is a problem with the circuit, then repair the wiring (WDM 21-51-11, WDM 21-51-21).
20) Re-connect the electrical connector D40562P to the receptacle D40562J at the E4-1 Electrical Shelf.
21) Re-connect the electrical connector D40554P to the receptacle D40554J at the E4-1 Electrical Shelf.

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- 22) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 23) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 24) Do the Repair Confirmation at the end of this task.
- (6) Do this check of the wiring between the receptacle D40554J and electrical connector D458B and between the receptacle D40562J and electrical connector D458A on the E4-1 Electrical Shelf:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Remove the ACAU Relay 1, M324. This is the task: Air Conditioning Accessory Unit (ACAU) Removal, AMM TASK 21-51-02-000-801.
 - (c) Examine the electrical connectors D458A and D458B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D458A or D458B, then do these steps:
 - 1) Re-install the ACAU Relay 1, M324. This is the task: Air Conditioning Accessory Unit (ACAU) Installation, AMM TASK 21-51-02-400-801.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If the electrical connectors D458A and D458B are satisfactory, then do these steps:
 - 1) Set the L PACK Switch to the AUTO position.
 - 2) Measure the resistance between this pin and Structure Ground on the electrical connector D458B as follows (SSM 21-51-11):

A/C RLY 1

D458B

pin 53 GND < 100 Ω

- 3) Set the L PACK Switch to the OFF position.
- 4) Set the R PACK Switch to the AUTO position.
- 5) Measure the resistance between this pin and Structure Ground on the electrical connector D458A as follows (SSM 21-51-21):

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A/C RLY 1

D458A

pin 53 GND < 100 Ω

- 6) Set the R PACK Switch to the OFF position.
 - 7) If there is a problem with the circuit, then repair the wiring (WDM 21-51-11, WDM 21-51-21).
 - 8) Re-install the ACAU Relay 1, M324. This is the task: Air Conditioning Accessory Unit (ACAU) Installation, AMM TASK 21-51-02-400-801.
 - 9) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 10) Do the Repair Confirmation at the end of this task.
- (7) Do these steps to replace the ACAU Relay 1, M324:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the ACAU Relay 1, M324. These are the tasks:
 - Air Conditioning Accessory Unit (ACAU) Removal, AMM TASK 21-51-02-000-801
 - Air Conditioning Accessory Unit (ACAU) Installation, AMM TASK 21-51-02-400-801
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do the Repair Confirmation at the end of this task.
- (8) Do this check of the wiring between the E4-1 Electrical Shelf and the ECU, M1709:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D40904P from the receptacle D40904J on the E4-1 Electrical Shelf.
 - (d) Examine the electrical connectors D40904P and D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D40904P or D3599, then do these steps:
 - 1) Re-connect the electrical connector D40904P to the receptacle D40904J on the E4-1 Electrical Shelf.
 - 2) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (f) If the electrical connectors D40904P and D3599 are satisfactory, then do these steps:
 - 1) Set the APU BLEED Switch to the ON position.
 - 2) Measure the resistance between this pin and Structure Ground on the receptacle D40904J as follows (WDM 49-52-31):

E4-1 SHELF

D40904J

pin A01 GND < 100 Ω

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- 3) Disconnect the electrical connector D40550P from the receptacle D40550J at the Right Load Control Center Panel, P6-4.
- 4) Install a jumper between pin 26 and Structure Ground on the electrical connector D40550P.
- 5) Set the L PACK Switch to the AUTO position.
- 6) Measure the resistance between this pin and Structure Ground on the receptacle D40904J as follows (WDM 49-52-31):

E4-1 SHELF

D40904J

pin B01		GND	< 100 Ω

- 7) Disconnect the electrical connector D40558P from the receptacle D40558J at the Right Load Control Center Panel, P6-4.
- 8) Install a jumper between pin 8 and Structure Ground on the electrical connector D40558P.
- 9) Set the R PACK Switch to the AUTO position.
- 10) Measure the resistance between this pin and Structure Ground on the receptacle D40904J as follows (WDM 49-52-31):

E4-1 SHELF

D40904J

pin A02		GND	< 100 Ω

- 11) If there is a problem with the circuit, then repair the wiring (WDM 21-51-11, WDM 21-51-21, WDM 49-52-31).
- 12) Re-connect the electrical connector D40904P to the receptacle D40904J at the E4-1 Electrical Shelf.
- 13) Measure the resistance between these pins on the electrical connector D3599B at the ECU, M1709 and Structure Ground as follows (SSM 49-52-31):

APU

**ELECTRONIC
CONTROL UNIT
MODULE**

D3599B

pin B5	.....	GND	< 100 Ω
pin B6	.....	GND	< 100 Ω
pin C4	.....	GND	< 100 Ω

- 14) Remove the jumper from the electrical connector D40550P.
- 15) Re-connect the electrical connector D40550P to the receptacle D40550J.
- 16) Remove the jumper from the electrical connector D40558P.
- 17) Re-connect the electrical connector D40558P to the receptacle D40558J.
- 18) Set the APU BLEED Switch to the OFF position.
- 19) Set the L PACK and R PACK Switches to the OFF position.

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- 20) If there is a problem with the circuit, then repair the wiring (WDM 21-51-11, WDM 21-51-21, WDM 49-52-31).
- 21) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE: Do not do the installation test for the ECU. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- 22) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 23) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 24) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 25) Do the Repair Confirmation at the end of this task.
- (9) Do a visual inspection of the APU Check Valve:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: APU Check Valve Removal, AMM TASK 36-14-02-000-801.
 - (c) Visually examine each duct end of the APU Check Valve for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the APU Check Valve for damage which can cause the APU Check Valve to be caught in the open or close position:
 - 1) If you find damage, install a new or serviceable APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - 2) If you did not find damage, re-install the APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - (e) If there was blockage of materials or damage to the duct or APU Check Valve, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If there were no blockage of materials and no damage to the duct and APU Check Valve, then continue.
- (10) Do an operational test of the IGVA linkage:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there was a problem with the IGVA, then do these steps:

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- 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
- 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 3) Do the Repair Confirmation at the end of this task.
- (d) If the IGVA is satisfactory, then continue.
- (11) Do these steps to replace the BAV, YAAV001:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the BAV, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801

NOTE: Do not do the installation test for the BAV. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
 - (c) Remove the safety tags and close these circuit breakers:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
 - (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Operate the APU with no load for a minimum five minutes.
 - (g) During the APU operation, examine the BAV for signs of air leakage.
 - (h) If you find air leakage, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the BAV for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
 - (i) Do the Repair Confirmation at the end of this task.
- (12) Do these steps to replace the SCV, YAAV003:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the SCV, YAAV003. These are the tasks:

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- Surge Control Valve Removal, AMM TASK 49-52-41-000-801
- Surge Control Valve Installation, AMM TASK 49-52-41-400-801

NOTE: Do not do the installation test for the SCV. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the SCV for signs of fuel and air leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.

- (h) If you find air leakage and/or more than the fuel leakage rate, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the fuel and/or air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the SCV for signs of fuel and/or air leakage.
 - 7) If you find air leakage and/or more than the fuel leakage rate, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.

- (13) Do these steps to replace the IGVA, YAAV002:

- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the IGVA, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801

NOTE: Do not do the installation test for the IGVA. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum of five minutes.
- (g) During the APU operation, examine the IGVA for signs of fuel leakage.
- NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (h) If you find more than the fuel leakage rate, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the fuel leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the IGVA for signs of fuel leakage.
 - 7) If you find more than the fuel leakage rate, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.
- (14) Do these steps to replace the Delta Pressure Sensor (DP), YAAT012:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the Delta Pressure Sensor (DP), YAAT012. These are the tasks:
- Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
- NOTE: Do not do the installation test for the Delta Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.

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- 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
 - (i) Do the Repair Confirmation at the end of this task.
- (15) Do these steps to replace the Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the Total Pressure Sensor (PT), YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
- NOTE:** Do not do the installation test for the Total Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Operate the APU with no load for a minimum five minutes.
 - (g) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
 - (h) If you find air leakage, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
 - (i) Do the Repair Confirmation at the end of this task.
- (16) Clean and do an inspection of the pneumatic tubes and housings for the Delta Pressure Sensor and Total Pressure Sensor:
- (a) Make sure that the APU Master Switch is OFF.

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- (b) Remove the sensors and tubes:
- 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the Delta Pressure Sensor drain tube.
NOTE: Reference Component Maintenance Manual (CMM) 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the Total Pressure Sensor drain tube.
NOTE: Reference CMM 49-26-95.
- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
- 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
- (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
- 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell Service Bulletin (SB) 131-49-7541 to replace the drain tubes with new drain tubes that have small orifice drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - a) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
- 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the Total Pressure Sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the Delta Pressure Sensor drain tube.
- (g) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (h) Do the Repair Confirmation at the end of this task.
- (17) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801NOTE: Do not do the installation test for the ECU. You must energize the bleed air system first to complete the Fault Isolation Task for this observed fault.

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- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do the Repair Confirmation at the end of this task.
- (18) Do these steps to replace the APU:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Set these switches on the Forward Overhead Panel, P5:
- (a) Set the ISOLATION VALVE Switch to the OPEN position.
- (b) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
- (c) Make sure that the L PACK and R PACK Switches are OFF.
- (d) Set the APU BLEED Switch to the ON position.
- NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
- (e) Set the three switches for the cabin temperature control to the AUTO position.
- (f) Set the L PACK and R PACK Switches to the AUTO position.
- (2) Let the APU EGT become stable (one to two minutes).
- (3) Set the L PACK and R PACK Switches to the HIGH position.
- (4) Let the APU EGT become stable (one to two minutes).
- (5) Set these switches, on the Forward Overhead Panel, P5, to remove the pneumatic load:
- (a) Set the L PACK and R PACK Switches to the OFF position.
- (b) Set the three switches for the cabin temperature control to the OFF position.
- (c) Set the APU BLEED Switch to the OFF position.
- (d) Set the ISOLATION VALVE Switch to the CLOSE position.
- (6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (7) If the duct pressure is satisfactory, then you corrected the problem.

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- (8) If the duct pressure is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. Duct Pressure is Low or Not Constant During ACS Operation, The APU is the Bleed Source - Fault Isolation

A. Description

- (1) The duct pressure is low or not constant during an Air Conditioning System (ACS) and APU operation. The duct pressure gage on the Forward Overhead Panel, P5 shows less than 7 psig (48 kPa) or changes by more than 2 psig (14 kPa).

B. Possible Causes

- (1) Maintenance message BLEED DISABLED TO PREVENT REVERSE FLOW shows on the CDU
- (2) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (3) Air leakage from the bleed air ducts on the airplane
- (4) Inlet Guide Vane (IGV), YAAV002
- (5) BAV, YAAV001
- (6) SCV, YAAV003
- (7) Operational problems with the IGVA, YAAV002
- (8) IGVA, YAAV002
- (9) Delta Pressure Sensor (DP), YAAT012
- (10) Total Pressure Sensor (PT), YAAT004
- (11) Blockage of unwanted materials or damage to the tubes for the Delta Pressure Sensor and Total Pressure Sensor
- (12) ECU, M1709
- (13) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this duct pressure check for the APU bleed air system:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:

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- 1) Set the ISOLATION VALVE Switch to the OPEN position.
- 2) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
- 3) Make sure that the L PACK and R PACK Switches are OFF.
- 4) Set the APU BLEED Switch to the ON position.
NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
- 5) Set the three switches for the cabin temperature control to the AUTO position.
- 6) Set the L PACK and R PACK Switches to the AUTO position.
- (c) Let the APU EGT become stable (one to two minutes).
- (d) Set the L PACK and R PACK Switches to the HIGH position.
- (e) Let the APU EGT become stable (one to two minutes).
- (f) Set these Switches on the Forward Overhead Panel, P5 to remove the pneumatic load:
 - 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.
- (g) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (h) If the duct pressure is satisfactory, then there was an intermittent fault.
- (i) If the duct pressure is not satisfactory, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for these maintenance message(s) on the CURRENT STATUS page of the CDU display:
 - 49-52269
 - 49-52292
 - (b) If you find the above maintenance message(s), then do the Fault Isolation Procedure for each message to correct the fault.
NOTE: The two maintenance messages have the same Fault Isolation Procedure.
 - (c) If you did not find the above maintenance message(s), then continue.
- (2) Do a general visual inspection of the air inlet duct, compressor inlet plenum, and IGV for the APU:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Set the APU Master Switch to the ON position and install a DO NOT OPERATE tag, STD-858.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.

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- 2) Remove the access door from the compressor inlet plenum.
NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Visually examine the IGTV for damage or missing vanes.
 - a) Use a flashlight to examine the IGTV through the inlet housing.

<1> If visibility of the IGTV is limited, do a borescope inspection of the IGTV (AMM TASK 49-21-00-200-801).
 - b) If you find damage or missing vanes, then do the applicable corrective action in the inspection procedure (AMM TASK 49-21-00-200-801).
 - 5) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (f) Set the APU Master Switch to the OFF position.
 - (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (3) Do an air leakage check on the bleed air ducts for the airplane:
- (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Set these switches on the Forward Overhead Panel, P5:
 - 1) Set the ISOLATION VALVE Switch to the OPEN position.
 - 2) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - 3) Make sure that the L PACK and R PACK Switches are OFF.
 - 4) Set the APU BLEED Switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).

 - 5) Set the three switches for the cabin temperature control to the AUTO position.
 - 6) Set the L PACK and R PACK Switches to the AUTO position.
 - (c) Let the APU EGT become stable (one to two minutes).
 - (d) Set the L PACK and R PACK Switches to the HIGH position.
 - (e) Let the APU EGT become stable (one to two minutes).
 - (f) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.
 - (g) If there is air leakage, then do these steps to repair the leakage:
 - 1) Set the L PACK and R PACK Switches to the OFF position.
 - 2) Set the three switches for the cabin temperature control to the OFF position.
 - 3) Set the APU BLEED Switch to the OFF position.
 - 4) Set the ISOLATION VALVE Switch to the CLOSE position.

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- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 6) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 7) Repair the cause of the air leakage.
 - 8) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 9) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 10) Set these switches on the Forward Overhead Panel, P5:
 - a) Set the ISOLATION VALVE Switch to the OPEN position.
 - b) Set the APU BLEED Switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
 - c) Set the three switches for the cabin temperature control to the AUTO position.
 - d) Set the L PACK and R PACK Switches to the AUTO position.
 - 11) Let the APU EGT become stable (one to two minutes).
 - 12) Set the L PACK and R PACK Switches to the HIGH position.
 - 13) Let the APU EGT become stable (one to two minutes).
 - 14) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.
 - 15) If there is air leakage, then do the leakage repair again.
 - 16) If there is no air leakage, then do these steps:
 - a) Set the L PACK and R PACK Switches to the OFF position.
 - b) Set the three switches for the cabin temperature control to the OFF position.
 - c) Set the APU BLEED Switch to the OFF position.
 - d) Set the ISOLATION VALVE Switch to the CLOSE position.
 - e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - f) If the duct pressure is satisfactory, then you corrected the fault.
 - (h) If there is no air leakage, then continue.
- (4) Do these steps to replace the BAV, YAAV001:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the BAV, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801

NOTE: Do not do the installation test for the BAV. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the BAV for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the BAV for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.

(5) Do these steps to replace the SCV, YAAV003:

- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801

NOTE: Do not do the installation test for the SCV. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the SCV for signs of fuel and air leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (h) If you find air leakage and/or more than the fuel leakage rate, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the fuel and/or air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.

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- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) During the APU operation, examine the SCV for signs of fuel and/or air leakage.
- 7) If you find air leakage and/or more than the fuel leakage rate, then do the leakage repair again.
 - (i) Do the Repair Confirmation at the end of this task.
- (6) Do an operational test of the IGVA linkage:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there was a problem with the IGVA, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If the IGVA is satisfactory, then continue.
- (7) Do these steps to replace the IGVA, YAAV002:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the IGVA, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801

NOTE: Do not do the installation test for the IGVA. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
 - (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the IGVA for signs of fuel leakage.

NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (h) If you find more than the fuel leakage rate, then do these steps to repair the leakage:

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- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
- 3) Repair the cause of the fuel leakage.
- 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 6) During the APU operation, examine the IGVA for signs of fuel leakage.
- 7) If you find more than the fuel leakage rate, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.

(8) Do these steps to replace the Delta Pressure Sensor (DP), YAAT012:

- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the Delta Pressure Sensor (DP), YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801

NOTE: Do not do the installation test for the Delta Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Operate the APU with no load for a minimum five minutes.
 - (g) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
 - (h) If you find air leakage, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
 - (i) Do the Repair Confirmation at the end of this task.
- (9) Do these steps to replace the Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU Master Switch is OFF.

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- (b) Replace the Total Pressure Sensor (PT), YAAT004. These are the tasks:

- Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
- Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801

NOTE: Do not do the installation test for the Total Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum five minutes.
- (g) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.
- (10) Clean and do an inspection of the pneumatic tubes and housings for the Delta Pressure Sensor and Total Pressure Sensor:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Remove the sensors and tubes:
- 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the Delta Pressure Sensor drain tube.

NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the Total Pressure Sensor drain tube.

NOTE: Reference CMM 49-26-95.
- (c) Examine the tubes for cracks, worn areas, corrosion and damage.
- 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.

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- (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
- 1) Clean as necessary with a soft cotton cloth, G50138.
- (e) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small office drain holes to drain water that might collect within the tubes.
- 2) APU's with Honeywell SB 131-49-7541;
Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
- a) If no air comes out of the small orifice drain holes, replace the tube.
- 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
- 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
a) Install the Total Pressure Sensor drain tube.
- 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
a) Install the Delta Pressure Sensor drain tube.
- (g) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (h) Do the Repair Confirmation at the end of this task.
- (11) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the ECU, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** Do not do the installation test for the ECU. You must energize the bleed air system first to complete the Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- (f) Do the Repair Confirmation at the end of this task.
- (12) Do these steps to replace the APU:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
 - (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Set these switches on the Forward Overhead Panel, P5:
 - (a) Set the ISOLATION VALVE Switch to the OPEN position.
 - (b) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - (c) Make sure that the L PACK and R PACK Switches are OFF.
 - (d) Set the APU BLEED Switch to the ON position.
 - NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
 - (e) Set the three switches for the cabin temperature control to the AUTO position.
 - (f) Set the L PACK and R PACK Switches to the AUTO position.
- (2) Let the APU EGT become stable (one to two minutes).
- (3) Set the L PACK and R PACK Switches to the HIGH position.
- (4) Let the APU EGT become stable (one to two minutes).
- (5) Set these switches, on the Forward Overhead Panel, P5, to remove the pneumatic load:
 - (a) Set the L PACK and R PACK Switches to the OFF position.
 - (b) Set the three switches for the cabin temperature control to the OFF position.
 - (c) Set the APU BLEED Switch to the OFF position.
 - (d) Set the ISOLATION VALVE Switch to the CLOSE position.
- (6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (7) If the duct pressure is satisfactory, then you corrected the problem.
- (8) If the duct pressure is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

807. Duct Pressure - Low or Not Constant During MES Operation, The APU is the Bleed Source - Fault Isolation

A. Description

- (1) The duct pressure is low or not constant during a Main Engine Start (MES) and APU operation.

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B. Possible Causes

- (1) Blockage of unwanted materials in the air inlet duct and compressor inlet plenum for the APU
- (2) Air leakage from the bleed air ducts on the airplane
- (3) IG, YAAV002
- (4) BLEED COMMAND SW and/or BLEED AIR VALVE indication problems on the INPUT MONITORING page for the bleed air system
- (5) Problem with the ENGINE 1 START Switch, S266 on the Pilot Overhead Panel, P5
- (6) Problem with the ENGINE 2 START Switch, S267 on the Pilot Overhead Panel, P5
- (7) Operational problems with the IG, YAAV002
- (8) Blockage of unwanted materials or damage to the tubes for the Delta Pressure Sensor and Total Pressure Sensor
- (9) APU Check Valve
- (10) BAV, YAAV001
- (11) IG, YAAV002
- (12) Delta Pressure Sensor (DP), YAAT012
- (13) Total Pressure Sensor (PT), YAAT004
- (14) ECU, M1709
- (15) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER
C	4	C00154	ENGINE 2 START VALVE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
A	14	C00033	AUX POWER UNIT CONT
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-55 TASK SUPPORT Figure 302)
- (3) SSM 21-51-11
- (4) SSM 21-51-21
- (5) SSM 49-52-31
- (6) SSM 80-11-11
- (7) WDM 21-51-11
- (8) WDM 21-51-21
- (9) WDM 49-52-31
- (10) WDM 80-11-11

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Do a check for these maintenance message(s) on the CURRENT STATUS page of the CDU display:
 - 49-52269
 - 49-52292
 - (b) If you find the above maintenance message(s), then do the Fault Isolation Procedure for each message to correct the problem.

NOTE: The two maintenance messages have the same Fault Isolation Procedure.
 - (c) If you did not find the above maintenance message(s), then do this duct pressure check for the APU bleed air system:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00.

NOTE: The bleed duct pressure must be 30 psig (207 kPa) - 40 psig (276 kPa).
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) If the duct pressure is satisfactory, then there was an intermittent fault.
 - 5) If the duct pressure is not satisfactory, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the air inlet duct, compressor inlet plenum, and IGV for the APU:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Set the APU Master Switch to the ON position and install a DO NOT OPERATE tag, STD-858.
 - (c) Visually examine the air inlet duct for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.

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- 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
- (d) Visually examine the compressor inlet plenum for blockage of unwanted materials:
 - 1) Loosen the eight captive screws that attach the access door to the compressor inlet plenum.
 - 2) Remove the access door from the compressor inlet plenum.

NOTE: A lanyard is attached to the access door to keep the access door with the APU.
 - 3) Visually examine the compressor inlet plenum for blockage of unwanted materials.
 - a) If you find blockage of unwanted materials, then remove the blockage.
 - 4) Visually examine the IGTV for damage or missing vanes.
 - a) Use a flashlight to examine the IGTV through the inlet housing.

<1> If visibility of the IGTV is limited, do a borescope inspection of the IGTV (AMM TASK 49-21-00-200-801).
 - b) If you find damage or missing vines, then do the applicable corrective action in the inspection procedure (AMM TASK 49-21-00-200-801).
 - 5) Re-install the access door to the compressor inlet plenum with the eight captive screws.
- (e) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (f) Set the APU Master Switch to the OFF position.
- (g) If there was blockage of materials or damage to the air inlet duct or compressor inlet plenum for the APU, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (h) If there were no blockage of materials and no damage to the air inlet duct and compressor inlet plenum for the APU, then continue.
- (2) Do an air leakage check on the bleed air ducts for the airplane:
 - (a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (b) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00.

NOTE: The bleed duct pressure must be 30 psig (207 kPa) - 40 psig (276 kPa).
 - (c) Operate the APU with no load for a minimum of five minutes.
 - (d) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.
 - (e) If there is air leakage, then do these steps to repair the leakage:
 - 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00.

NOTE: The bleed duct pressure must be 30 psig (207 kPa) - 40 psig (276 kPa).

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- 7) During the APU operation, examine the bleed air ducts on the airplane for signs of air leakage.
- 8) If there is air leakage, then do the leakage repair again.
- 9) If there is no air leakage, then do these steps:
 - a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - b) If the duct pressure is satisfactory, then you corrected the problem.
- (f) If there is no air leakage, then continue.
- (3) Do a check of the BLEED COMMAND SW and BLEED AIR VALVE indications on the INPUT MONITORING page for the bleed air system:
 - (a) Make sure that the ISOLATION VALVE Switch is CLOSE.
 - (b) Make sure that the L PACK and R PACK Switches are OFF.
 - (c) Make sure that the engines 1 and/or 2 BLEED Switches are OFF.
 - (d) Make sure that the APU BLEED Switch is OFF.
 - (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - (f) Set the ISOLATION VALVE Switch to the OPEN position.
 - (g) Set the APU BLEED Switch to the ON position.

NOTE: The bleed duct pressure must be more than 10 psig (69 kPa).
 - (h) Do this task: APU Operation Limits, AMM TASK 49-11-00-710-802.
 - (i) Get access to the INPUT MONITORING page from the MAIN MENU page.

NOTE: You push the LSK adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.
 - (j) Make sure that the CDU shows the third page of four pages (3/4) for the INPUT MONITORING data.
 - (k) Look at the BLEED COMMAND SW indication during the APU operation.
 - (l) If the BLEED COMMAND SW indication shows OFF, then do these steps:
 - 1) Set the APU BLEED Switch to the OFF position.
 - 2) Set the ISOLATION VALVE Switch to the CLOSE position.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- 5) Remove the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- 6) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- 7) Examine the electrical connectors D646 and D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 8) If there was a problem with the electrical connector D646 or D3599, then do these steps:
 - a) Re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do the Repair Confirmation at the end of this task.
- 9) If the electrical connectors D646 and D3599 are satisfactory, then do these steps:
 - a) Do a check for an open or a short-to-ground circuit between this socket of electrical connector D646 for the Air Conditioning Panel, P5-10 and this pin of electrical connector D3599B for the ECU, M1709 as follows (SSM 21-51-11):

**AIR
CONDITIONING
PANEL
D646**

socket 13

**APU
ELECTRONIC
CONTROL UNIT
D3599B**

pin C4

- b) Measure the resistance between this socket on the electrical connector D646 and Structure Ground as follows (SSM 21-51-11):

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AIR CONDITIONING PANEL D646

socket 4 GND < 100 Ω

- c) Move and hold the APU BLEED Switch on Air Conditioning Panel, P5-10 to the ON position.
- d) Do a check for continuity between these pins of the electrical connector P1 on the Air Conditioning Panel, P5-10 as follows (WDM 21-51-11):

**AIR
CONDITIONING
PANEL
P1**
pin 13

**AIR
CONDITIONING
PANEL
P1**
pin 4

- e) If there is problem with the circuit, then repair the wiring or replace the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- f) If circuit is satisfactory, then re-install the Air Conditioning Panel, P5-10 (WDM 21-51-11, WDM 21-51-21).
- g) Re-install the ECU, M1704. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- h) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	13	C01277	MASTER CAUTION ANNUNCIATOR CONT 3
E	11	C00313	INDICATOR MASTER DIM SECT 1

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C00259	AIR CONDITIONING BLEED AIR VALVE ISLN
A	7	C00796	AIR CONDITIONING BLEED AIR VALVES L
B	7	C00797	AIR CONDITIONING BLEED AIR VALVES R
C	5	C00263	AIR CONDITIONING PACK CONT VALVES R
C	6	C00262	AIR CONDITIONING PACK CONT VALVES L
D	1	C01444	A/C OVERBOARD EXHAUST VALVE CONT
D	2	C01445	A/C OVERBOARD EXH VALVE RECONFIG CONT

- i) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- j) Do the Repair Confirmation at the end of this task.
- (m) If the BLEED COMMAND SW indication shows ON, then do these steps:
 - 1) During the APU operation, look at the BLEED AIR VALVE indication.
NOTE: You can find the BLEED AIR VALVE indication on the third page of four pages (3/4) for the INPUT MONITORING data.
 - a) Make sure that the BLEED AIR VALVE indication shows OPEN.

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- 2) During the APU operation, look at the two indications on the position switch for the BAV.

NOTE: There are two indications on the position switch to show the position of the BAV. You can find the OPEN and CLOSED indications on the top and bottom of the BAV.

- a) Make sure that the position switch for the BAV shows OPEN.
- 3) Set the APU BLEED Switch to the OFF position.
- 4) Set the ISOLATION VALVE Switch to the CLOSE position.
- 5) Make sure that the BLEED AIR VALVE indication shows CLOSE.
- 6) Make sure that the position switch for the BAV shows CLOSED.
- 7) If the BLEED AIR VALVE indication and/or the position switch for the BAV do not show the correct values, then do these steps:
- a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- b) Replace the BAV, YAAV001. These are the tasks:
- Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
- c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- d) Do the Repair Confirmation at the end of this task.
- 8) If the BLEED AIR VALVE indication and the position switch for the BAV show the correct values, then do this step and continue:
- a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (4) Do a check of the ENGINE 1 START Switch, S266, on the Pilot Overhead Panel, P5:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Make sure that the ENGINE 1 START and ENGINE 2 START Switches are OFF.
- (c) Disconnect the electrical connectors D40450P and D40136P from the E2-2 Electrical Shelf.
- (d) Get access to the INPUT MONITORING page from the MAIN MENU page.
- NOTE: You push the LSK adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.
- (e) Make sure that the CDU shows the second page of four pages (2/4) for the INPUT MONITORING data.
- (f) Look at the MES SWITCH(es) indication during the APU operation.
- NOTE: The MES SWITCH(es) indication must show OFF.
- (g) Set the ENGINE 1 START Switch to the GRD position.
- NOTE: The MES SWITCH(es) indication must show 1.
- (h) Set the ENGINE 1 START Switch to the OFF position.
- NOTE: The MES SWITCH(es) indication must show OFF.
- (i) If the MES SWITCH(es) indication does not show the correct values at each switch position, then do these steps:
- 1) Re-connect the electrical connectors D40450P and D40136P to the E2-2 Electrical Shelf.



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- 2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

- 3) Remove the ENGINE 1 START Switch, S266 from the Pilot Overhead Panel, P5 (WDM 80-11-11).
- 4) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- 5) Examine the electrical connector D3599 and terminal lug 1B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 6) If there was a problem with the electrical connector D3599 or terminal lug 1B, then do these steps:
- a) Re-install the ENGINE 1 START Switch, S266 to the Pilot Overhead Panel, P5 (WDM 80-11-11).
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

- d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do the Repair Confirmation at the end of this task.
- 7) If the electrical connector D3599 and terminal lug 1B are satisfactory, then do these steps:
- a) Do a check for an open or a short-to-ground circuit between this pin of electrical connector D3599B for the ECU, M1709, and this terminal lug for the ENGINE 1 START Switch, S266 (SSM 49-52-31, SSM 80-11-11):

APU

**ELECTRONIC
CONTROL UNIT**

D3599B

pin A1 terminal lug 1B

**ENG 1 START
SWITCH**

S266

- b) If there is problem with circuit, then do repair the wiring (WDM 49-52-31, WDM 80-11-11).
- c) If the circuit is satisfactory, then, do this task: Engine Start Switch - Switch Does Not Hold In GRD Position, Switch Manually Held In GRD Position, No N2 Rotation - Fault Isolation, 80-07 TASK 806.
- d) Re-install the ENGINE 1 START Switch, S266 to the Pilot Overhead Panel, P5 (WDM 80-11-11).
- e) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- f) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

- g) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- h) Do the Repair Confirmation at the end of this task.
- (j) If the MES SWITCH(es) indication shows the correct values at each switch position, then do this step and continue:
- 1) Re-connect the electrical connectors D40450P and D40136P to the E2-2 Electrical Shelf.
- (5) Do a check of the ENGINE 2 START Switch, S267, on the Pilot Overhead Panel, P5:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Make sure that the ENGINE 1 START and ENGINE 2 START Switches are OFF.
 - (c) Disconnect the electrical connectors D40158P and D41010P from the E4-1 Electrical Shelf.
 - (d) Get access to the INPUT MONITORING page from the MAIN MENU page.
NOTE: You push the LSK adjacent to <INPUT MONITORING to get access to the INPUT MONITORING page.
 - (e) Make sure that the CDU shows the second page of four pages (2/4) for the INPUT MONITORING data.
 - (f) Look at the MES SWITCH(es) indication during the APU operation.
NOTE: The MES SWITCH(es) indication must show OFF.
 - (g) Set the ENGINE 2 START Switch to the GRD position.
NOTE: The MES SWITCH(es) indication must show 2.
 - (h) Set the ENGINE 2 START Switch to the OFF position.
NOTE: The MES SWITCH(es) indication must show OFF.
 - (i) If the MES SWITCH(es) indication does not show the correct values at each switch position, then do these steps:
 - 1) Re-connect the electrical connectors D40158P and D41010P to the E4-1 Electrical Shelf.
 - 2) Open this circuit breaker and install safety tag:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE
 - 3) Remove the ENGINE 2 START Switch, S267 from the Pilot Overhead Panel, P5 (WDM 80-11-11).
 - 4) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- 5) Examine the electrical connector D3599 and terminal lug 1B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- 6) If there was a problem with the electrical connector D3599 or terminal lug 1B, then do these steps:
 - a) Re-install the ENGINE 2 START Switch, S267 to the Pilot Overhead Panel, P5 (WDM 80-11-11).
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

- d) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - e) Do the Repair Confirmation at the end of this task.
- 7) If the electrical connector D3599 and terminal lug 1B are satisfactory, then do these steps:
 - a) Do a check for an open or a short-to-ground circuit between this pin of electrical connector D3599B for the ECU, M1709 and this terminal lug for the ENGINE 2 START Switch, S267 as follows (SSM 49-52-31, SSM 80-11-11):

APU

**ELECTRONIC
CONTROL UNIT
D3599B**

**ENG 2 START
SWITCH
S267**

pin C3 terminal lug 1B

- b) If there is problem with circuit, then do repair the wiring (WDM 49-52-31, WDM 80-11-11).
 - c) If the circuit is satisfactory, then do this task: Engine Start Switch - Switch Does Not Hold In GRD Position, Switch Manually Held In GRD Position, No N2 Rotation - Fault Isolation, 80-07 TASK 806.
 - d) Re-install the ENGINE 2 START Switch, S267 to the Pilot Overhead Panel, P5 (WDM 80-11-11).
 - e) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - f) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

- g) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.

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- h) Do the Repair Confirmation at the end of this task.
- (j) If the MES SWITCH(es) indication shows the correct values at each switch position, then do this step and continue:
 - 1) Re-connect the electrical connectors D40158P and D41010P to the E4-1 Electrical Shelf.
- (6) Do a visual inspection of the APU Check Valve:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: APU Check Valve Removal, AMM TASK 36-14-02-000-801.
 - (c) Visually examine each duct end of the APU Check Valve for blockage of unwanted materials and damage that can cause a decrease in airflow:
 - 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find damage that can cause a decrease in airflow, then repair the problems that you find.
 - (d) Visually examine the APU Check Valve for damage which can cause the APU Check Valve to be caught in the open or close position:
 - 1) If you find damage, install a new or serviceable APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - 2) If you did not find damage, re-install the APU Check Valve. This is the task: APU Check Valve Installation, AMM TASK 36-14-02-400-801.
 - (e) If there was blockage of materials or damage to the duct or APU Check Valve, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If there were no blockage of materials and no damage to the duct and APU Check Valve, then continue.
- (7) Clean and do an inspection of the pneumatic tubes and housings for the Delta Pressure Sensor and Total Pressure Sensor:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Remove the sensors and tubes:
 - 1) Do this task: Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801.
 - a) Remove the Delta Pressure Sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - 2) Do this task: Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801.
 - a) Remove the Total Pressure Sensor drain tube.
NOTE: Reference CMM 49-26-95.
 - (c) Examine the tubes for cracks, worn areas, corrosion and damage.
 - 1) If you find cracks, worn areas, corrosion and damage, replace the tubes or repair the problems that you find.
 - (d) Examine the housings for debris build up and residual lubricant.
NOTE: Look inside small pockets within the housing for lubricant that was used to aide installation of the sensors. This residual lubricant can clog the sensor.
 - 1) Clean as necessary with a soft cotton cloth, G50138.

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- (e) Clean the tubes and sensor housing as follows:
- 1) Use the air source to blow the air through the tubes to remove unwanted materials.
NOTE: It is recommended that you use a pressure of 60 psig (414 kPa) - 90 psig (621 kPa) of filtered air or nitrogen to blow the air through the tubes.
NOTE: Reference Honeywell SB 131-49-7541 to replace the drain tubes with new drain tubes that have small orifice drain holes to drain water that might collect within the tubes.
 - 2) APU's with Honeywell SB 131-49-7541;
 - a) Cap one end of the tube, and use the air source to blow the air through the tube to be sure that air will come out of the small orifice drain holes.
 - b) If no air comes out of the small orifice drain holes, replace the tube.
 - 3) Use the air source to blow the air through the mounts of the removed sensors to remove unwanted materials from the mounts.
- (f) Install the sensors and tubes:
- 1) Do this task: Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801.
 - a) Install the Total Pressure Sensor drain tube.
 - 2) Do this task: Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801.
 - a) Install the Delta Pressure Sensor drain tube.
- (g) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (h) Do the Repair Confirmation at the end of this task.
- (8) Do an operational test of the IGVA linkage:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: Inlet Guide Vane (IGV) Actuator Operational Test, AMM TASK 49-52-12-710-801.
 - (c) If there was a problem with the IGVA, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
 - 2) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If the IGVA is satisfactory, then continue.
- (9) Do these steps to replace the BAV, YAAV001:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the BAV, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801NOTE: Do not do the installation test for the BAV. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.

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- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum of five minutes.
- (g) During the APU operation, examine the BAV for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the BAV for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
- (i) Do this the Repair Confirmation at the end of this task.
- (10) Do these steps to replace the IGVA, YAAV002:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the IGVA, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- NOTE: Do not do the installation test for the IGVA. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum of five minutes.

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- (g) During the APU operation, examine the IGVA for signs of fuel leakage.
NOTE: A fuel leakage rate of 1 drop for each minute (0.04 cc for each minute) is permitted during an APU operation from the forward drain on the APU drain seal.
- (h) If you find more than the fuel leakage rate, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the fuel leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the IGVA for signs of fuel leakage.
 - 7) If you find more than the fuel leakage rate, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.
- (11) Do these steps to replace the Delta Pressure Sensor (DP), YAAT012:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the Delta Pressure Sensor (DP), YAAT012. These are the tasks:
- Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
- NOTE:** Do not do the installation test for the Delta Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum of five minutes.
- (g) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Delta Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.

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- (i) Do the Repair Confirmation at the end of this task.
- (12) Do these steps to replace the Total Pressure Sensor (PT), YAAT004:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the Total Pressure Sensor (PT), YAAT004. These are the tasks:
- Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
- NOTE: Do not do the installation test for the Total Pressure Sensor. You must energize the bleed air system first to complete this Fault Isolation Task for this observed fault.
- (c) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU with no load for a minimum of five minutes.
- (g) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
- (h) If you find air leakage, then do these steps to repair the leakage:
- 1) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 2) Install a DO NOT OPERATE tag, STD-858, to the APU Master Switch.
 - 3) Repair the cause of the air leakage.
 - 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) During the APU operation, examine the Total Pressure Sensor for signs of air leakage.
 - 7) If you find air leakage, then do the leakage repair again.
- (i) Do the Repair Confirmation at the end of this task.
- (13) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the ECU, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE: Do not do the installation test for the ECU. You must energize the bleed air system first to complete the Fault Isolation Task for this observed fault.

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- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Do the Repair Confirmation at the end of this task.
- (14) Do these steps to replace the APU:
- (a) Make sure that the APU Master Switch is OFF.
- (b) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the APU installation test. After you do the APU installation test, you must energize the bleed air system to complete this Fault Isolation Task for this observed fault.
- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00.
- NOTE: The bleed duct pressure must be 30 psig (207 kPa) - 40 psig (276 kPa).
- (2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (3) If the duct pressure is satisfactory, then you corrected the problem.
- (4) If the duct pressure is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

808. Multiple Surge Condition During MES Operation, The APU is the Bleed Source - Fault Isolation

A. Description

- (1) This task is for this observed fault:
- (a) APU: surge of APU during main engine start.
- (2) There is a multiple compressor surge condition during a MES and APU operation.
- (a) An APU surge is the result of disrupted airflow in the compressor section of the APU.
- (b) The noise can be a loud bang-type sound or you can see a momentarily flame coming out of the APU exhaust tail cone.

B. Possible Causes

- (1) APU BITE check
- (2) APU Air Inlet Duct

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- (3) APU Compressor Inlet Plenum
- (4) IGV, YAAV002
- (5) BAV, YAAV001
- (6) SCV, YAAV003
- (7) Wiring
- (8) Delta Pressure sensor, YAAT012
- (9) Total Pressure Sensor, YAAT004
- (10) Engine Wire Harness
- (11) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-55 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-55 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31

E. Initial Evaluation

- (1) While you dry-motor an engine with the APU in the next steps, look for one or more APU surge conditions.
 - (a) Go to the APU maintenance page and look for the EGT indication. An APU surge condition occurs when you see that the APU EGT indication suddenly increases.
- (2) Dry-motor an engine. This is the task:
 - Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00
- (3) If there was one or more APU surge conditions while you dry-motored an engine, then do the Fault Isolation Procedure below.
- (4) If there was no APU surge conditions while you dry-motored an engine, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a BITE test of the APU. This is the task:
 - APU BITE Procedure, 49-60 TASK 801
- (a) If you find any related maintenance messages, then do these steps:
 - 1) Do the fault isolation task for each related maintenance message.
 - 2) Do the Repair Confirmation at the end of this task.

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- (2) Do a BITE test of the APU. This is the task:
- APU BITE Procedure, 49-60 TASK 801
- (a) On the CDU, go to the MAIN MENU page for the APU BITE TEST.
- (b) Push the LSK adjacent to IDENT/CONFIG.
- (c) Push the NEXT PAGE key to go to the second page.
- (d) the LSK adjacent to DATA MEMORY MODULE.
- NOTE: The program data for the data memory module shows on the CDU display.
- (e) Push the NEXT PAGE key until you find the RECT4R indication.
- (f) If the RECT4R indication is more than 2000°F (1093°C), then do these steps:
- 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (g) If the RECT4R indication is not more than 2000°F (1093°C), then continue.
- (3) Do a general visual inspection of the APU air inlet duct. This is the task:
- APU Power Plant Inspection, AMM TASK 49-11-00-200-801
- (a) If you find a problem during the inspection, then do these steps:
- 1) Clean or repair the APU air inlet duct.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem during the inspection, then continue.
- (4) Do a general visual inspection of the APU compressor inlet plenum. This is the task:
- APU Power Plant Inspection, AMM TASK 49-11-00-200-801
- (a) If you find a problem during the inspection, then do these steps:
- 1) Clean or repair the APU compressor inlet plenum.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem during the inspection, then continue.
- (5) Replace the APU inlet guide vane, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the APU bleed valve, YAAV001. These are the tasks:
- Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the APU surge valve, YAAV003. These are the tasks:
- Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (8) Do this check of the wiring:

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- (a) Remove the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
- (b) Disconnect connector P10 from the APU bleed valve, YAAV001.
- (c) Do a wiring check between these pins of connector D3599B at the E6 rack and these pins of connector P10 at the APU bleed valve (WDM 49-52-31):

APU ELECTRONIC CONTROL UNIT, M1709 D3599B		BLEED VALVE, V1(YAA) P10	
pin C9	.....	pin 4	
pin B10	.....	pin 1	

- (d) Do a wiring check to make sure that pin 3 of P10 has continuity to ground.
- (e) Do a wiring check to make sure that pin 2 of P10 has continuity to ground.
- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Re-connect connector P10 to the APU bleed valve, YAAV001.
 - 4) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then continue.
- (h) Re-connect connector P10 to the APU bleed valve, YAAV001.
- (9) Do this check of the wiring:
 - (a) Disconnect connector P9 from the APU surge valve, YAAV003.
 - (b) Do a wiring check between these pins of connector D3599A at the E6 rack and these pins of connector P9 at the APU surge valve (WDM 49-52-31) :

APU ELECTRONIC CONTROL UNIT, M1709 D3599A		SURGE VALVE, V3(YAA) P9	
pin B15	.....	pin 7	
pin B14	.....	pin 8	
pin C14	.....	pin 2	
pin C15	.....	pin 1	
pin D15	.....	pin 3	

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 3) Re-connect connector P9 to the APU surge valve, YAAV003.

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- 4) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
- (e) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (f) Re-connect connector P9 to the APU surge valve, YAAV003.
- (10) Replace the APU delta pressure sensor, YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (11) Replace the APU total pressure sensor, YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (12) Do a general visual inspection of the APU engine wire harness. This is the task:
 - Wire Harness Inspection, AMM TASK 49-11-01-200-801
- (a) If you find a problem during the inspection, then do these steps:
 - 1) Replace the APU engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem during the inspection, then continue.
- (13) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (2) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00.
- (3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (4) If there is no multiple surge condition during a MES, then you corrected the problem.
- (5) If there is a multiple surge condition during a MES, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

809. Abnormal noise during APU System Operations

A. Description

- (1) This task is for this observed fault:
 - (a) There are abnormal noises during APU operations.

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B. Possible Causes

- (1) APU load compressor surge
 - (a) Audible "BOOMING" noise coming out from tail pipe due to APU Load Compressor surge or Engine Compressor Surge.
 - 1) APU load compressor surge occurs when the airflow from the compressor falls too far below the rate at which it enters through the IGV. A back pressure condition known as compressor stall can occur. A significant back pressure of the compressor results in an APU load compressor surge. APU load compressor surges have most often occurred during single Environmental Control System (ECS) pack HIGH operation mode. The observations below can be seen during APU load compressor surge:
 - a) The P5 Panel DUCT PRESS gauge located in the flight deck shows a significant drop of pressure during a surge event, from about 45 psig to 20 psig.
 - b) The SCV, when viewed on the APU BITE screen, will go full open (approximately 10 degrees) during an event.
 - c) The delta-P value will drop close to, or in some observed cases, below 0 psid.
 - d) The inlet guide vanes (approximately 80-85 deg) will not move.
 - e) The events are self recovering and the SCV will gradually close and the pneumatic duct pressure will return to normal after several seconds.
 - 2) Engine compressor surge is the most infrequent type of surging event. During an engine compressor surge, apart from noise, these parameters can be viewed on the CDU monitoring display:
 - a) APU EGT fluctuates (+/- 50F).
 - b) Fuel Flow fluctuates (+/- 10 pph).
 - c) APU fluctuates (+/- 0.5%).
 - d) The degree of all of these parameters is a function of the damage to the engine compressor impeller, shroud and diffuser, as well as the load applied to the APU.
 - (2) APU Engine Compressor Impeller Shroud Rub
 - (a) A rapid popping type noise in APU compartment originating from the APU when operating
 - 1) This noise may occur due to a rubbing condition of the Engine Compressor impeller with the impeller shroud.
 - 2) Engine compressor rubs are not uncommon and may rarely result in a popping noise. By itself, the rubs will not be an issue for continued operation. The rub may result in some decrease in EGT margin. In that the rub normally occurs closer to the blade trailing edge area, the condition may not be detected by a Bore Scope Inspection (BSI).
 - 3) If the sound does not diminish on it's own, the APU will require disassembly to address the issue.
 - (3) APU check valve / SCV oscillation
 - (a) A loud metallic clattering noise under floor in the vicinity of the APU check valve.
 - 1) This noise will be heard when APU check valve / surge control valve oscillation occurs.

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- 2) APU check valve/surge control valve oscillation has only been observed when transitioning from single ECS pack HIGH operation mode to duct pressurization mode. In this case, the surge control valve enters an oscillating mode causing the check valve to rapidly open and close.
- 4) APU SCV nudging/ bleed dumping
 - (a) Audible "BOOMING" noise coming out from the tailpipe or a loud metallic clattering noise under the floor in the vicinity of the APU checkvalve, accompanied by a momentary increase in exhaust noise.
 - 1) This audible noise will be heard when APU SCV nudging/ bleed dumping occurs.
 - 2) This noise is commonly misinterpreted as APU load compressor surge or APU check valve / SCV oscillation.
 - 3) When aircraft pneumatic demand is significantly decreased (i.e. turning APU bleed off, engine starter cutout, etc.), the SCV must open in order to dump excess pressure and the inlet guide vanes will move to a new, reduced bleed schedule. This will be accompanied by a momentary increase in exhaust noise.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) 49-55 TASK SUPPORT Figure 301
- (2) 49-55 TASK SUPPORT Figure 302

E. Initial Evaluation

- (1) If you hear a BOOMING noise coming from the tailpipe because of APU Load Compressor surge during main engine start operations, do the Fault Isolation Procedure (Surge during MES) below.
- (2) If you hear a BOOMING noise coming from the tailpipe because of APU Load Compressor surge during ECS operations, do the Fault Isolation Procedure (Surge during ECS) below.
- (3) If you hear a BOOMING noise coming from the tailpipe because of Engine Compressor surge, do the Fault Isolation Procedure (Engine Compressor Surge) below.
- (4) If you hear a rapid popping noise in the APU compartment originating from the APU during operation, do the Fault Isolation Procedure (Engine Compressor Rub) below.
- (5) If you hear a loud metallic clattering noise below the floor near the APU check valve and this is because of APU check valve / surge control valve oscillation, do the Fault Isolation Procedure (APU SCV) below.
- (6) If you hear a BOOMING noise coming from the tail pipe or a loud metallic clattering noise under the floor near the APU check valve, there is a momentary increase in exhaust noise, and this is because of SCV nudging or bleed dumping then no maintenance action is necessary.

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F. Fault Isolation Procedure

- (1) Fault Isolation Procedure (Surge during MES)
 - (a) Do this is the task: Multiple Surge Condition During MES Operation, The APU is the Bleed Source - Fault Isolation, 49-55 TASK 808
 - 1) Do the Repair Confirmation at the end of this task.
- (2) Fault Isolation Procedure (Surge during ECS)
 - (a) Do this is the task: Surge Condition During ECS Operation, The APU is the Bleed Source - Fault Isolation, 49-55 TASK 810
 - 1) Do the Repair Confirmation at the end of this task.
- (3) Fault Isolation Procedure (Engine Compressor Surge)
 - (a) Contact your local Boeing representative for instructions.
 - 1) Do the Repair Confirmation at the end of this task.
- (4) Fault Isolation Procedure (Engine Compressor Rub)
 - (a) The popping sound may eventually go away. If the noise does not subside or go away, replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- (5) Fault Isolation Procedure (APU SCV)
 - (a) Replace the APU surge valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Listen to the abnormal noises during APU operations.
 - (a) If there is no abnormal noise, then you corrected the problem.
 - (b) If there is still abnormal noise, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

810. Surge Condition During ECS Operation, The APU is the Bleed Source - Fault Isolation

A. Description

- (1) This task is for this observed fault:
 - (a) APU: surge of APU during ECS operation.
- (2) There is a surge condition during ECS and APU operation.
 - (a) An APU surge is the result of disrupted airflow in the compressor section of the APU.
 - (b) The noise can be a loud bang-type sound or you can see a momentarily flame coming out of the APU exhaust tail cone.

B. Possible Causes

- (1) APU BITE Test
- (2) APU Air Inlet Duct
- (3) APU Compressor Inlet Plenum

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- (4) IGV, YAAV002
- (5) BAV, YAAV001
- (6) SCV, YAAV003
- (7) Wiring
- (8) Delta Pressure sensor, YAAT012
- (9) Total Pressure Sensor, YAAT004
- (10) APU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) 49-55 TASK SUPPORT Figure 301
- (2) 49-55 TASK SUPPORT Figure 302
- (3) SSM 49-52-31
- (4) WDM 49-52-31

E. Initial Evaluation

- (1) While you dry-motor an engine with the APU in the next steps, look for one or more APU surge conditions.
 - (a) Go to the APU maintenance page and look for the EGT indication. An APU surge condition occurs when you see that the APU EGT indication suddenly increases.
- (2) Dry-motor an engine. This is the task:
 - Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00
- (3) If there was one or more APU surge conditions while you dry-motored an engine, then do the Fault Isolation Procedure below.
- (4) If there was no APU surge conditions while you dry-motored an engine, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a BITE test of the APU. This is the task:
 - APU BITE Procedure, 49-60 TASK 801
- (a) If you find any related maintenance messages, then do these steps:
 - 1) Do the fault isolation task for each related maintenance message.
 - 2) Do the Repair Confirmation at the end of this task.
- (2) Do a BITE test of the APU. This is the task:
 - APU BITE Procedure, 49-60 TASK 801

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- (a) On the CDU, go to the MAIN MENU page for the APU BITE TEST.
- (b) Push the LSK adjacent to IDENT/CONFIG.
- (c) Push the NEXT PAGE key to go to the second page.
- (d) the LSK adjacent to DATA MEMORY MODULE.
NOTE: The program data for the data memory module shows on the CDU display.
- (e) Push the NEXT PAGE key until you find the RECT4R indication.
- (f) If the RECT4R indication is more than 2000°F (1093°C), then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (g) If the RECT4R indication is not more than 2000°F (1093°C), then continue.
- (3) Do a general visual inspection of the APU air inlet duct. This is the task:
 - APU Power Plant Inspection, AMM TASK 49-11-00-200-801
- (a) If you find a problem during the inspection, then do these steps:
 - 1) Clean or repair the APU air inlet duct.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem during the inspection, then continue.
- (4) Do a general visual inspection of the APU compressor inlet plenum. This is the task:
 - APU Power Plant Inspection, AMM TASK 49-11-00-200-801
- (a) If you find a problem during the inspection, then do these steps:
 - 1) Clean or repair the APU compressor inlet plenum.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem during the inspection, then continue.
- (5) Replace the APU inlet guide vane, YAAV002. These are the tasks:
 - Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the APU bleed valve, YAAV001. These are the tasks:
 - Bleed Air Valve Removal, AMM TASK 49-52-11-000-801
 - Bleed Air Valve Installation, AMM TASK 49-52-11-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the APU surge valve, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (8) Do this check of the wiring:
 - (a) Remove the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- (b) Disconnect connector P10 from the APU bleed valve, YAAV001.
- (c) Do a wiring check between these pins of connector D3599B at the E6 rack and these pins of connector P10 at the APU bleed valve (WDM 49-52-31):

APU ELECTRONIC CONTROL UNIT, M1709 D3599B		BLEED VALVE, V1(YAA) P10
pin C9	.....	pin 4
pin B10	.....	pin 1

- (d) Do a wiring check to make sure that pin 3 of P10 has continuity to ground.
- (e) Do a wiring check to make sure that pin 2 of P10 has continuity to ground.
- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Re-connect connector P10 to the APU bleed valve, YAAV001.
 - 4) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then continue.
- (h) Re-connect connector P10 to the APU bleed valve, YAAV001.
- (9) Do this check of the wiring:
 - (a) Disconnect connector P9 from the APU surge valve, YAAV003.
 - (b) Do a wiring check between these pins of connector D3599A at the E6 rack and these pins of connector P9 at the APU surge valve (WDM 49-52-31):

APU ELECTRONIC CONTROL UNIT, M1709 D3599A		SURGE VALVE, V3(YAA) P9
pin B15	.....	pin 7
pin B14	.....	pin 8
pin C14	.....	pin 2
pin C15	.....	pin 1
pin D15	.....	pin 3

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 3) Re-connect connector P9 to the APU surge valve, YAAV003.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.

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- (e) Re-install the APU electronic control unit, M1709. This is the task:
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (f) Re-connect connector P9 to the APU surge valve, YAAV003.
- (10) Replace the APU delta pressure sensor, YAAT012. These are the tasks:
 - Delta Pressure Sensor Removal, AMM TASK 49-52-33-000-801
 - Delta Pressure Sensor Installation, AMM TASK 49-52-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (11) Replace the APU total pressure sensor, YAAT004. These are the tasks:
 - Total Pressure Sensor Removal, AMM TASK 49-52-32-000-801
 - Total Pressure Sensor Installation, AMM TASK 49-52-32-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (12) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (2) Do this task: Dry Motor the Engine, AMM TASK 71-00-00-700-821-F00
- (3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (4) If there is no surge condition during the ECS and APU operation, then you corrected the problem.
- (5) If there is a surge condition during the ECS and APU operation, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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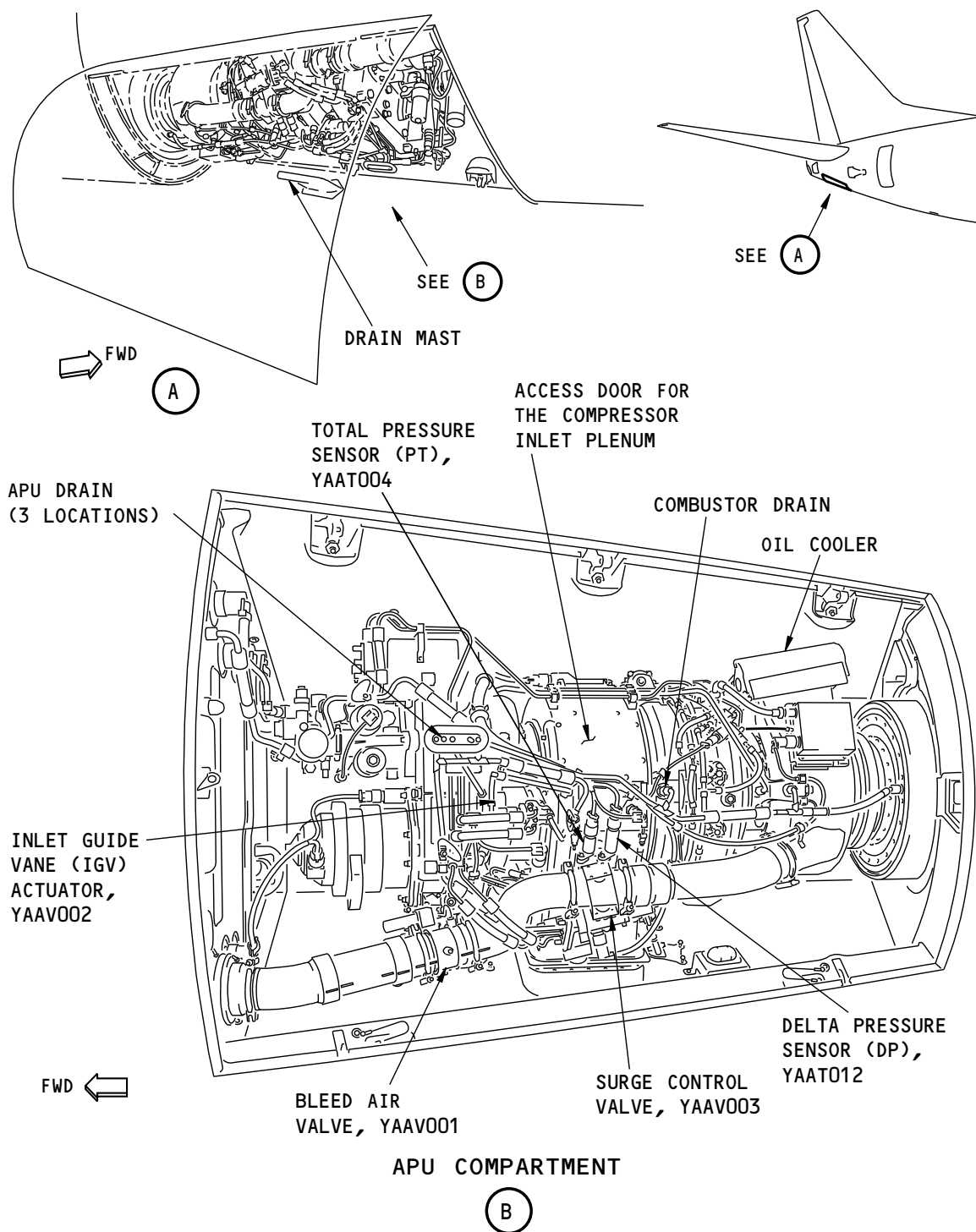
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G88655 S0006745276_V1

APU Bleed Air Component Location
Figure 301/49-55-00-990-801 (Sheet 1 of 3)

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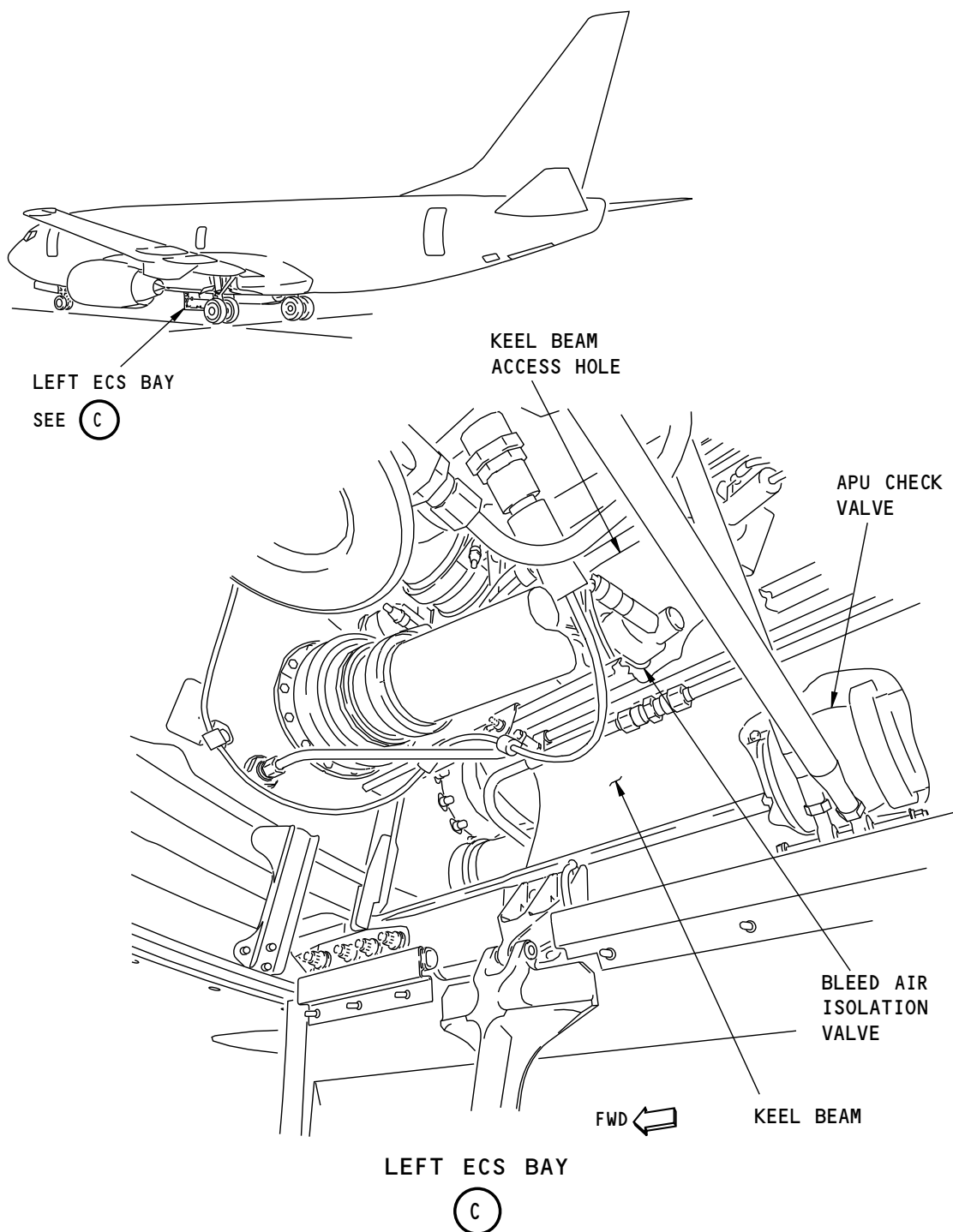
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G88661 S0006745277_V1

APU Bleed Air Component Location
Figure 301/49-55-00-990-801 (Sheet 2 of 3)

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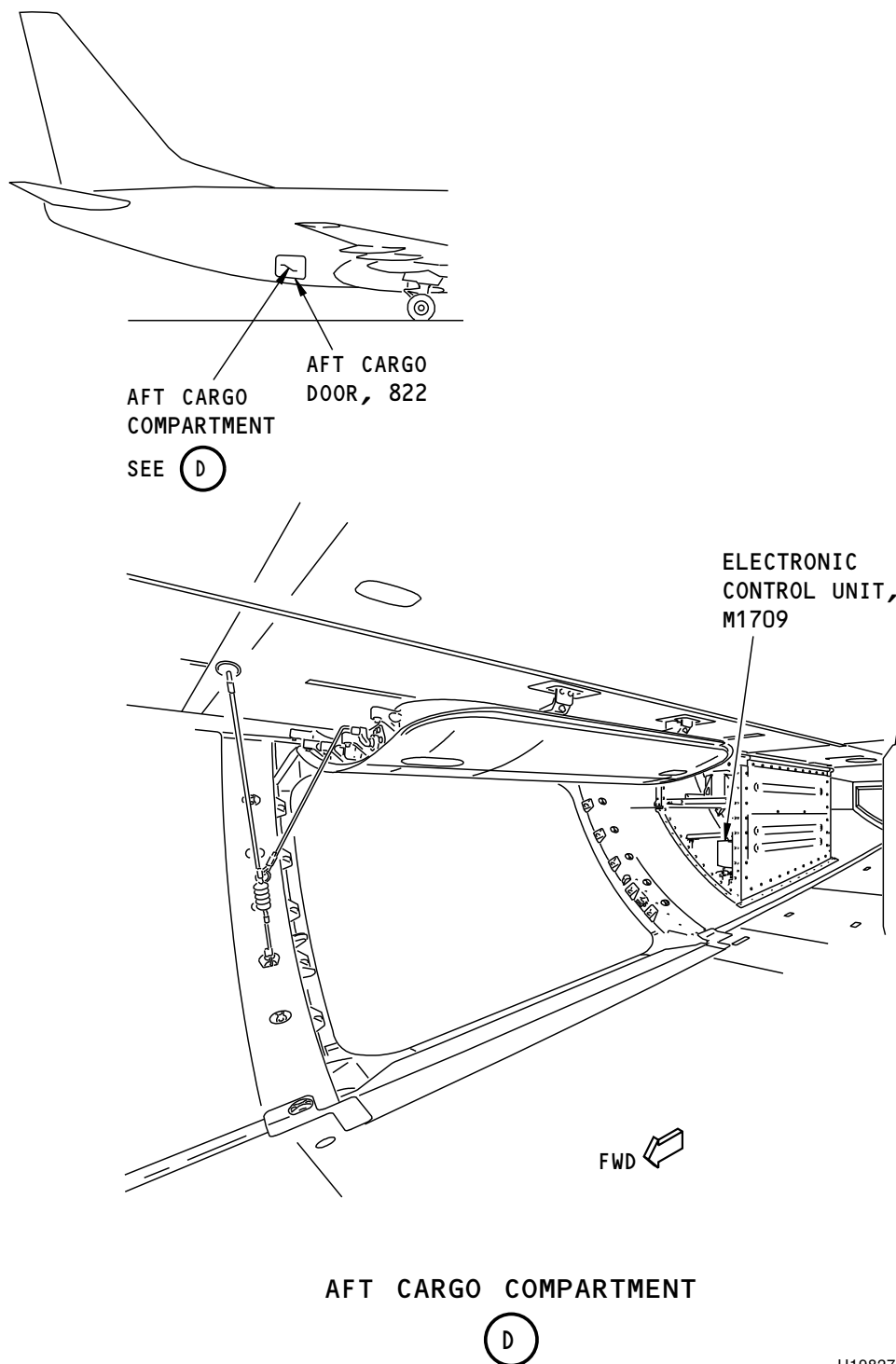
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H19827 S0006745279_V1

APU Bleed Air Component Location
Figure 301/49-55-00-990-801 (Sheet 3 of 3)

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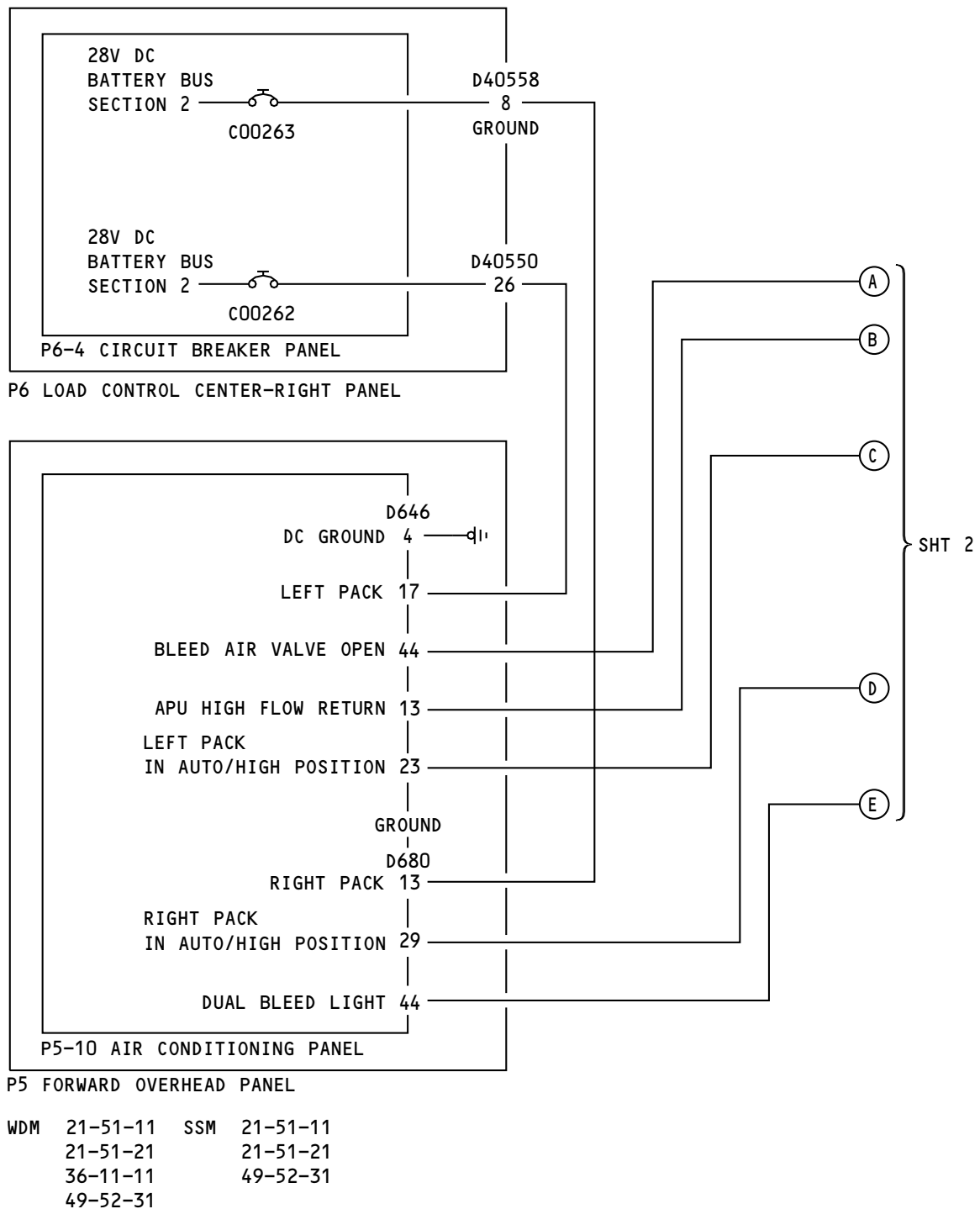
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G88679 S0006745281_V1

APU Bleed Air Simplified Schematic
Figure 302/49-55-00-990-802 (Sheet 1 of 4)

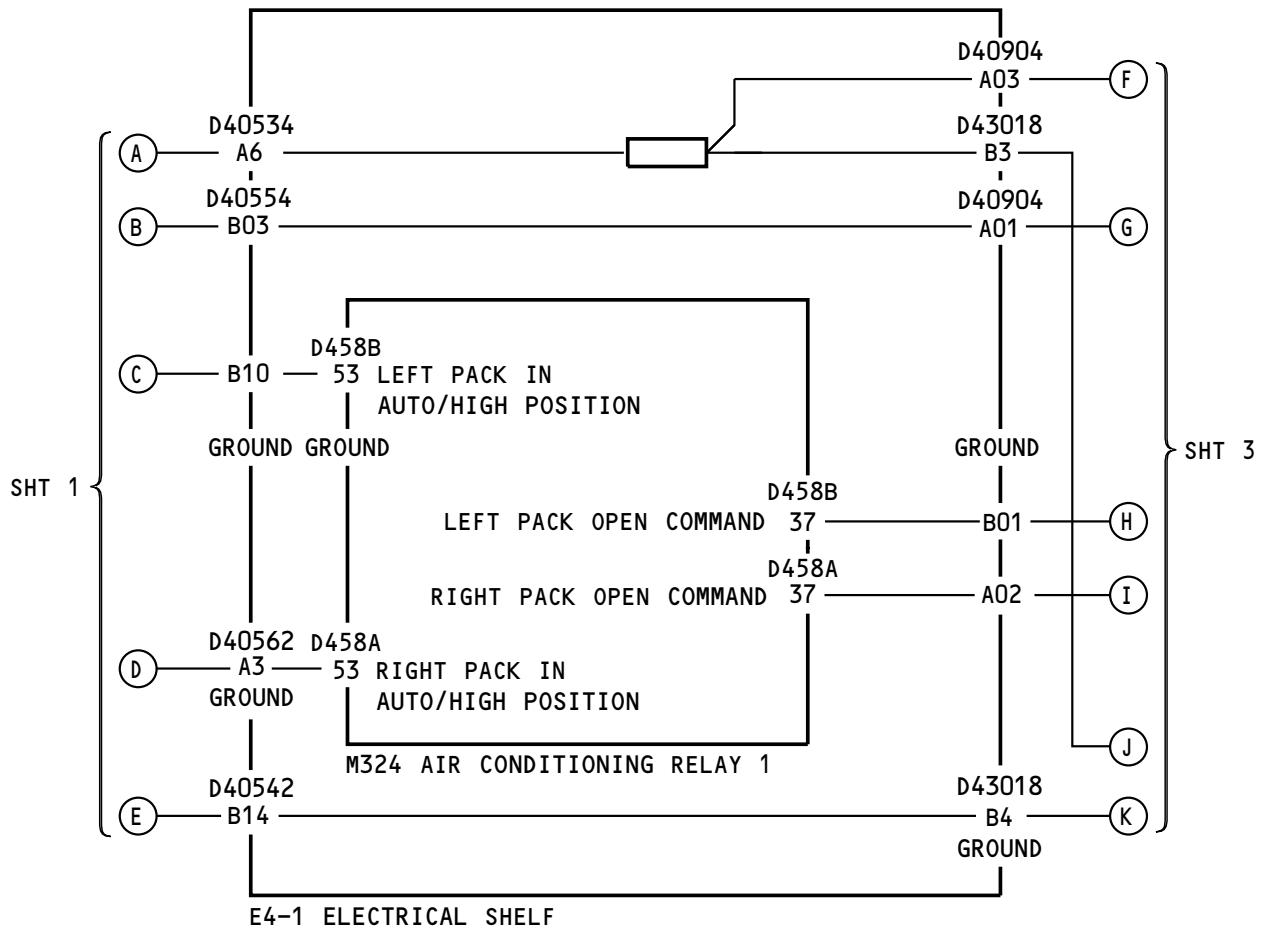
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H16348 S0006745282_V1

APU Bleed Air Simplified Schematic
Figure 302/49-55-00-990-802 (Sheet 2 of 4)

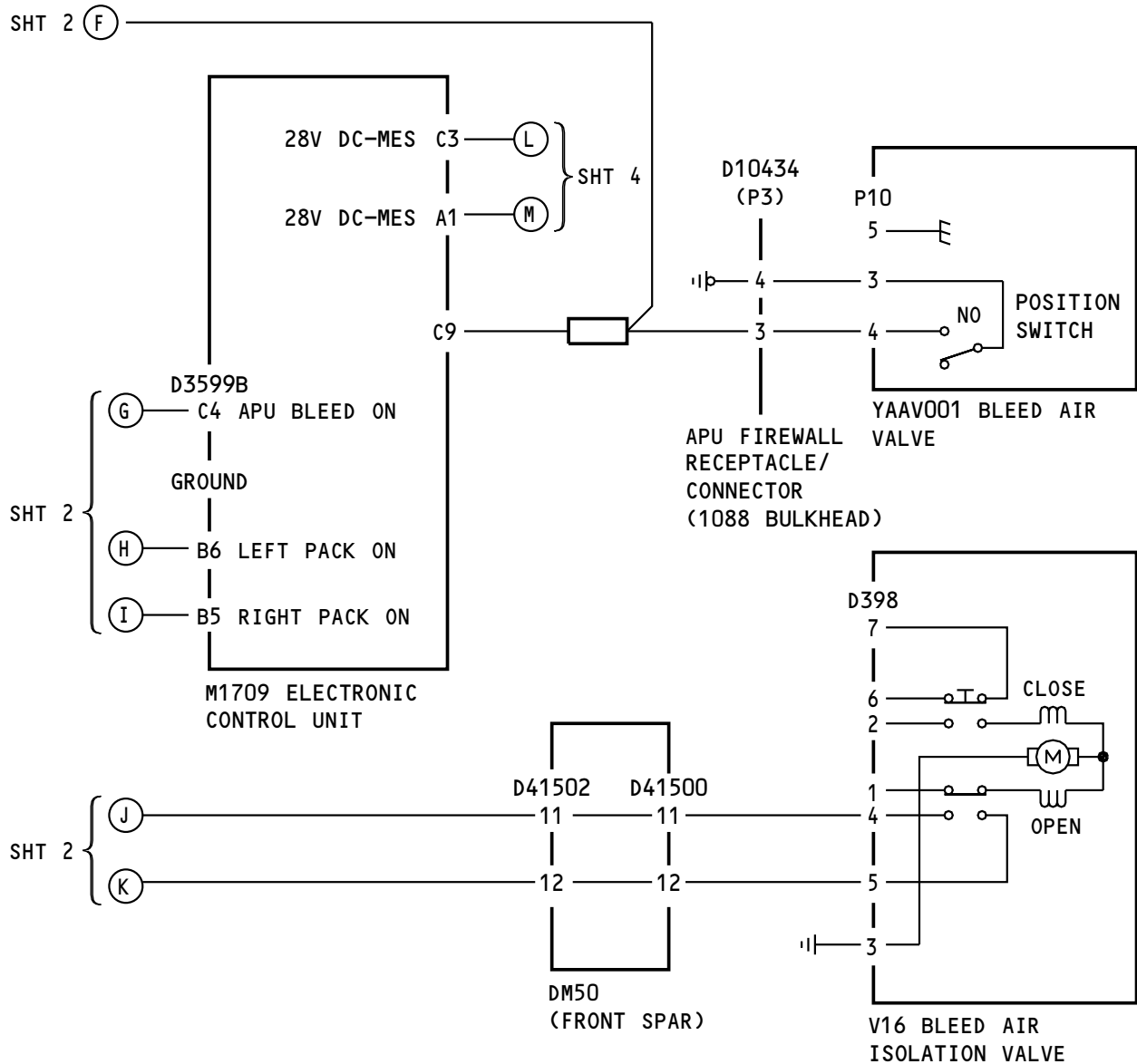
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H16352 S0006745283_V1

APU Bleed Air Simplified Schematic
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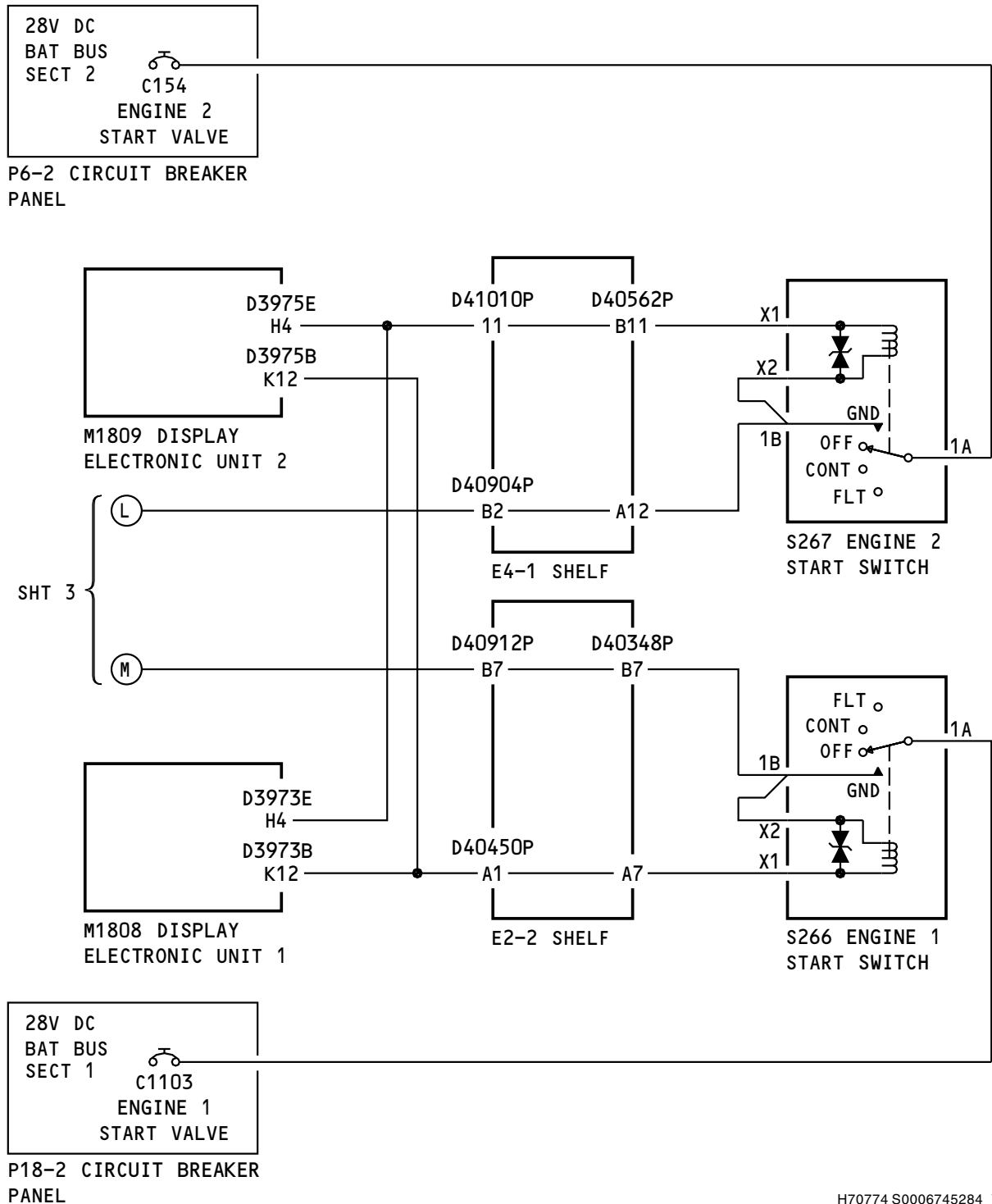
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H70774 S0006745284_V1

APU Bleed Air Simplified Schematic
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801. APU BITE Procedure

A. General

- (1) This task gives the instructions to use the control display unit (CDU) for the APU built-in test equipment (BITE) procedure. There are two CDUs on the P9 forward electronics panel in the flight compartment. You show the CURRENT STATUS, FAULT HISTORY and MAINTENANCE HISTORY pages on the CDU display to do the APU BITE procedure.
- (2) The CURRENT STATUS page shows the current record of maintenance message(s).
- (3) The FAULT HISTORY page shows the fault message(s). A fault message identifies a type of APU protective shutdown and its related problems, if any, that caused the APU protective shutdown. If you replace the electronic control unit (ECU) from a different airplane, the FAULT HISTORY page can contain APU engine problems from the different airplane.
- (4) The MAINTENANCE HISTORY page shows the maintenance message(s). A maintenance message identifies a specified problem in the APU system. If you replace the ECU from a different airplane, the MAINTENANCE HISTORY page can contain APU engine problems from the different airplane.

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NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

NOTE: Message 49-91227 (LOW OIL QUANTITY) can appear in MAINTENANCE HISTORY as a nuisance message if the APU was not shutdown with the AMM shutdown procedure (APU Usual Shutdown, AMM TASK 49-11-00-860-802) and the APU inlet door was open during a subsequent start. Do 'Low Oil Quantity - Fault Isolation, 49-90 TASK 804' as a precaution.

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- (5) You can do the APU BITE procedure with the APU master switch, on the P5 forward overhead panel, in the OFF or ON position.

B. APU BITE Procedure

- (1) Do the APU BITE procedure:
 - (a) If you get access to the CDU for the first time or were in an airplane system other than the APU, then push the INIT REF function key until the PERF INT page shows on the CDU display.
 - (b) If you see the PERF INT page, then push the line select key adjacent to <INDEX>.
NOTE: The INIT/REF INDEX page shows on the CDU display.
 - (c) If you see the INIT/REF INDEX page, then push the line select key adjacent to MAINT>.
NOTE: The MAINT BITE INDEX page shows on the CDU display.

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- (d) If you see the MAINT BITE INDEX page, then push the line select key adjacent to APU>.
- NOTE: If the last APU shutdown or cycle was an APU protective shutdown and/or the FAULT light is on, then the FAULT HISTORY page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the APU protective shutdown with the date, Greenwich mean time (GMT) and APU cycle will show on this page.
- NOTE: If the MAINT light is on, then the CURRENT STATUS page for the APU BITE TEST shows on the CDU display. The related problem(s) that caused the MAINT light to come on will show on this page.
- NOTE: If the FAULT and MAINT lights are off and there are no APU protective shutdowns, then the MAIN MENU page for the APU BITE TEST shows on the CDU display. You can find the FAULT and MAINT lights on the P5 forward overhead panel.
- (e) If you see the FAULT HISTORY page for the APU BITE TEST, then write the maintenance message number(s) (MAINT MSG) for the fault message(s) to be corrected.
- NOTE: The maintenance message number(s) that you write is necessary to go to the correct fault isolation task(s) in the FIM.
- 1) Refer to the table at the end of this task to find the fault isolation task(s) for the applicable maintenance message number(s).
 - 2) If there are more than one FAULT HISTORY page, then push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.
NOTE: The number of pages are shown on the top right side of the FAULT HISTORY page.
 - 3) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on the FAULT HISTORY page, then the fault message(s) are active.
 - a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the APU protective shutdown.
 - 4) If you do not see CURRENT STATUS> on the FAULT HISTORY page, then the fault message(s) are intermittent.
 - 5) If it is necessary to see other APU cycles which have the same symptom, then push the line select key adjacent to OTHER OCCURRENCES.
NOTE: If there are no other APU cycles which have the same symptom, then you will see the message "NO OTHER OCCURRENCES".
 - a) Push the line select key adjacent to <INDEX to go back to the FAULT HISTORY or MAINTENANCE HISTORY page.
 - 6) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, then push the line select key adjacent to <INDEX.
NOTE: The MAIN MENU page shows on the CDU display.
- (f) If you see the MAIN MENU page for the APU BITE TEST on the CDU display, then push the line select key adjacent to <CURRENT STATUS.



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- (g) If you see the CURRENT STATUS page for the APU BITE TEST, then look at the current record of maintenance message(s).

NOTE: If there are no current maintenance messages on the CURRENT STATUS page, then you will see the message "no failures found".

NOTE: If you see a maintenance message on the CURRENT STATUS page that was monitored continuously by the ECU and you corrected the problem while you were on this page, then you will see the message "FAULT CLEARED".

- 1) Write the maintenance message number(s) (MAINT MSG) for the maintenance message(s) to be corrected.

NOTE: The maintenance message number(s) that you write is necessary to go to the correct fault isolation task(s) in the FIM.

- 2) Refer to the table at the end of this task to find the fault isolation task for the applicable maintenance message.

- 3) If there are more than one CURRENT STATUS page, then push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.

NOTE: The number of pages are shown on the top right side of the CURRENT STATUS page.

- 4) If it is necessary to see other APU cycles which have the same symptom, then push the line select key adjacent to OTHER OCCURRENCES.

NOTE: If there are no other APU cycles which have the same symptom, then you will see the message "NO OTHER OCCURRENCES".

- a) Push the line select key adjacent to <INDEX to go back to the CURRENT STATUS page.

- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, then push the line select key adjacent to <INDEX.

- (h) If it is necessary to see the FAULT HISTORY page from the MAIN MENU page, then push the line select key adjacent to <FAULT HISTORY.

NOTE: The FAULT HISTORY page shows a list of all APU protective shutdowns with the date, Greenwich mean time (GMT) and APU cycle the fault(s) occurred. If you replace the ECU from a different airplane, the FAULT HISTORY page can contain APU engine problems from the different airplane.

- 1) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on this page, then the fault message(s) are active.

- a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the APU protective shutdown.

- 2) If you do not see CURRENT STATUS> on this page, then the fault message(s) are intermittent.

- 3) If it is necessary to see other APU cycles which have the same APU protective shutdown, then push the line select key adjacent to OTHER OCCURRENCES>.

NOTE: If there are no other APU cycles which have the same APU protective shutdown, then you will see the message "NO OTHER OCCURRENCES".

- a) Push the line select key adjacent to <INDEX to go back to the FAULT HISTORY page.

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- 4) If there are more than one FAULT HISTORY page, then push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.

NOTE: The number of pages are shown on the top right side of the FAULT HISTORY page.

- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, then push the line select key adjacent to <INDEX.

- (i) If it is necessary to see the MAINTENANCE HISTORY page from the MAIN MENU page, then push the line select key adjacent to MAINTENANCE HISTORY>.

NOTE: The MAINTENANCE HISTORY page shows a list of a maximum of 99 maintenance messages (symptoms) shows with the date, Greenwich mean time (GMT) and APU cycle the symptom(s) occurred. If you replace the ECU from a different airplane, the MAINTENANCE HISTORY page can contain APU engine problems from the different airplane.

- 1) If you see the ">" symbol adjacent to CURRENT STATUS (CURRENT STATUS>) on this page, then the maintenance message(s) are active.
- a) Push the line select key adjacent to CURRENT STATUS> to see the symptom(s) that cause the line replaceable unit (LRU) with the problem.
- 2) If you do not see CURRENT STATUS> on this page, then the maintenance message(s) are intermittent.
- 3) If it is necessary to see other APU cycles which have the same symptom, then push the line select key adjacent to OTHER OCCURRENCES>.

NOTE: If there are no other APU cycles which have the same symptom, then you will see the message "NO OTHER OCCURRENCES".

- a) Push the line select key adjacent to <INDEX to go back to the MAINTENANCE HISTORY page.
- 4) If there are more than one MAINTENANCE HISTORY page, then push the previous page key (PREV PAGE) or next page key (NEXT PAGE) to go to the other pages.

NOTE: The number of pages are shown on the top right side of the MAINTENANCE HISTORY page.

- 5) If it is necessary to go back to the MAIN MENU page for the APU BITE TEST, then push the line select key adjacent to <INDEX.
- (j) If it is necessary to see other airplane MAINT BITE systems, push the line select key adjacent to <INDEX on the MAIN MENU page for the APU BITE TEST.

NOTE: The MAINT BITE INDEX page for the other airplane systems shows on the CDU display.

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-11019 DC POWERLOSS SHUTDOWN POWER INTERRUPT	49-10 TASK 801
APU	49-11021 FIRE SHUTDOWN SHOWS COCKPIT FIRE HANDLE PULLED	49-10 TASK 802
APU	49-11023 FIRE SHUTDOWN SHOWS REMOTE FIRE HANDLE PULLED	49-10 TASK 803
APU	49-11024 FIRE SHUTDOWN FROM AUTOMATIC FIRE DETECTION SYSTEM	49-10 TASK 804

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-15003 INLET DOOR SHUTDOWN DOOR NOT OPEN	49-10 TASK 805
APU	49-15004 INLET DOOR SHUTDOWN	49-10 TASK 806
APU	49-15215 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT	49-10 TASK 807
APU	49-15216 APU FUEL VALVE/DOOR LOOP SHOWS HIGH CURRENT	49-10 TASK 808
APU	49-15217 INLET DOOR SWITCH POWER SHOWS HIGH CURRENT	49-10 TASK 809
APU	49-15218 INLET DOOR DID NOT CLOSE	49-10 TASK 810
APU	49-21015 OVERTEMPERATURE SHUTDOWN	49-20 TASK 801
APU	49-21235 BLEED DISABLED TO PREVENT OVERTEMPERATURE	49-20 TASK 802
APU	49-31001 APU FUEL VALVE SHUTDOWN	49-30 TASK 801
APU	49-31014 OVERSPEED SHUTDOWN APU OVERSPEED	49-30 TASK 802
APU	49-31016 OVERTEMPERATURE SHUTDOWN	49-30 TASK 803
APU	49-31018 UNDERSPEED SHUTDOWN	49-30 TASK 804
APU	49-31159 FCU RESOLVER CIRCUIT SHOWS SHORT TO GROUND	49-32 TASK 801
APU	49-31160 FCU RESOLVER CIRCUIT SHOWS OPEN	49-32 TASK 802
APU	49-31161 FCU RESOLVER CIRCUIT SHOWS SHORT	49-32 TASK 803
APU	49-31162 FCU RESOLVER CIRCUIT SHOWS BAD	49-32 TASK 804
APU	49-31163 FUEL CONTROL UNIT SHOWS SOLENOID FAILED ON	49-31 TASK 801
APU	49-31164 FUEL CONTROL UNIT SHOWS SOLENOID OPEN CIRCUIT	49-31 TASK 802
APU	49-31166 FUEL CONTROL UNIT SHOWS SOLENOID HIGH CURRENT	49-31 TASK 803
APU	49-31167 FUEL CONTROL UNIT SHOWS FUEL TEMP SENSOR SHORT	49-31 TASK 804
APU	49-31168 FUEL CONTROL UNIT TEMP SHOWS OUT OF RANGE HIGH	49-31 TASK 805
APU	49-31169 FUEL CONTROL UNIT TEMP SHOWS OUT OF RANGE LOW	49-31 TASK 806
APU	49-31170 FUEL CONTROL TORQ MOTOR SHOWS LOW SIDE GROUNDED	49-31 TASK 807
APU	49-31171 FUEL CONTROL UNIT FLOW DISAGREES WITH COMMAND	49-31 TASK 808
APU	49-31172 FUEL CONTROL UNIT TORQUE MOTOR SHOWS OPEN CIRCUIT	49-31 TASK 809

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-31173 FUEL CONTROL UNIT TORQUE MOTOR SHOWS SHORT	49-31 TASK 810
APU	49-31175 FCU RESOLVER CIRCUIT SHOWS BAD	49-32 TASK 805
APU	49-31214 APU FUEL VALVE SHOWS NOT OPEN	49-33 TASK 801
APU	49-31294 FLOW DIVIDER SOLENOID SHOWS HIGH CURRENT	49-33 TASK 802
APU	49-31295 FLOW DIVIDER SOLENOID SHOWS OPEN CIRCUIT	49-33 TASK 803
APU	49-41010 NO ACCELERATION SHUTDOWN	49-40 TASK 801
APU	49-41011 NO FLAME SHUTDOWN	49-40 TASK 802
APU	49-41012 NO APU ROTATION SHUTDOWN	49-40 TASK 803
APU	49-41180 IGNITION UNIT CIRCUIT SHOWS HIGH CURRENT	49-40 TASK 804
APU	49-41181 IGNITION UNIT CIRCUIT SHOWS OPEN CIRCUIT	49-40 TASK 805
APU	49-41244 START CONVERTER SHOWS FAILED GENERATOR DIODE	49-40 TASK 806
APU	49-41245 START CONVERTER UNIT SHOWS GEN UNDERVOLTAGE	49-40 TASK 807
APU	49-41246 START CONVERTER UNIT SHOWS BAD INPUT COMMAND	49-40 TASK 808
APU	49-41247 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL	49-40 TASK 809
APU	49-41248 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 810
APU	49-41249 START CONVERTER UNIT SHOWS LOW BATTERY POWER	49-40 TASK 822
APU	49-41250 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 811
APU	49-41251 START CONVERTER UNIT SHOWS HIGH TEMPERATURE	49-40 TASK 812
APU	49-41252 START CONVERTER SHOWS VOLTAGE REGULATOR FAILED	49-40 TASK 813
APU	49-41253 START POWER UNIT SHOWS START SYSTEM INOP	49-40 TASK 814
APU	49-41254 START CONVERTER UNIT SHOWS START SYSTEM INOP	49-40 TASK 821
APU	49-41255 START POWER UNIT SHOWS HIGH TEMPERATURE	49-40 TASK 815
APU	49-41256 START CONVERTER SHOWS NO COOLING FAN POWER	49-40 TASK 816
APU	49-41266 START COMMAND SHOWS HIGH CURRENT	49-40 TASK 817

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-41267 START COMMAND SHOWS OPEN CIRCUIT	49-40 TASK 818
APU	49-41297 START POWER UNIT SHOWS INTERNAL FAILURE	49-40 TASK 819
APU	49-41298 START CONVERTER SHOWS GENERATOR PMG FAILURE	49-40 TASK 820
APU	49-41305 START CONVERTER UNIT SHOWS BAD INPUT COMMAND	49-40 TASK 808
APU	49-41306 START CONVERTER UNIT SHOWS INTERLOCK RLY FAIL	49-40 TASK 823
APU	49-52017 REVERSE FLOW SHUTDOWN	49-50 TASK 801
APU	49-52102 TOTAL PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 811
APU	49-52183 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 801
APU	49-52186 IGV ACTUATOR LVDT SHOWS LOW SIDE GROUNDED	49-52 TASK 802
APU	49-52187 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 803
APU	49-52188 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 801
APU	49-52189 IGV ACTUATOR LVDT SHOWS OPEN CIRCUIT	49-52 TASK 804
APU	49-52190 IGV ACTUATOR POSITION DISAGREES WITH COMMAND	49-52 TASK 805
APU	49-52191 IGV ACTUATOR POSITION DISAGREES WITH COMMAND	49-52 TASK 805
APU	49-52192 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 806
APU	49-52193 IGV ACTUATOR LVDT SHOWS CIRCUIT FAILURE	49-52 TASK 807
APU	49-52194 IGV ACTUATOR TORQUE MOTOR SHOWS OPEN CIRCUIT	49-52 TASK 808
APU	49-52195 IGV ACTUATOR TORQ MOTOR SHOWS SHORT CIRCUIT	49-52 TASK 809
APU	49-52196 IGV ACTUATOR TORQ MOTOR SHOWS LOW SIDE GROUNDED	49-52 TASK 810
APU	49-52219 INLET PRESSURE SENSOR DISAGREES WITH BUS DATA	49-54 TASK 801
APU	49-52221 INLET PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 802
APU	49-52222 INLET PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 803
APU	49-52236 BLEED VALVE POSITION DISAGREES WITH COMMAND	49-51 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-52237 BLEED AIR VALVE CIRCUIT SHOWS OPEN CIRCUIT	49-51 TASK 802
APU	49-52238 BLEED VALVE POSITION DISAGREES WITH COMMAND	49-51 TASK 803
APU	49-52240 BLEED AIR VALVE CIRCUIT SHOWS HIGH CURRENT	49-51 TASK 804
APU	49-52269 BLEED DISABLED TO PREVENT REVERSE FLOW	49-50 TASK 821
APU	49-52270 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT	49-54 TASK 804
APU	49-52271 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 805
APU	49-52272 DELTA PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 806
APU	49-52273 DELTA PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 807
APU	49-52280 SURGE VALVE TORQUE MOTOR SHOWS LOW SIDE GROUNDED	49-53 TASK 802
APU	49-52281 SURGE CONTROL VALVE LVDT SHOWS OPEN CIRCUIT	49-53 TASK 803
APU	49-52282 SURGE CONTROL VALVE LVDT SHOWS SHORT CIRCUIT	49-53 TASK 804
APU	49-52283 SURGE CONTROL VALVE LVDT SHOWS LOW SIDE GROUNDED	49-53 TASK 805
APU	49-52284 SURGE VALVE POSITION DISAGREES WITH COMMAND	49-53 TASK 806
APU	49-52285 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 807
APU	49-52286 SURGE CONTROL VALVE LVDT SHOWS CIRCUIT FAILURE	49-53 TASK 808
APU	49-52287 SURGE VALVE TORQUE MOTOR SHOWS OPEN CIRCUIT	49-53 TASK 809
APU	49-52288 SURGE VALVE TORQUE MOTOR SHOWS SHORT CIRCUIT	49-53 TASK 810
APU	49-52289 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE DRIFT	49-54 TASK 808
APU	49-52290 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE HIGH	49-54 TASK 809
APU	49-52291 TOTAL PRESSURE SENSOR SHOWS OUT OF RANGE LOW	49-54 TASK 810

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-52292 BLEED DISABLED TO PREVENT REVERSE FLOW	49-50 TASK 821
APU	49-52301 IGV ACTUATOR LVDT SHOWS HIGH SIDE GROUNDED	49-52 TASK 811
APU	49-52302 SURGE CONTROL VALVE LVDT SHOWS HIGH SIDE GROUNDED	49-53 TASK 811
APU	49-52303 INLET PRESSURE SENSOR SHOWS CIRCUIT FAILURE	49-54 TASK 812
APU	49-61002 ECU SHUTDOWN	49-60 TASK 824
APU	49-61025 SENSOR FAILURE SHUTDOWN	49-60 TASK 823
APU	49-61104 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61106 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61107 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61108 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-60 TASK 803
APU	49-61109 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61110 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61111 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61112 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61113 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61114 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61115 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61116 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61117 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61118 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61119 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61120 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61121 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61122 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61123 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61124 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61125 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61126 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61127 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61128 ECU INTERNAL FAILURE	49-60 TASK 802

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-61129 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61130 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61131 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61132 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61133 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61134 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61135 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61136 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61137 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61138 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61139 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61140 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61141 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61142 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61143 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61144 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61145 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61150 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61151 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61152 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61153 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61154 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61155 APU LOADSHED DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61156 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61157 ECU INTERNAL FAILURE or FCU TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61158 FCU RESOLVER EXCITATION SHOWS CIRCUIT FAILED ON	49-60 TASK 805
APU	49-61165 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61174 FCU TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-31 TASK 812
APU	49-61176 APU LOADSHED DRIVER SHOWS HIGH CURRENT	49-60 TASK 806
APU	49-61178 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61179 IGNITION UNIT DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 808

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-61182 IGV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 809
APU	49-61184 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61185 IGV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 802
APU	49-61197 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61198 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61199 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61200 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61201 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61202 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61203 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61204 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61210 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61211 DOOR CLOSE DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 810
APU	49-61212 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61213 DOOR OPEN DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 811
APU	49-61220 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61223 INLET TEMPERATURE SENSOR SHOWS SHORT CIRCUIT	49-60 TASK 812
APU	49-61224 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH	49-60 TASK 813
APU	49-61225 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW	49-60 TASK 814
APU	49-61231 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61232 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61233 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61234 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61239 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61241 BLEED AIR VALVE DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 815
APU	49-61242 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61243 READY TO LOAD DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 816
APU	49-61257 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61258 ECU INTERNAL FAILURE	49-60 TASK 802

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-61259 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61260 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61261 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61262 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61263 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61264 SPEED SENSOR 1 OR 2 SHOWS CIRCUIT FAILURE	49-60 TASK 817
APU	49-61265 START ENABLE COMMAND SHOWS CIRCUIT FAILED ON	49-60 TASK 818
APU	49-61268 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61274 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61275 SCV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 819
APU	49-61276 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61277 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61278 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 820
APU	49-61279 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON	49-60 TASK 821
APU	49-61293 FLOW DIVIDER SOLENOID SHOWS CIRCUIT FAILED ON	49-60 TASK 822
APU	49-61296 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61308 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61309 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61310 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61311 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61312 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61313 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61314 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-61315 ECU INTERNAL FAILURE	49-60 TASK 802
APU	49-71146 EGT1 THERMOCOUPLE DISAGREES WITH EGT2	49-70 TASK 801
APU	49-71147 EGT1 THERMOCOUPLE SHOWS OPEN CIRCUIT	49-70 TASK 802
APU	49-71148 EGT2 THERMOCOUPLE SHOWS OPEN CIRCUIT	49-70 TASK 803

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
APU	49-71149 EGT2 THERMOCOUPLE DISAGREES WITH EGT1	49-70 TASK 804
APU	49-72101 DATA MEMORY MODULE POWER SHOWS HIGH CURRENT	49-70 TASK 805
APU	49-72103 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 806
APU	49-72104 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 807
APU	49-72105 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE	49-70 TASK 808
APU	49-72205 FAULT LIGHT CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 809
APU	49-72206 LOP INDICATOR CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 810
APU	49-72207 MAINTENANCE INDICATOR SHOWS HIGH CURRENT	49-70 TASK 811
APU	49-72208 OVERSPEED INDICATOR SHOWS HIGH CURRENT	49-70 TASK 812
APU	49-72209 READY TO LOAD CIRCUIT SHOWS HIGH CURRENT	49-70 TASK 813
APU	49-91005 HIGH OIL TEMP SHUTDOWN	49-90 TASK 801
APU	49-91006 INLET OVERHEAT SHUTDOWN	49-90 TASK 802
APU	49-91007 OIL PRESSURE SHUTDOWN LOW OIL PRESSURE	49-90 TASK 803
APU	49-91227 LOW OIL QUANTITY	49-90 TASK 804
APU	49-94226 LOW OIL PRESSURE SWITCH SHOWS OPEN CIRCUIT	49-90 TASK 805
APU	49-94228 OIL TEMPERATURE SENSOR SHOWS SHORT CIRCUIT	49-90 TASK 806
APU	49-94229 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH	49-90 TASK 807
APU	49-94230 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW	49-90 TASK 808
APU	49-94299 STARTER GENERATOR OIL FILTER SHOWS CLOGGED	49-90 TASK 809
APU	49-94300 OIL FILTER SWITCH SHOWS SHORT CIRCUIT	49-90 TASK 810
APU	49-94304 OIL LEVEL SENSOR SHOWS CIRCUIT FAILURE	49-90 TASK 811

———— **END OF TASK** ————

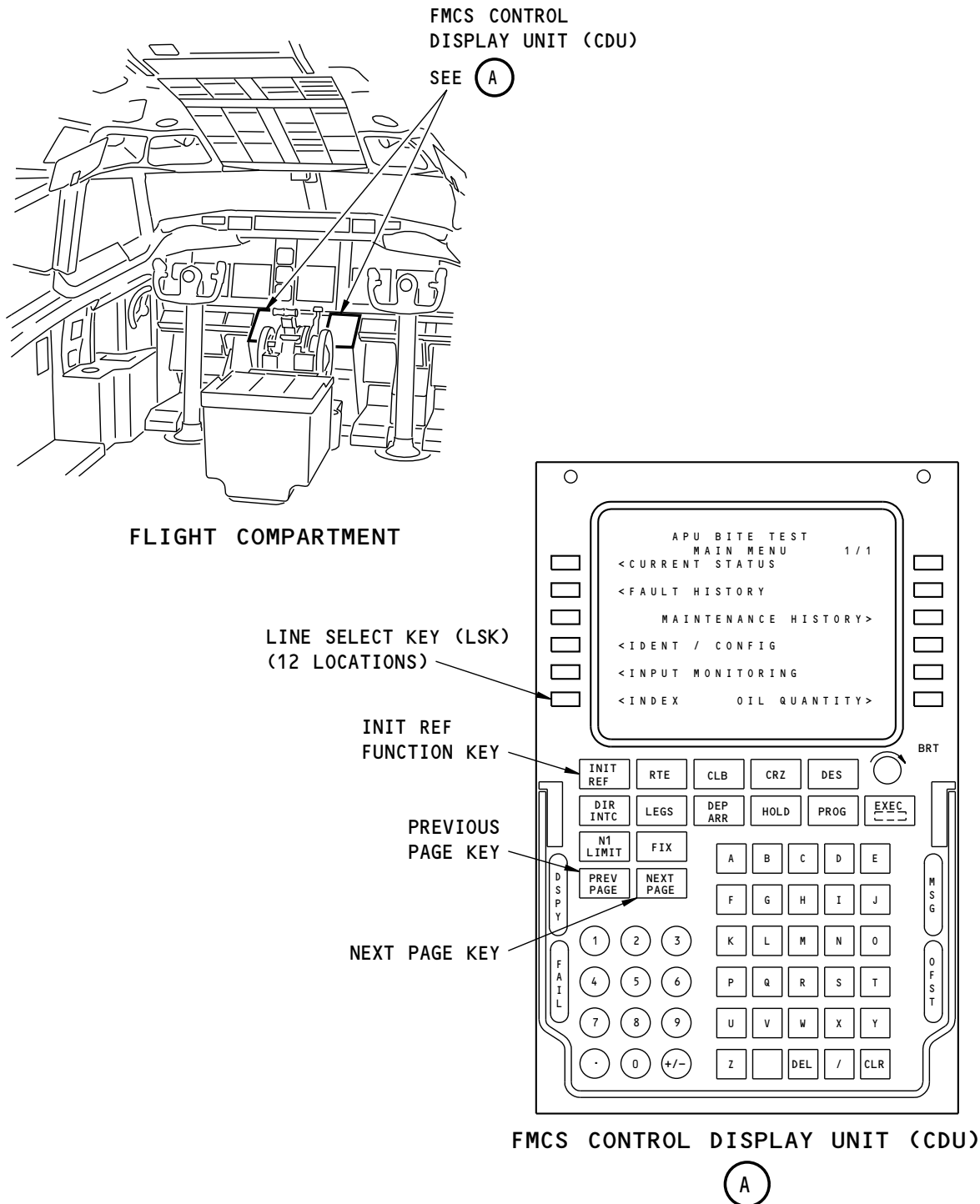
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APU BITE Procedure
Figure 201/49-60-00-990-804

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802. ECU Internal Failure - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

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- (a) 49-61109, 49-61110, 49-61111, 49-61112, 49-61113, 49-61114, 49-61116, 49-61117, 49-61125, 49-61131, 49-61132, 49-61133, 49-61134, 49-61135, 49-61138, 49-61139, 49-61142, 49-61144, 61145, 49-61151, 49-61153, 49-61157, 49-61174, 49-61184, 49-61185, 49-61220, 49-61231, 49-6132, 49-61257, 49-61277, 49-61308, 49-61309, 49-61310, 49-61311, 49-61312, 49-61313, 49-61314, 49-61315, ECU INTERNAL FAILURE.

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- (b) 49-61155 APU LOADSHED DRIVER SHOWS CIRCUIT FAILED ON.
(c) 49-61174 FCU TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON.
(d) 49-61185 IGV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON.
(2) There is an internal problem with the Electronic Control Unit (ECU).
(3) The APU FAULT Light on the Forward Overhead Panel, P5, will show for these maintenance messages:

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (a) 49-60308, 49-60309, 49-60310, 49-60311, 49-60312, 49-60313, 49-60314, 49-60315, 49-61109, 49-61110, 49-61111, 49-61112, 49-61113, 49-61114, 49-61116, 49-61117, 49-61125, 49-61131, 49-61132, 49-61133, 49-61134, 49-61135, 49-61138, 49-61139, 49-61142, 49-61144, 49-61145, 49-61151, 49-61153, 49-61157, 49-61174, 49-61184, 49-61185, 49-61220, 49-61231, 49-61232, 49-61257, 49-61277.

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- (4) The APU FAULT Light can show for these maintenance messages:
(a) 49-61112, 49-61136, 49-61153, 49-61154, 49-61165, 49-61178, 49-61210, 49-61212, 49-61257, 49-61258, 49-61268, 49-61296.
(5) The APU OVER SPEED Light on the Forward Overhead Panel, P5 will show for these maintenance messages:
(a) 49-61150, 49-61152, 49-61204.
(6) The APU FAULT Light and/or APU OVER SPEED Light can show for this maintenance message:
(a) 49-61174.
(7) The APU LOW OIL PRESSURE Light on the Forward Overhead Panel, P5 will show for this maintenance message:
(a) 49-61200.
(8) The APU MAINT Light on the Forward Overhead Panel, P5 will show for this maintenance message:
(a) 49-61202.
(9) No Auxiliary Power Unit (APU) indication lights on the Forward Overhead Panel, P5 will show for these maintenance messages:

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- (a) 49-61106, 49-61107, 49-61111, 49-61114, 49-61140, 49-61141, 49-61151, 49-61155, 49-61184, 49-61185, 49-61197, 49-61199, 49-61201, 49-61203, 49-61220, 49-61231, 49-61232, 49-61233, 49-61234, 49-61239, 49-61242, 49-61276, 49-61277.

B. Possible Causes

- (1) ECU, M1709
- (2) If maintenance message 49-61277 shows on the Control Display Unit (CDU) Display, then there may be a wiring problem with the airplane wire harness or Surge Control Valve (SCV), YAAV3

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) SSM 49-52-31
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (a) If one or more of these maintenance message(s) do not show on the CURRENT STATUS page, then there were intermittent problem(s).
- NOTE: You can find other occurrences of these maintenance message(s) on the MAINTENANCE HISTORY page.
- (b) If one or more of these maintenance message(s) show on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Remove and then re-install the APU electronic control unit, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (a) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (b) Do the repair confirmation at the end of the task.
- (2) Do these steps to replace the ECU, M1709:
- (a) Replace the ECU, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801,
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- (b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (c) Do the Repair Confirmation at the end of the task.

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- (3) If maintenance message 49-61174 shows on the CDU Display, then do this task: Fuel Control Unit Torque Motor Shows Circuit Failed On - Fault Isolation, 49-31 TASK 812.

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- (4) If the maintenance message 49-61277 shows on the CDU Display, then do this check of the airplane wire harness:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Disconnect the electrical connector P9 from the SCV, YAAV3.
 - (c) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (d) Examine the wiring between the ECU, M170 and SCV, YAAV3 as follows (WDM 49-52-31):

SURGE VALVE, V3(YAA) P9	APU ELECTRONIC CONTROL UNIT, M1709 D3599A
pin 7	pin B15
pin 8	pin B14
pin 3	pin D15
pin 2	pin C14
pin 1	pin C15
pin 5	pin A15
pin 4	pin A14

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the electrical connector P9 to the SCV, YAAV3.
 - c) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) Do the Repair Confirmation at the end of the task.
- 2) If you do not find a problem with the wiring, then do these steps:
 - a) Replace the SCV, YAAV3. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Do the Repair Confirmation at the end of the task.

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G. Repair Confirmation

- (1) Set the APU Master Switch to the ON position.
- (2) Look at the CURRENT STATUS page on the CDU Display to see if the maintenance message(s) shows.
 - (a) If the CDU Display does not show the maintenance message, then you corrected the problem.
 - (b) If the CDU Display show the maintenance message(s), then continue the Fault Isolation Procedure at the subsequent step.
- (3) Set the APU Master Switch to the OFF position.

———— **END OF TASK** ————

803. Data Memory Module Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61107 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE
 - (b) 49-61108 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE
- (2) This fault is set when there is a problem with the transmit and receive circuits for the data memory module. The electronic control unit reads the transmit and receive circuits for the data memory module during its power-up cycle. Electrical power is supplied to the data memory module before this test to let the data memory module complete its power tests. If there is no electrical power to the data memory module, then this test does not occur. The data memory module cannot be read or written if this fault occurs. If this fault is not corrected, then a loss of input monitoring data from the data memory module occurs if the electronic control unit is replaced.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Electrical connector P11 for the data memory module, YAAM003
- (5) Data memory module, YAAM003
- (6) Wiring problem with the engine wire harness
- (7) Wiring problem with the airplane wire harness.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-62-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then do this step and continue:
 - a) Replace the new electronic control unit, M1709, with the electronic control unit that you removed. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to inspect the electrical connector P11 for the data memory module, YAAM003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (d) Examine the electrical connector P11. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P11 to the data memory module, YAAM003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P11, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P11 is satisfactory, then continue.



DO NOT REMOVE THE DATA MEMORY MODULE AND THE ELECTRONIC CONTROL UNIT AT THE SAME TIME. IF YOU REMOVE BOTH THE DATA MEMORY MODULE AND THE ELECTRONIC CONTROL UNIT AT THE SAME TIME, YOU WILL LOSE THE DATA FOR THE APU.



YOU MUST USE A BLANK DATA MEMORY MODULE. DO NOT USE A DATA MEMORY MODULE FROM A DIFFERENT APU OR A DATA MEMORY MODULE WITH APU DATA. IF YOU DO NOT USE A BLANK DATA MEMORY MODULE, LOSS OF DATA OR INCORRECT DATA CAN OCCUR.

- (5) Do these steps to replace the data memory module, YAAM003:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the data memory module, YAAM003. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - a) After 30 seconds, set the APU master switch to the OFF position.
 - NOTE: The time period to load the APU data to the blank data memory module is 10 seconds.
 - 2) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Replace the new data memory module, YAAM003, with the data memory module that you removed. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801

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- Data Memory Module Installation, AMM TASK 49-72-11-400-801

NOTE: The data memory module with the APU data that you removed is satisfactory.

- Send the new data memory module, YAAM003, for calibration or disposition to remove the APU data.

NOTE: The new data memory module receives the APU data when the APU master switch is set to the ON position.

- Do this check of the engine wire harness:
 - Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- Disconnect the electrical connector P11 from the data memory module, YAAM003.
- Examine the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connector D10436 (P2) or P11 or APU firewall receptacle D10436, then do these steps:
 - Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- Do this task: APU BITE Procedure, 49-60 TASK 801.
- Set the APU master switch to the ON position.
- Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.

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- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) (SSM 49-62-12):
 - a) Pin 19 and pin 35, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 19 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 20 and pin 36, specified resistance of more than 100K ohms (open circuit).
 - d) Pin 20 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - e) Pin 33 and pin 34, specified resistance of more than 100K ohms (open circuit).
 - f) Pin 33 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - g) Pin 34 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - h) Pin 35 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - i) Pin 36 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 8 and socket 9 on the electrical connector P11 at the data memory module, YAAM003.
 - 3) Measure the resistance between pin 19 and pin 35 on the electrical connector D10436 (P2).

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 10 and socket 11 on the electrical connector P11.
 - 6) Measure the resistance between pin 33 and pin 34 on the electrical connector D10436 (P2).

NOTE: The resistance must be less than 10 ohms.
 - 7) Remove the jumper.
 - 8) Install the jumper between socket 6 and socket 7 on the electrical connector P11.
 - 9) Measure the resistance between pin 20 and pin 36 on the electrical connector D10436 (P2).

NOTE: The resistance must be less than 10 ohms.
 - 10) Remove the jumper.
 - 11) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 12) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (7) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.

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- (f) If the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin C11 and pin C12, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin C12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin C13 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - e) Pin C13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - f) Pin D11 and pin D12, specified resistance of more than 100K ohms (open circuit).
 - g) Pin D11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - h) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - i) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 19 and socket 35 on the APU firewall receptacle D10436 at the 1088 bulkhead.
 - 3) Measure the resistance between pin D11 and pin D12 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 33 and socket 34 on the APU firewall receptacle D10436.
 - 6) Measure the resistance between pin C13 and pin D13 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 7) Remove the jumper.
 - 8) Install the jumper between socket 20 and socket 36 on the APU firewall receptacle D10436.
 - 9) Measure the resistance between pin C11 and pin C12 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 10) Remove the jumper.
 - 11) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 12) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 13) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 14) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 15) Set the APU master switch to the ON position.
- 16) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 17) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

805. FCU Resolver Excitation Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61158 FCU RESOLVER EXCITATION SHOWS CIRCUIT FAILED ON

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- (2) This fault is set when there is an incorrect excitation voltage across the resolver for the Fuel Control Unit (FCU). An excitation voltage is applied continuously to the resolver. The excitation circuit furnishes a BITE voltage and a voltage related to current to the software. If the voltage is high the driver is shorted or if excitation frequency is too low or high a fault is declared. In normal operation the voltage reads 1.0 to 1.8 volts, including temperature and component variations, providing good margin from nuisance trips. The resolver measures the fuel flow through the FCU. If this failure occurs, the calibration factor for the fuel flow from the last APU operation is used to continue the APU operation. This calibration factor comes from the data memory module. An APU start problem can occur.

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- (3) The APU FAULT light on the Forward Overhead Panel, P5 can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) ECU, M1709
- (4) FCU, YAAM002
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the ECU, M1709:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

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- (c) Do the Repair Confirmation at the end of this task.
- (d) Set the APU master switch to the OFF position.
- (4) Do this check of the FCU, YAAM002:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P22 from the FCU, YAAM002.
- (d) Examine the electrical connector P22. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P22, then do these steps:
 - 1) Re-connect the electrical connector P22 to the FCU, YAAM002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector P22 is satisfactory, then do these steps:
 - 1) Do a resistance check at the FCU, YAAM002 as follows (SSM 49-62-12):

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FCU		FCU	RESISTANCE
P22		P22	
pin 1		pin 2	>100 KΩ
pin 2		pin 3	>30 Ω
pin 2		pin 4	>100 KΩ
pin 2		pin 5	>100 KΩ
pin 2	.....	pin 6	>100 KΩ
pin 2	.....	pin 7	>100 KΩ
pin 2	.....	pin 8	>100 KΩ
pin 2	.....	pin 9	>100 KΩ
pin 2	.....	pin 10	>100 KΩ
pin 2	.....	pin 11	>100 KΩ
pin 2	.....	pin 12	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
- Replace the FCU, YAAM002. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801<1> Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps:
- Re-connect the electrical connector P22 to the FCU, YAAM002.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the engine wire harness:
- Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

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- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Examine the electrical connector D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - a) Do the Repair Confirmation at the end of this task.
- 4) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10436 (P2), P22 and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU D10436 (P2)	APU D10436 (P2)	RESISTANCE
pin 3	pin 26	>100 KΩ
pin 4	pin 26	>100 KΩ
pin 11	pin 26	>100 KΩ
pin 12	pin 26	>100 KΩ
pin 24	pin 26	>100 KΩ
pin 25	pin 26	>100 KΩ
pin 26	pin 27	>100 KΩ
pin 26	pin 28	>100 KΩ
pin 26	pin 29	>100 KΩ
pin 26	pin 42	>100 KΩ

APU D10436 (P2)		
pin 26	GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.

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- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps:
 - a) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connector D3599 and D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (f) If the electrical connector D3599 and D10436 (P2) and APU firewall receptacle D10436 is satisfactory, then do these steps:
 - 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

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ECU D3599A		ECU D3599A	RESISTANCE
pin A4		pin A9	>100 KΩ
pin A5		pin A9	>100 KΩ
pin A6		pin A9	>100 KΩ
pin A7	.....	pin A9	>100 KΩ
pin A8	.....	pin A9	>100 KΩ
pin A9	.....	pin B9	>100 KΩ
pin A9	.....	pin C4	>100 KΩ
pin A9	.....	pin D4	>100 KΩ

ECU D3599A		RESISTANCE
pin A9	 GROUND	>100 KΩ

ECU D3599A		ECU D3599B	RESISTANCE
pin A9	.....	pin C10	>100 KΩ

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 4) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 5) Do the Repair Confirmation at the end of this task.
- 6) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. APU Loadshed Driver Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61176 APU LOADSHED DRIVER SHOWS HIGH CURRENT

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- (2) The ECU loadshed driver circuit furnishes a voltage indication to determine the current flow in the loadshed circuit. This test is run while the driver is turned on (i.e. not loadshedding). The expected voltage with no failures is greater than 4 V DC (including aircraft component tolerance, temp variation, and aircraft power supply variation). If an overcurrent is found, the driver is turned off immediately. After one second, the driver is enabled. The driver will be turned on in test mode long enough for the test to pass or fail.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem between the bus power control unit, G15, and the electronic control unit, M1709
- (3) Bus power control unit, G15
- (4) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
F	13	C01290	GENERATOR BUS PWR CONT UNIT

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	10	C01327	BUS PWR CONT UNIT

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00936	EXT PWR BPCU

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) SSM (SSM 24-28-41)
- (4) (SSM 49-62-11)
- (5) (WDM 24-28-41)
- (6) (WDM 49-62-11)

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E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the wiring between the bus power control unit, G15, and the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the bus power control unit (BPCU), G15, from the E4-2 electrical shelf. To remove it, do this task: BPCU Removal, AMM TASK 24-41-21-000-801.
 - (d) Examine the electrical connectors D10898B and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D10898B or D3599, then do these steps:
 - 1) Re-install the bus power control unit (BPCU), G15. To re-install it, do this task: BPCU Installation, AMM TASK 24-41-21-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D10898B and D3599 are satisfactory, then do these steps:

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- 1) Measure the resistance between socket 27 and structural ground on the electrical connector D10898B at the bus power control unit, G15 (SSM 24-28-41), (SSM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).

- 2) Measure the resistance between pin A11 and structural ground on the electrical connector D3599B at the electronic control unit, M1709.

NOTE: The resistance must be more than 100K ohms (open circuit).

- 3) Install a jumper between socket 27 and structural ground on the electrical connector D10898B.
- 4) Measure the resistance between pin A11 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.

- 5) Remove the jumper.
- 6) If there is a problem with the circuit, then repair the wiring (WDM 24-28-41), (WDM 49-62-11).
- 7) Re-install the bus power control unit (BPCU), G15. To re-install it, do this task: BPCU Installation, AMM TASK 24-41-21-400-801.
- 8) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 9) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.

- 10) If the circuit is satisfactory, then continue.

- (3) Do these steps to replace the bus power control unit (BPCU), G15:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the bus power control unit (BPCU), G15, on the E4-2 electrical shelf. These are the tasks:
 - BPCU Removal, AMM TASK 24-41-21-000-801
 - BPCU Installation, AMM TASK 24-41-21-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.

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- (4) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

808. Ignition Unit Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61179 IGNITION UNIT DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the ignition unit driver. The electronic control unit does a check of the voltage across the high side driver of the ignition unit. A short across the ignition unit driver shows the voltage is more than 11.0V DC.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Electrical connector P13 for the ignition unit, YAAM001
- (5) Voltage problem with the ignition unit, YAAM001.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)

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- (3) (SSM 49-41-11)
- (4) (WDM 49-41-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (4) Do these steps to inspect the electrical connector P13 for the ignition unit, YAAM001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P13 from the ignition unit, YAAM001.
- (d) Examine the electrical connector P13. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P13 to the ignition unit, YAAM001.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P13, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (i) If the electrical connector P13 is satisfactory, then continue.
- (5) Do a voltage check of the ignition unit, YAAM001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P13 from the ignition unit, YAAM001.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Set the APU master switch to the ON position.
- (g) Do a voltage check on the electrical connector P13, socket 1 and socket 2, at the ignition unit, YAAM001 (SSM 49-41-11).

NOTE: The voltage must be less than 0.5V DC.

- (h) If the voltage is less than 0.5V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P13 to the ignition unit, YAAM001.

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- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (i) If the voltage is more than 0.5V DC, then do these steps:

- 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
- 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 6) Set the APU master switch to the ON position.
- 7) Do a voltage check on the APU firewall receptacle D10434, socket 16 and socket 17.
NOTE: The voltage must be less than 0.5V DC.
- 8) If the voltage is less than 0.5V DC, then do these steps:
 - a) Make sure the APU master switch is OFF.
 - b) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.

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- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- f) If the CDU display does not show this maintenance message, then you corrected the fault.
- g) Set the APU master switch to the OFF position.
- 9) If the voltage is more than 0.5V DC, then do these steps:
 - a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Re-connect the electrical connector P13 to the ignition unit, YAAM001.
- d) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
- e) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- f) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- g) Re-install the electronic control unit. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- i) Set the APU master switch to the ON position.
- j) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- k) If the CDU display does not show this maintenance message, then you corrected the fault.
- l) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

809. IGV Excitation Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61182 IGV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON

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- (2) The AC excitation voltage is continuously applied to the Linear Variable Differential Transformer (LVDT). The excitation circuit furnishes a BITE voltage and a voltage related to current to the software. If the voltage is high, the driver is shorted. If the frequency is out of range, a fault is declared.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) Inlet Guide Vane Actuator (IGVA), YAAV002
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (c) If there was a problem with the engine wire harness, then do these steps:
NOTE: You can repair or replace the engine wire harness.
- 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) Set the APU master switch to the OFF position.
- (4) Do this check of the IGVA, YAAV002:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (d) Examine the electrical connector P17. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P17, then do these steps:
 - 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task,
- 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P17 is satisfactory, then do these steps:
- 1) Do a resistance check at the IGVA, YAAV002 as follows (SSM 49-52-31):

<u>IGVA</u>		<u>IGVA</u>	<u>RESISTANCE</u>
<u>P17</u>		<u>P17</u>	
pin 1	.....	pin 2	>100 KΩ
pin 1	.....	pin 3	>100 KΩ
pin 1	.....	pin 4	>100 KΩ
pin 1	.....	pin 5	>100 KΩ
pin 1	.....	pin 6	50-300 Ω
pin 1	.....	pin 7	>100 KΩ
pin 1	.....	pin 10	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
- a) Replace the IGVA, YAAV002. These are the tasks:
- Inlet Guide Vane (IGV) Actuator Removal, AMM TASK 49-52-12-000-801
 - Inlet Guide Vane (IGV) Actuator Installation, AMM TASK 49-52-12-400-801
- b) Do the Repair Confirmation at the end of this task.
- c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
- a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the engine wire harness:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P17 from the IGVA, YAAV002.
- (e) Examine the electrical connector D10436 (P2) and P17 and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10436 (P2) or P17 or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - 2) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do the Repair Confirmation at the end of this task.
 - 6) Set the APU master switch to the OFF position.
- (g) If the electrical connector D10436 (P2) and P17 and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU		APU	RESISTANCE
D10436 (P2)		D10436 (P2)	
pin 1	.....	pin 15	>100 K Ω
pin 5	.....	pin 15	>100 K Ω
pin 6		pin 15	>100 K Ω
pin 15		pin 16	>100 K Ω
pin 15		pin 30	50-300 Ω
pin 15		pin 31	>100 K Ω

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APU

D10436 (P2)

pin 15 GROUND >100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps:
 - a) Re-connect the electrical connector P17 to the IGVA, YAAV002.
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connector D3599 and D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

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- 1) Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU	ECU	RESISTANCE
D3599A	D3599A	
pin A10	pin A11	>100 K Ω
pin A10	pin A12	>100 K Ω
pin A10	pin A13	>100 K Ω
pin A10	pin B10	50-300 Ω
pin A10	pin B12	>100 K Ω
pin A10	pin B13	>100 K Ω

ECU	RESISTANCE
D3599A	
pin A10 GROUND	>100 K Ω

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 4) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 5) Do the Repair Confirmation at the end of this task.
- 6) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

810. Door Close Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61211 DOOR CLOSE DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the high side (door close) driver. The electronic control unit does a check of the voltage across the high side (door close) driver of the air inlet door actuator. A short across the driver shows the voltage is more than 8.0V DC. If this fault is not corrected, then the APU fuel shutoff valve and air inlet door actuator can be in the closed position.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

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B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

811. Door Open Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61213 DOOR OPEN DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the high side (door open) driver. The electronic control unit does a check of the voltage across the high side (door open) driver of the ignition unit. A short across the driver shows the voltage is more than 8.0V DC. If this fault is not corrected, then the APU fuel shutoff valve and air inlet door actuator can be in the open position and an APU protective shutdown can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

812. Inlet Temperature Sensor Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61223 INLET TEMPERATURE SENSOR SHOWS SHORT CIRCUIT

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- (2) This fault is set when there is a short to ground in the resistive temperature device (RTD) circuit for the inlet temperature sensor. The electronic control unit does a check of the current across the positive side of the RTD. If this current is greater than the limit, the fault is tripped.

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- (3) If this failure occurs, the APU inlet temperature is replaced with the total air temperature from the airplane and continues the APU operation. If this fault is not corrected, an inlet overheat protective shutdown can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the inlet temperature sensor, YAAT002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-71-21)
- (4) (WDM 49-71-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the inlet temperature sensor, YAAT002:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P21 from the inlet temperature sensor, YAAT002.
- (d) Examine the electrical connector P21. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P21, then do these steps:
 - 1) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P21 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the inlet temperature sensor, YAAT002 (SSM 49-71-21):
 - a) Pin A and structural ground (connector shell), specified resistance of more than 100K ohms (open circuit).
 - b) Pin B and structural ground (connector shell), specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-71-21):
 - a) Pin 13 and structural ground, specified resistance of more than 100K ohms (open circuit).

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- b) Pin 14 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-71-21):
 - a) Pin C3 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D3 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

813. Inlet Temperature Sensor Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61224 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH
- (2) This fault is set when there is an open in the resistive temperature device (RTD) circuit for the inlet temperature sensor. An open circuit shows infinite resistance and thus, infinite temperature. The value of infinite resistance is more than 100K ohms. The maximum possible temperature for the APU inlet temperature is 325°F (163°C).

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- (3) The temperature range for the sensor conditioning circuit is between -94°F (-70°C) and 451°F (233°C). This fault is set at 400°F (204°C).

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- (4) If this failure occurs, the APU inlet temperature is replaced with the total air temperature from the airplane and continues the APU operation. If this fault is not corrected, hung starts, speed droop or an inlet overheat protective shutdown can occur.
- (5) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the inlet temperature sensor, YAAT002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-71-21)
- (4) (WDM 49-71-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the inlet temperature sensor, YAAT002:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P21 from the inlet temperature sensor, YAAT002.
- (d) Examine the electrical connector P21. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P21, then do these steps:

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- 1) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P21 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A and pin B on the inlet temperature sensor, YAAT002 (SSM 49-71-21).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
(d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU BITE Procedure, 49-60 TASK 801.
5) Set the APU master switch to the ON position.
6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
a) If the CDU display does not show this maintenance message, then you corrected the fault.
7) Set the APU master switch to the OFF position.
(f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:

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- 1) Measure the resistance between pin 13 and pin 14 on the electrical connector D10912 (P1) (SSM 49-71-21).

NOTE: The resistance must be less than 200 ohms.

- 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 200 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.

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- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Measure the resistance between pin C3 and pin D3 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-71-21).
NOTE: The resistance must be less than 200 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

814. Inlet Temperature Sensor Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61225 INLET TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW
- (2) This fault is set when there is a short in the resistive temperature device (RTD) circuit for the inlet temperature sensor. A short circuit shows an almost zero resistance and thus, a low temperature. The value of an almost zero resistance is 5 ohms. The minimum possible temperature for the APU inlet temperature is -65°F (-54°C). This fault is set at -100°F (-73°C).

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- (3) The temperature range for the sensor conditioning circuit is between -94°F (-70°C) and 451°F (233°C).

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- (4) If this failure occurs, the APU inlet temperature is replaced with the total air temperature from the airplane and continues the APU operation. If this fault is not corrected, then an inlet overheat protective shutdown can occur.
- (5) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the inlet temperature sensor, YAAT002
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-71-21)
- (4) (WDM 49-71-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the inlet temperature sensor, YAAT002:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P21 from the inlet temperature sensor, YAAT002.
- (d) Examine the electrical connector P21. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P21, then do these steps:

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- 1) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P21 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A and pin B on the inlet temperature sensor, YAAT002 (SSM 49-71-21).

NOTE: The resistance must be more than 72 ohms.
 - 2) If the resistance is less than 72 ohms, then do these steps:
 - a) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 72 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:

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- 1) Measure the resistance between pin 13 and pin 14 on the electrical connector D10912 (P1) (SSM 49-71-21).

NOTE: The resistance must be more than 72 ohms.

- 2) If the resistance is less than 72 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is more than 72 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.

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- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Measure the resistance between pin C3 and pin D3 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-71-21).
NOTE: The resistance must be more than 72 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

815. Bleed Air Valve Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61241 BLEED AIR VALVE DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the solenoid driver for the bleed air valve. The electronic control unit does a check of the voltage across the high side driver of the solenoid for the bleed air valve. A short across the solenoid driver shows the voltage is more than 11.0V DC. If this fault is not corrected, then the bleed air valve is in the open position.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.

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- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- (c) Disconnect the electrical connector P10 from the bleed air valve, YAAV001.
- (d) Examine the electrical connector P10. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P10, then do these steps:
 - 1) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P10 is satisfactory, then do these steps:
 - 1) Do a voltage check between socket 1 and socket 2 on the electrical connector P10 at the bleed air valve, YAAV001 (SSM 49-52-31).

NOTE: The voltage must be less than 0.5V DC.
 - 2) If the voltage is more than 0.5V DC, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the voltage is less than 0.5V DC, then do these steps and continue:
 - a) Re-connect the electrical connector P10 to the bleed air valve, YAAV001.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B10 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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816. Ready to Load Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61243 READY TO LOAD DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the ready-to-load driver. The electronic control unit does a check of the voltage across the high side of the ready-to-load driver. A short across the driver shows the voltage is more than 11.0V DC.
- (3) The APU GEN OFF BUS light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 4) Set the APU master switch to the OFF position.
- (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

817. Speed Sensor 1 or 2 Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 49-61259 SPEED SENSOR 1 SHOWS OPEN CIRCUIT
 - (b) 49-61260 SPEED SENSOR 1 SHOWS CIRCUIT FAILURE
 - (c) 49-61261 SPEED SENSOR 1 SHOWS CIRCUIT FAILURE
 - (d) 49-61262 SPEED SENSOR 2 SHOWS OPEN CIRCUIT
 - (e) 49-61263 SPEED SENSOR 2 SHOWS CIRCUIT FAILURE
 - (f) 49-61264 SPEED SENSOR 2 SHOWS CIRCUIT FAILURE
- (2) This fault is set when there is a problem in the speed sensor circuit. The problem can be an open in the monopole 1 and/or monopole 2 circuit or a deterioration of one of the two monopoles. The electronic control unit does a check of the voltage across the monopole for the speed sensor. An open in the monopole 1 and/or monopole 2 circuit shows the voltage is more than 10V DC. This test also does a check each 20 milliseconds for out-of-range indications. The fault is also set if there are six out-of-range indications one after the other. A low threshold signal is used for control and overspeed detection. A five percent loss of a monopole gradually can cause the low threshold signal to disagree with the high threshold signal. This loss can cause a speed threshold fault. If this failure occurs, the APU operates on one of the two monopoles with the higher threshold signal.
- (3) The APU FAULT light on the P5 forward overhead panel can show for these maintenance messages.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Silver color paricles or large quantity of metal particles on the magnetic drain plug.
- (4) Internal problem with the speed sensor, YAAT007

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- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Speed sensor, YAAT007
- (8) Electronic control unit, M1709

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If one or more of these maintenance message(s) show on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If one or more of these maintenance message(s) do not show on the CURRENT STATUS page, then there were intermittent fault(s).

NOTE: You can find other occurrences of these maintenance message(s) on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.

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- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (4) Do this check of the speed sensor, YAAT007:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P12 from the speed sensor, YAAT007.
- (d) Examine the electrical connector P12. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P12, then do these steps:
 - 1) Re-connect the electrical connector P12 to the speed sensor, YAAT007.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- 5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- 6) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 7) Set the APU master switch to the ON position.
- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector P12 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the speed sensor, YAAT007 (SSM 49-62-12):
- a) Pin 1 and pin 2, specified resistance of less than 50 ohms.
- b) Pin 3 and pin 4, specified resistance of less than 50 ohms.
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the speed sensor, YAAT007. These are the tasks:
- Speed Sensor Removal, AMM TASK 49-61-21-000-801
 - Speed Sensor Installation, AMM TASK 49-61-21-400-801
- NOTE: It is necessary to do the installation test for the speed sensor to see if this maintenance message shows on the CDU display.
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P12 to the speed sensor, YAAT007.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (5) Do this check of the engine wire harness:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
(b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
(d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
(e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
4) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
5) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
6) Do this task: APU BITE Procedure, 49-60 TASK 801.
7) Set the APU master switch to the ON position.

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- 8) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 9) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) (SSM 49-62-12):
 - a) Pin 12 and pin 26, specified resistance of less than 50 ohms.
 - b) Pin 12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 18 and pin 19, specified resistance of less than 50 ohms.
 - d) Pin 18 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - e) Pin 19 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - f) Pin 26 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - NOTE:** It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin B13 and pin B14, specified resistance of less than 50 ohms.
 - b) Pin B13 and pin B15, specified resistance of more than 100K ohms (open circuit).
 - c) Pin B14 and pin B15, specified resistance of more than 100K ohms (open circuit).
 - 2) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709:
 - a) Pin B5 and pin C5, specified resistance of more than 100K ohms (open circuit).
 - b) Pin B5 and pin D5, specified resistance of more than 100K ohms (open circuit).
 - c) Pin C5 and pin D5, specified resistance of less than 50 ohms.
 - 3) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 4) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

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- 5) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 6) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the speed sensor, YAAT007:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the speed sensor, YAAT007. These are the tasks:
 - Speed Sensor Removal, AMM TASK 49-61-21-000-801
 - Speed Sensor Installation, AMM TASK 49-61-21-400-801
 - NOTE: It is necessary to do the installation test for the speed sensor to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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818. Start Enable Command Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61265 START ENABLE COMMAND SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the start relay driver in the electronic control unit. The electronic control unit does a check of the voltage across the high side driver of its start relay. A short across the driver shows the voltage is more than 11.0V DC. If this fault is not corrected, the start converter unit will receive the start enable command from the electronic control unit continuously.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

819. SCV Excitation Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61275 SCV EXCITATION DRIVER SHOWS CIRCUIT FAILED ON

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- (2) This fault is set when there is a problem with the excitation voltage in the LVDT circuit for the SCV. An excitation voltage is applied continuously to the LVDT. If the voltage bit is high then the driver is shorted or the frequency is out of range. With the loss of the position signal, the position of the SCV is fully open and APU bleed air is not available.

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- (3) No APU indication lights on the Forward Overhead Panel, P5 will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness
- (2) Airplane wire harness
- (3) SCV, YAAV003
- (4) ECU, M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) SSM 49-52-31
- (4) WDM 49-52-31
- (5) WDM 49-62-12

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the ECU, M1709:

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- (a) Make sure that the APU master switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) Set the APU master switch to the OFF position.
- (4) Do this check of the SCV, YAAV003:
- (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the SCV, YAAV003.
- (d) Examine the electrical connector P9. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a resistance check at the SCV, YAAV003 as follows (SSM 49-52-31):

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SCV		SCV	RESISTANCE
P9		P9	
pin 1		pin 4	>100 K Ω
pin 2		pin 4	>100 K Ω
pin 3		pin 4	>100 K Ω
pin 4		pin 7	>100 K Ω
pin 4	.....	pin 8	>100 K Ω
pin 4	.....	pin 9	>100 K Ω

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the SCV, YAAV003. These are the tasks:
 - Surge Control Valve Removal, AMM TASK 49-52-41-000-801
 - Surge Control Valve Installation, AMM TASK 49-52-41-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Disconnect the electrical connector P9 from the SCV, YAAV003.
 - (e) Examine the electrical connector D10436 (P2) and P9 and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

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- (f) If there was a problem with the electrical connector D10436 (P2) or P9 or APU firewall receptacle D10436, then do these steps:

- 1) Re-connect the electrical connector P9 to the SCV, YAAV003.
- 2) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do the Repair Confirmation at the end of this task.
 - 6) Set the APU master switch to the OFF position.
- (g) If the electrical connector D10436 (P2) and P9 and APU firewall receptacle D10436 are satisfactory, then do these steps:

- 1) Do a resistance check at the APU, M1709 as follows (SSM 49-62-12):

APU		APU	RESISTANCE
D10436 (P2)		D10436 (P2)	
pin 2	.....	pin 22	>100 KΩ
pin 8	.....	pin 22	>100 KΩ
pin 9	.....	pin 22	>100 KΩ
pin 10	.....	pin 22	>100 KΩ
pin 21	.....	pin 22	>100 KΩ
pin 22	.....	pin 23	>100 KΩ

APU		RESISTANCE
D10436 (P2)		
pin 22	 GROUND	>100 KΩ

- 2) If the resistance is not in the specified range, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - c) Set the APU master switch to the OFF position.
- 3) If the resistance is in the specified range, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the SCV, YAAV003.
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (6) Do this check of the airplane wire harness:

- Make sure that the APU master switch is OFF.
- Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- Examine the electrical connector D3599 and D10436 (P2) and APU firewall receptacle D10436. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - Set the APU master switch to the OFF position.
- If the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - Do a resistance check at the ECU, M1709 as follows (WDM 49-52-31, WDM 49-62-12):

ECU		ECU	RESISTANCE
D3599A		D3599A	
pin A14	.....	pin A15	>100 KΩ
pin A14	.....	pin B14	>100 KΩ
pin A14	.....	pin B15	>100 KΩ
pin A14	.....	pin C14	>100 KΩ
pin A14		pin C15	>100 KΩ
pin A14		pin D15	>100 KΩ

ECU		RESISTANCE
D3599A		
pin A14	 GROUND	>100 KΩ

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- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31, WDM 49-62-12).
- 3) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
- 4) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 5) Do the Repair Confirmation at the end of this task.
- 6) Set the APU master switch to the OFF position.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - (a) If the CDU display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU display shows maintenance message, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

820. SCV Torque Motor Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61278 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON
- (2) This fault is set when there is a short across the negative side of the torque motor driver. The electronic control unit does a check of the current to the torque motor driver of the surge control valve. A short across the negative side of the torque motor driver shows the current is less than -20 mA. If this failure occurs, the positions of the surge control valve is fully open and the inlet guide vanes are fully closed. The APU bleed air is not available during the APU operation.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.

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- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.
- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
 - 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
 - 1) Do a voltage check between socket 7 and socket 8 on the electrical connector P9 at the surge control valve, YAAV003 (SSM 49-52-31).

NOTE: The voltage must be less than 0.5V DC.
 - 2) If the voltage is more than 0.5V DC, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the voltage is less than 0.5V DC, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.

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- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B14 and pin B15 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

821. SCV Torque Motor Driver Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61279 SCV TORQUE MOTOR DRIVER SHOWS CIRCUIT FAILED ON

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- (2) This fault is set when there is a short across the positive side of the torque motor driver. The electronic control unit does a check of the current to the torque motor driver of the surge control valve. If the current indicated by the current wrap signal exceeds the limit with no current commanded, the test fails. If this fault is not corrected, a reverse flow protective shutdown can occur.

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- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem

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- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-52-31)
- (4) (WDM 49-52-31)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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- (c) Disconnect the electrical connector P9 from the surge control valve, YAAV003.

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- (d) Examine the electrical connector P9. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P9, then do these steps:
- 1) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P9 is satisfactory, then do these steps:
- 1) Do a voltage check between socket 7 and socket 8 on the electrical connector P9 at the surge control valve, YAAV003 (SSM 49-52-31).
NOTE: The voltage must be less than 0.5V DC.
 - 2) If the voltage is more than 0.5V DC, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the voltage is less than 0.5V DC, then do these steps and continue:
 - a) Re-connect the electrical connector P9 to the surge control valve, YAAV003.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B14 and pin B15 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-52-31).

NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-52-31).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

822. Flow Divider Solenoid Shows Circuit Failed ON - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-61293 FLOW DIVIDER SOLENOID SHOWS CIRCUIT FAILED ON

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- (2) This fault is set when there is a short across the solenoid driver for the fuel flow divider. The electronic control unit does a check of the voltage across the high side driver of the flow divider solenoid. A short across the solenoid driver shows the voltage is more than 11.0V DC. If this fault is not corrected, then APU start problems at low altitude can occur.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electronic control unit, M1709
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-12)
- (4) (WDM 49-71-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.

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- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P23 from the flow divider solenoid, YAAV004.
- (d) Examine the electrical connector P23. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P23, then do these steps:
- 1) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P23 is satisfactory, then do these steps:
- 1) Do a voltage check between socket 1 and socket 2 on the electrical connector P23 at the flow divider solenoid, YAAV004 (SSM 49-62-12).

NOTE: The voltage must be less than 0.5V DC.
 - 2) If the voltage is more than 0.5V DC, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the voltage is less than 0.5V DC, then do these steps and continue:
 - a) Re-connect the electrical connector P23 to the flow divider solenoid, YAAV004.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin A9 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12).
NOTE: The resistance must be less than 80 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.

END OF TASK

823. Sensor Failure Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61025 SENSOR FAILURE SHUTDOWN
- (2) This APU protective shutdown occurs when there is a problem with the inlet temperature sensor, YAAT002, or the oil temperature sensor, YAAT006. The problem is a loss of the temperature indications from one of the two temperature sensors. If the inlet temperature sensor does not send the APU inlet temperature indications to the electronic control unit, the APU will operate with degraded exhaust temperature control. If the oil temperature sensor does not send the oil temperature indications to the electronic control unit, the APU will operate with no high oil temperature protection. This APU protective shutdown does not occur during flight operations.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Inlet temperature sensor, YAAT002
- (4) Oil temperature sensor, YAAT006
- (5) Voltage problem with the engine wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-60 TASK SUPPORT Figure 302)
- (3) (SSM 49-71-21)
- (4) (SSM 49-94-21)
- (5) (WDM 49-71-21)
- (6) (WDM 49-94-21)

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E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-61136
 - 2) 49-61223
 - 3) 49-61224
 - 4) 49-61225
 - 5) 49-94228
 - 6) 49-94229
 - 7) 49-94230.
 - 8) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 9) Do these steps after you do the Fault Isolation Procedure for each message:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-61025 shows.
 - d) If the CDU display does not show maintenance message 49-61025, then you corrected the fault.
 - e) If the CDU display shows maintenance message 49-61025, then continue.
 - f) Set the APU master switch to the OFF position.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (c) If the CDU display does not show this maintenance message on the FAULT HISTORY page for the last APU cycle, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.

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- 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to replace the inlet temperature sensor, YAAT002:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the inlet temperature sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the oil temperature sensor, YAAT006:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
 - Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do a voltage check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P21 from the inlet temperature sensor, YAAT002.
- (d) Disconnect the electrical connector P15 from the oil temperature sensor, YAAT006.
- (e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (g) Set the APU master switch to the ON position.
- (h) Do a voltage check on the electrical connector P21, pin A to pin B, at the inlet temperature sensor, YAAT002 (SSM 49-71-21).
- (i) Do a voltage check on the electrical connector P15, pin A to pin B, at the oil temperature sensor, YAAT006 (SSM 49-94-21).

NOTE: The voltage must be more than 9.0V DC.

NOTE: The voltage must be more than 9.0V DC.

- (j) If one or both voltage(s) are not more than 9.0V DC, then do these steps:
 - 1) Set the APU master switch to the OFF position.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (k) If the two voltages are more than 9.0V DC, then do these steps and continue:
 - 1) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
- 4) Re-connect the electrical connector P21 to the inlet temperature sensor, YAAT002.
- 5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 6) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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824. ECU Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-61002 ECU SHUTDOWN

B. Possible Causes

- (1) Electronic Control Unit, M1709

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-60 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the FAULT HISTORY page, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do these steps to replace the Electronic Control Unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the Electronic Control Unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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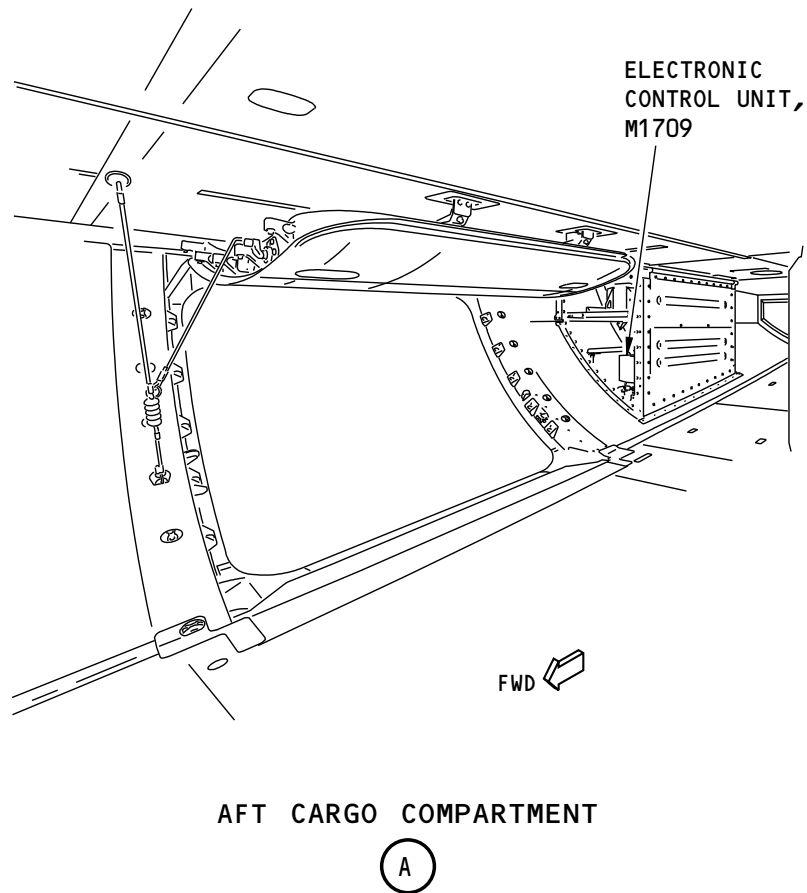
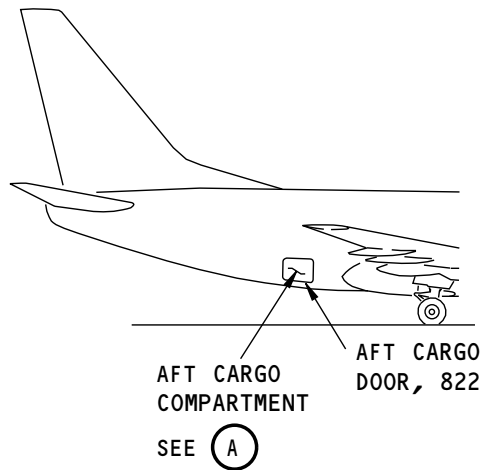
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H19839 S0006745314_V1

APU Controls Component Location
Figure 301/49-60-00-990-801 (Sheet 1 of 2)

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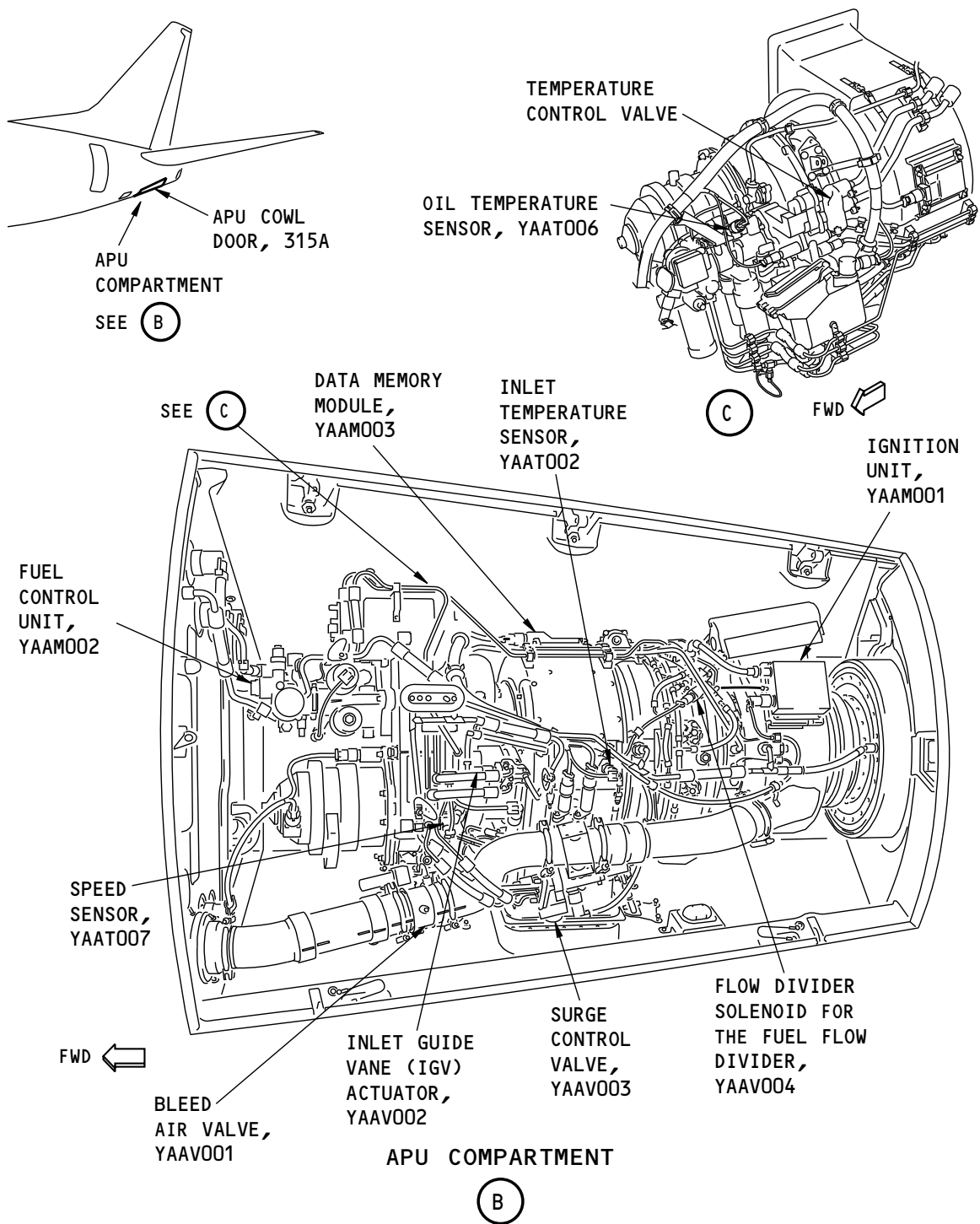
49-60 TASK SUPPORT

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G45716 S0006745316_V1

APU Controls Component Location
Figure 301/49-60-00-990-801 (Sheet 2 of 2)

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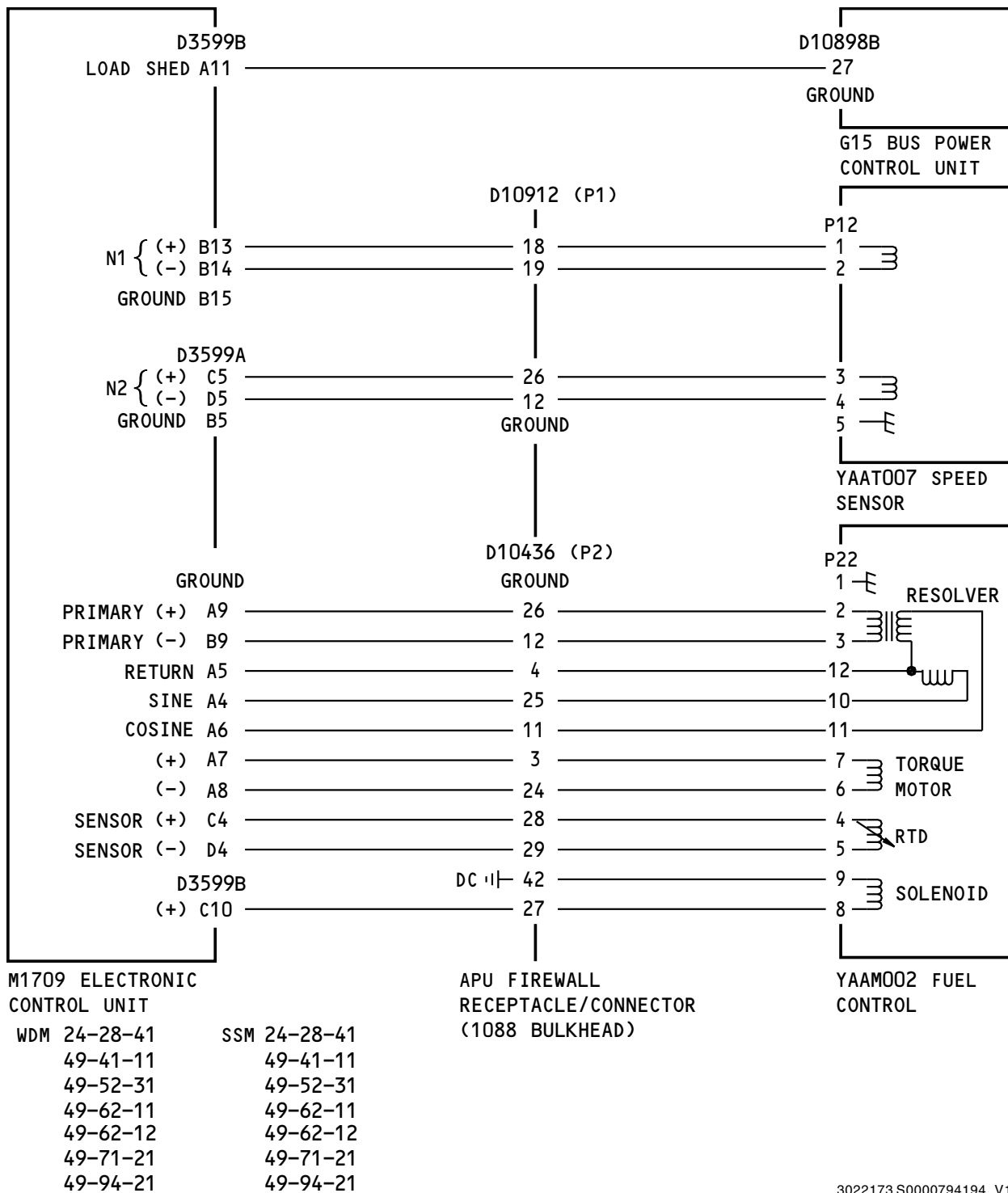
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3022173 S0000794194_V1

APU Controls Simplified Schematic
Figure 302/49-60-00-990-803 (Sheet 1 of 4)

EFFECTIVITY
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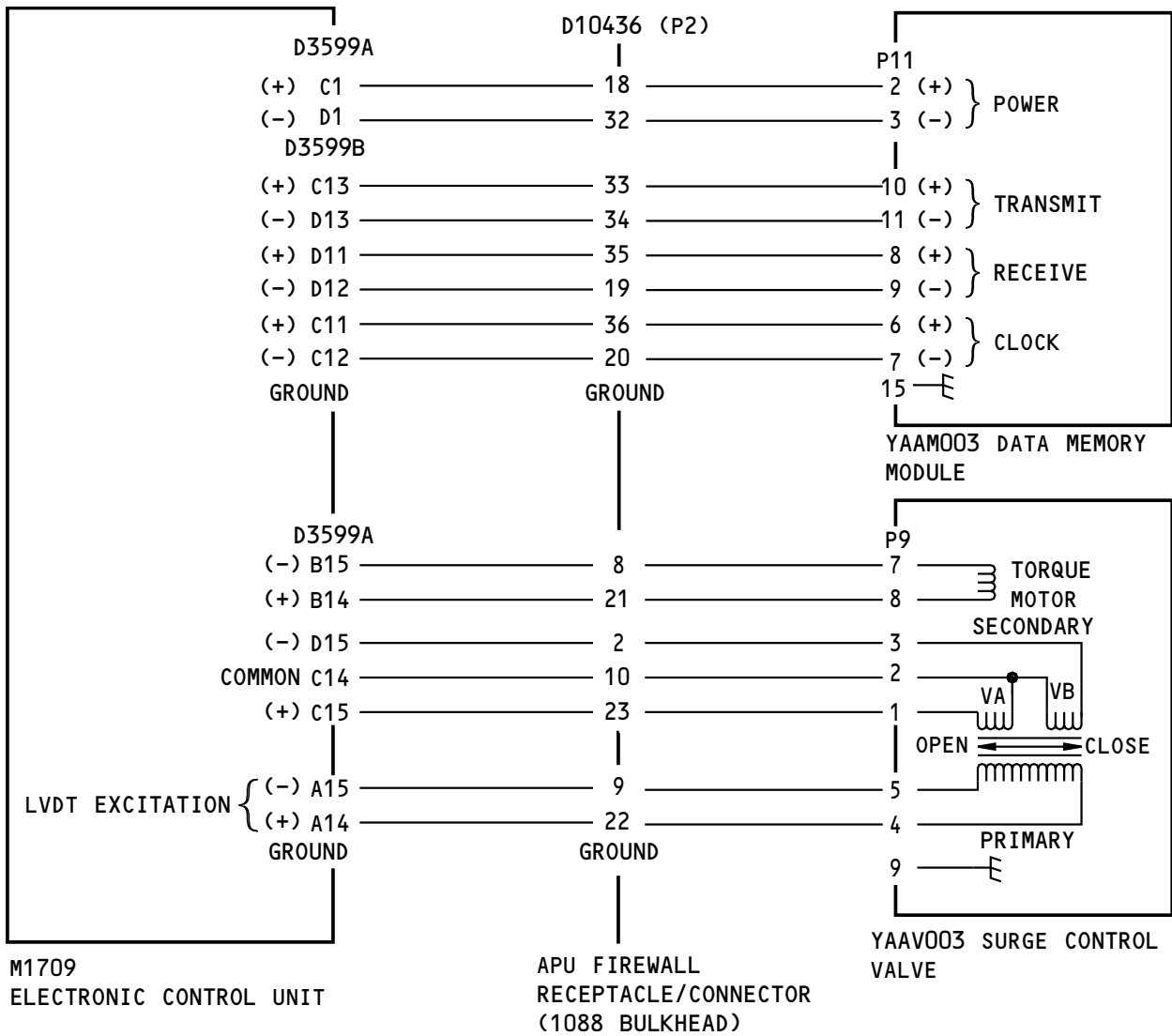
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3022174 S0000794195_V1

APU Controls Simplified Schematic
Figure 302/49-60-00-990-803 (Sheet 2 of 4)

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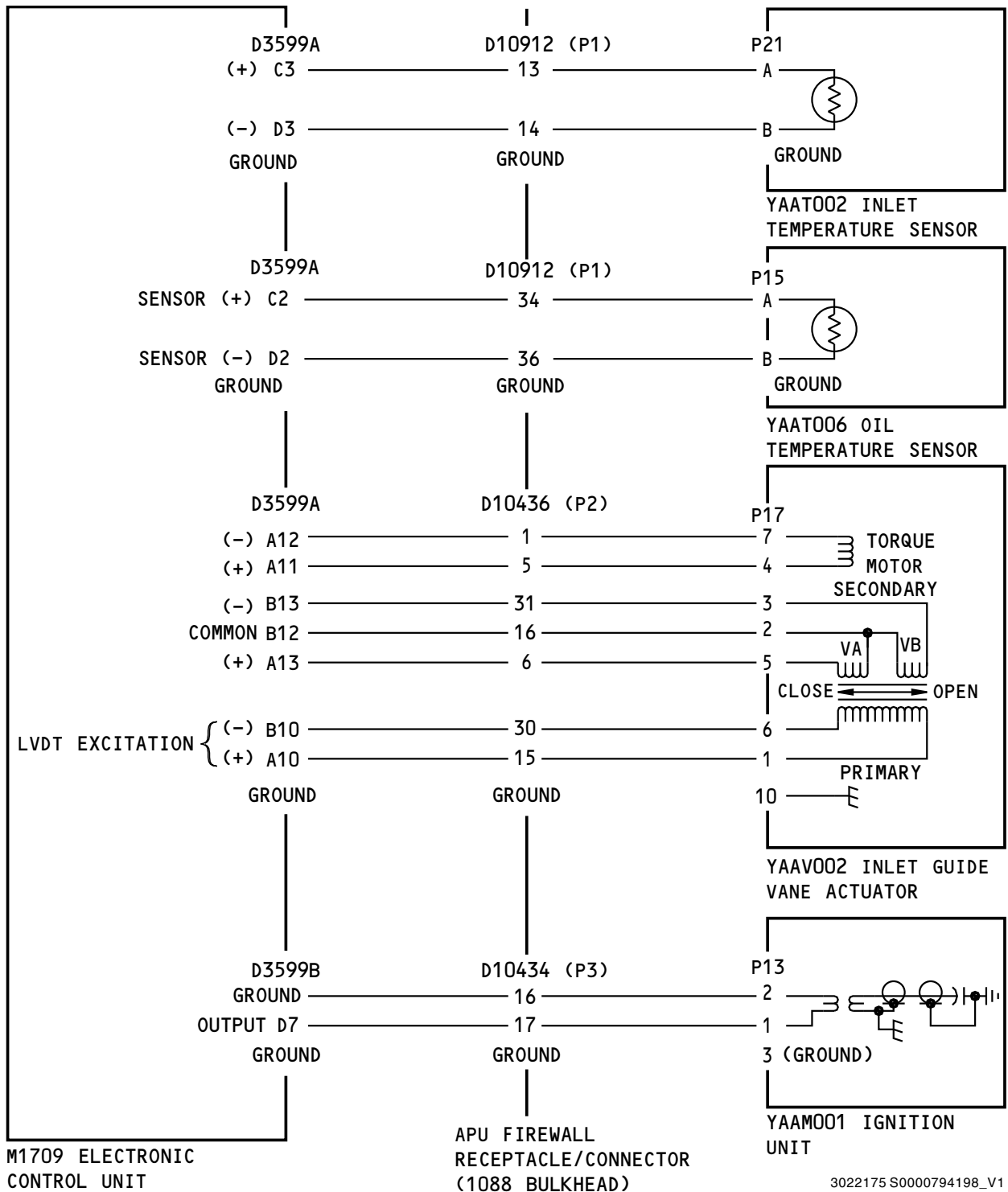
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3022175 S0000794198_V1

APU Controls Simplified Schematic
Figure 302/49-60-00-990-803 (Sheet 3 of 4)

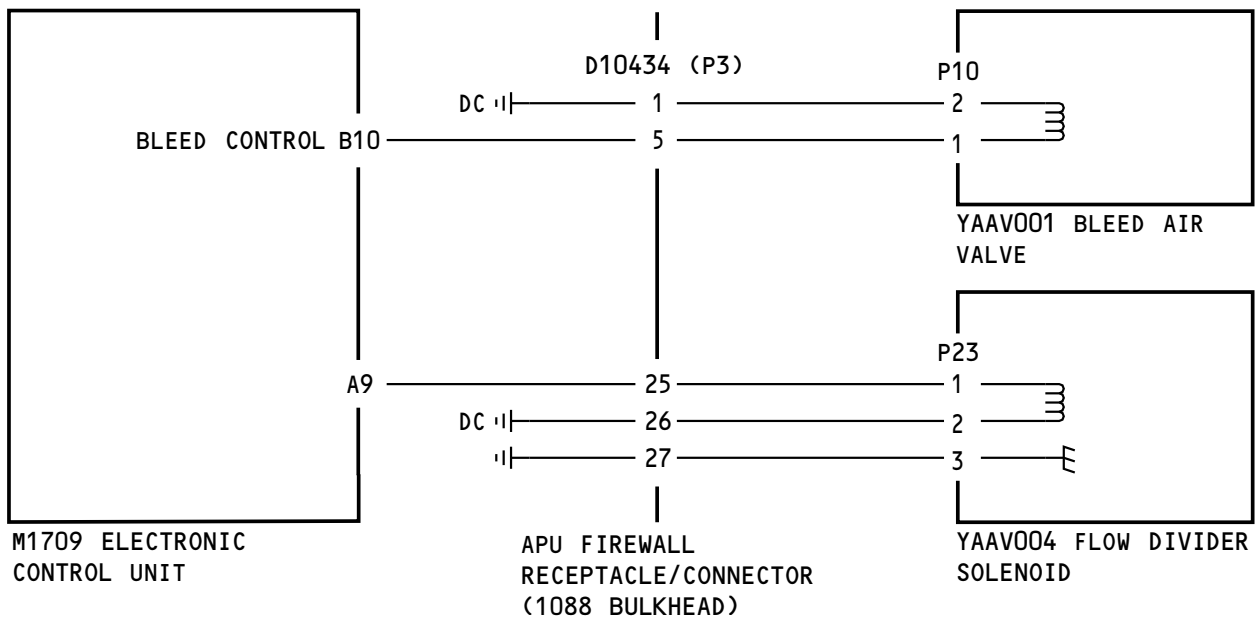
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H71697 S0006745320_V1

APU Controls Simplified Schematic
Figure 302/49-60-00-990-803 (Sheet 4 of 4)

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801. APU BITE INOP Message Shows on the CDU - Fault Isolation

A. Description

- (1) The APU BITE test is initiated by the BITE POWERUP signal from the two display electronic units (DEU-1 and DEU-2) and the transmitting label 357 with the APU ID code from DEU-1. The control display unit (CDU) display shows the APU INITIATING message until the electronic control unit transmits the label 356 to DEU-1 and DEU-2. If label 356 is not transmitted by the electronic control unit in 25 seconds, then the CDU display will show the APU BITE INOP message.
- (2) The CDU display will show the APU BITE INOP message when one of these conditions occurs:
 - (a) DATA LOAD SELECT switch on the data loader control panel, P61-01, is in the APU position
 - (b) Airplane is in the air mode
 - (c) Voltage and wiring problems to the electronic control unit, M1709
 - (d) Internal problem with the electronic control unit, M1709.

B. Possible Causes

- (1) DISPLAYS SOURCE switch, on the instrument switching module at the P5 forward overhead panel, is not in the ALL ON 1 position
- (2) DATA LOAD SELECT switch, on the data loader control panel, P61-01, is not in the NORM position
- (3) Airplane is not in the ground mode
- (4) Voltage problem to the electronic control unit, M1709
- (5) Electronic control unit, M1709, did not receive transmitting label 357 from the display electronic unit 1 (DEU-1), M1808
- (6) Wiring problem between the electronic control unit, M1709, and the display electronic unit 1 (DEU-1), M1808
- (7) Wiring problem between the electronic control unit, M1709, and the data load enable relay, R735
- (8) Wiring problem between the data load enable relay, R735, and the display electronic unit 1 (DEU-1), M1808
- (9) Wiring problem between the electronic control unit, M1709, and the display electronic unit 1 (DEU-1), M1808
- (10) Internal problem with the data load enable relay, R735
- (11) Wiring problem between the data load enable relay, R735, and the data loader control panel, P61-01
- (12) Data loader control panel, P61-01
- (13) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-65 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-65 TASK SUPPORT Figure 302)
- (3) (SSM 34-61-18)
- (4) (SSM 49-62-11)
- (5) (SSM 73-24-12)
- (6) (WDM 34-61-18)
- (7) (WDM 49-62-11)
- (8) (WDM 73-24-12)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows the APU BITE INOP message, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show the APU BITE INOP message, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the position of the DISPLAYS SOURCE switch for the display electronic unit (DEU-1), M1808:
 - (a) Make sure the APU master switch is OFF.
 - (b) Make sure that the DISPLAYS SOURCE switch on the instrument switching module at the P5 forward overhead panel is in the ALL ON 1 position.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 1) If the CDU display goes blank, then, do this task: CDS BITE Procedure, 31-62 TASK 801.
 - 2) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - 3) If the CDU display shows the APU BITE INOP message, then continue.
- (2) Do this check of the position of the DATA LOAD SELECT on the data loader control panel, P61-01:
 - (a) Make sure the APU master switch is OFF.

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- (b) Make sure that the DATA LOAD SELECT switch on the data loader control panel, P61-01, is in the NORM position.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 1) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - 2) If the CDU display shows the APU BITE INOP message, then continue.
- (3) Do this system check of the airplane in the ground mode:
 - (a) Make sure the APU master switch is OFF.
 - (b) Make sure the airplane is in the ground mode. To do a check if the airplane is in the ground mode. Do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 1) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - 2) If the CDU display shows the APU BITE INOP message, then continue.
- (4) Do a voltage check to the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Do a voltage check on the electrical connector D3599C, pin 2 to structural ground, at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The voltage must be 26V-28V DC.

- (e) If the voltage is not 26V-28V DC, then do these steps:
 - 1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Do a voltage check at the load terminal of circuit breaker C33 (SSM 49-62-11).

NOTE: The voltage must be 26V-28V DC.

NOTE: Circuit breaker C33 is referred to as 6-4A14 AUX POWER UNIT CONT on the circuit breaker panel, P6-4.

- 3) If the voltage is not 26V-28V DC, then do these steps:
 - a) Replace the circuit breaker C33 (WDM 49-62-11):

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This is the circuit breaker:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- 4) If the voltage is 26V-28V DC, then do these steps:
- a) Repair the wiring between the load terminal of circuit breaker C33 and the electrical connector D3599C, pin 2 (WDM 49-62-11).
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- (f) If the voltage is 26V-28V DC, then do these steps and continue:
- 1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (5) Do this check for the transmitting label 357 from the display electronic unit 1 (DEU-1), M1808, to the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Install an analyzer, COM-1562 to the electrical connector D3599B, pin C14 (HI) and pin D14 (LO), at the electronic control unit, M1709, to read the APU/EEC BUS output (SSM 49-62-11).
 - (d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (e) Remove the analyzer, COM-1562.
 - (f) If the analyzer, COM-1562 reads transmitting label 357, then do these steps:
 - 1) Install a new electronic control unit, M1709. To install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - (g) If the analyzer, COM-1562 does not read transmitting label 357, then do this step and continue:

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- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (6) Do this check of the wiring between the electronic control unit, M1709, and the data load enable relay, R735:
 - (a) Make sure the APU master switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

- (c) Disconnect the electrical connector D12466 from the data load enable relay, R735.
NOTE: The data load enable relay, R735, is installed on the junction box, J20.
- (d) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (e) Examine the electrical connectors D3599 and D12466. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D3599 or D12466, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - 3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- (g) If the electrical connectors D3599 and D12466 are satisfactory, then do these steps:
 - 1) Do a wiring check between these pins of electrical connector D3599B at the electronic control unit, M1709, and these sockets of electrical connector D12466 at the data load enable relay, R735 (SSM 49-62-11) (SSM 73-24-12):

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D3599B

pin C14 socket 2
pin D14 socket 6

D12466

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-62-11) (WDM 73-24-12).
 - b) Re-install the electronic control unit, M1709. To install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - b) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

- (7) Do this check of the wiring between the data load enable relay, R735, and the display electronic unit 1 (DEU-1), M1808:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the display electronic unit 1 (DEU-1), M1808. To remove it, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.

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- (c) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- (d) Disconnect the electrical connector D12466 from the data load enable relay, R735.

NOTE: The data load enable relay, R735, is installed on the junction box, J20.

- (e) Examine the electrical connectors D3973 and D12466. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- (f) If there was a problem with the electrical connector D3973 or D12466, then do these steps:

- 1) Re-connect the electrical connector D12466 to the data load enable relay, R735.
- 2) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- 3) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.

- a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.

- (g) If the electrical connectors D3973 and D12466 are satisfactory, then do these steps:

- 1) Do a wiring check between these sockets of electrical connector D12466 at the data load enable relay, R735, and these pins of electrical connector D3973A at the display electronic unit 1 (DEU-1), M1808 (SSM 49-62-11) (SSM 73-24-12):

D12466	D3973A
socket 4	pin J3
socket 8	pin K3

- 2) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring (WDM 49-62-11) (WDM 73-24-12).
 - b) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- d) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

- e) Do this task: APU BITE Procedure, 49-60 TASK 801.

- f) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.

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- 3) If the circuit is satisfactory, then do these steps and continue:
 - a) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - b) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER

- c) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
- (8) Do this check of the wiring between the electronic control unit, M1709, and the display electronic unit 1 (DEU-1), M1808:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the display electronic unit 1 (DEU-1), M1808. To remove it, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (d) Examine the electrical connectors D3599 and D3973. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D3973, then do these steps:
 - 1) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - (f) If the electrical connectors D3599 and D3973 are satisfactory, then do these steps:
 - 1) Do a check for an open or short-to-ground circuit between these pins of electrical connector D3599A at the electronic control unit, M1709, and electrical connector D3973E at the display electronic unit 1 (DEU-1), M1808 (SSM 49-62-11):

D3599A	D3973E
pin A3	pin H9
 - 2) Do a wiring check between these pins of electrical connector D3599B at the electronic control unit, M1709, and electrical connector D3973A at the display electronic unit 1 (DEU-1), M1808:

D3599B	D3973A
pin C15	pin C5
pin D15	pin D5
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring (WDM 49-62-11).

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- b) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - c) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - e) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- 4) If the circuit is satisfactory, then do these steps and continue:
- a) Re-install the display electronic unit 1 (DEU-1), M1808. To re-install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - b) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (9) Do this check of the data load enable relay, R735:
- (a) Make sure the APU master switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D12466 from the data load enable relay, R735.
NOTE: The data load enable relay, R735, is installed on the junction box, J20.
- (d) Examine the electrical connector D12466. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D12466, then do these steps:
 - 1) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - 2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- (f) If the electrical connector D12466 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the data load enable relay, R735 (SSM 34-61-18) (SSM 49-62-11):
 - a) Pin 1 and pin 6, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 2 and pin 5, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the data load enable relay, R735 (WDM 34-61-18) (WDM 49-62-11).
 - b) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.

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- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:

- Re-connect the electrical connector D12466 to the data load enable relay, R735.
- Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (10) Do this check of the wiring between the data load enable relay, R735, and the data loader control panel, P61-01:

- Make sure the APU master switch is OFF.
- Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the data loader control panel, P61-01 (WDM 34-61-18).
- Disconnect the electrical connector D12466 from the data load enable relay, R735.

NOTE: The data load enable relay, R735, is installed on the junction box, J20.

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- (e) Examine the electrical connectors D2879 and D12466. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D2879 or D12466, then do these steps:
 - 1) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - 2) Re-install the data loader control panel, P61-01 (WDM 34-61-18).
 - 3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - a) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- (g) If the electrical connectors D2879 and D12466 are satisfactory, then do these steps:
 - 1) Do a check for an open or a short-to-ground circuit between these sockets of electrical connector D2879 at the data loader control panel, P61-01, and electrical connector D12466 at the data load enable relay, R735 (SSM 34-61-18):

D2879	D12466
socket 21	socket 3

- 2) If there is an open or a short-to-ground circuit, then do these steps:
 - a) Repair the wiring (WDM 34-61-18).
 - b) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - c) Re-install the data loader control panel, P61-01 (WDM 34-61-18).
 - d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - f) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
- 3) If the circuit is satisfactory, then do these steps and continue:
- a) Re-connect the electrical connector D12466 to the data load enable relay, R735.
 - b) Re-install the data loader control panel, P61-01 (WDM 34-61-18).
 - c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (11) Do these steps to replace the data loader control panel, P61-01:
- (a) Make sure the APU master switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Replace the data loader control panel, P61-01 (WDM 34-61-18).
- (d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	9	C00923	DATA LOADER
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 1) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.
 - 2) If the CDU display shows the APU BITE INOP message, then continue.
- (12) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 1) If the CDU display does not show the APU BITE INOP message, then you corrected the fault.

————— **END OF TASK** —————

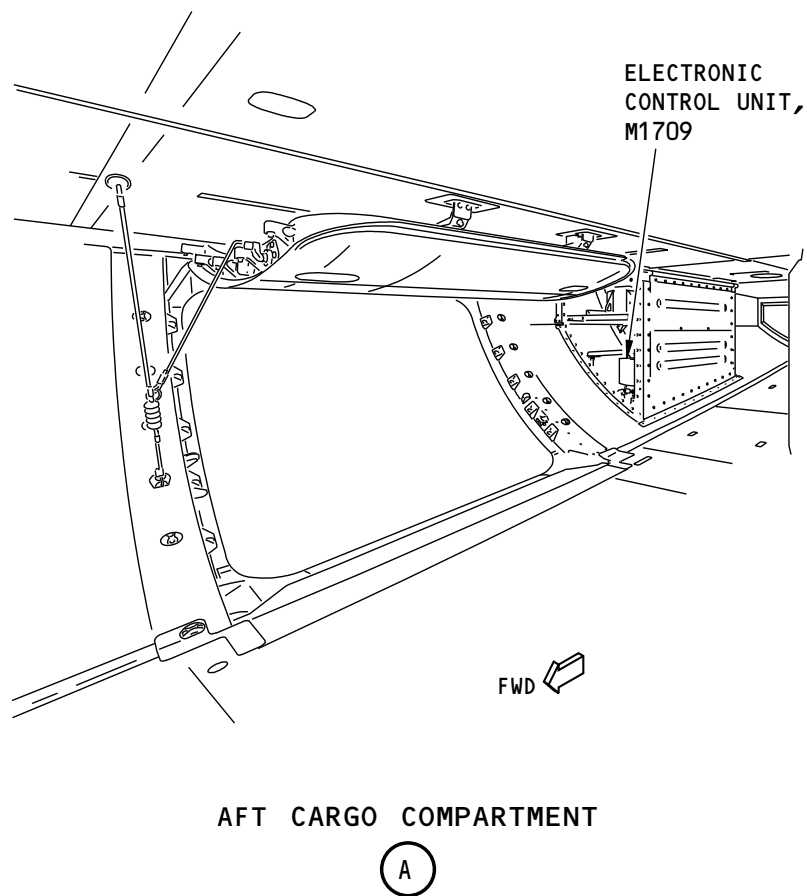
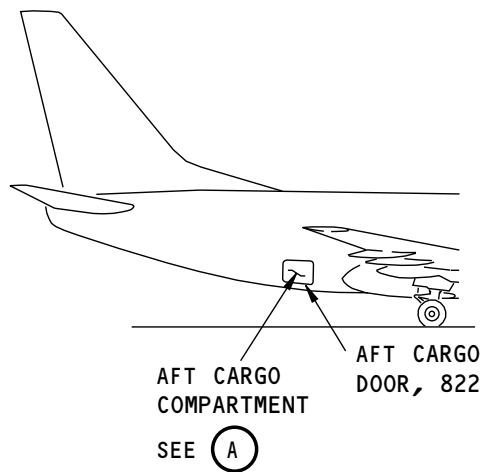
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H70216 S0006745334_V1

APU Controls Component Location
Figure 301/49-65-00-990-801

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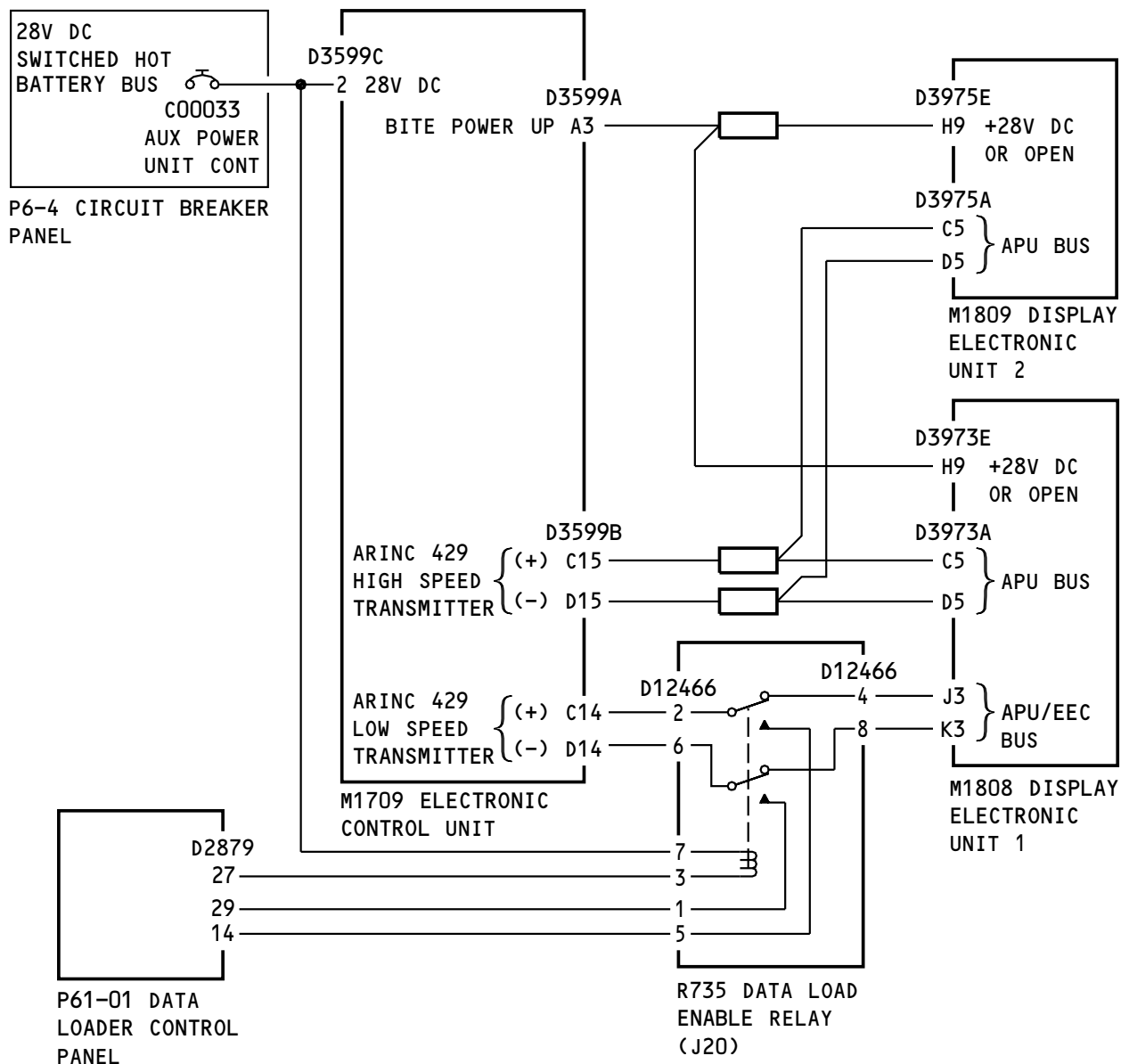
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WDM 34-61-18 SSM 34-61-18
49-62-11 49-62-11
73-24-12 73-24-12

H70894 S0006745336_V2

APU Controls Simplified Schematic
Figure 302/49-65-00-990-802

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801. EGT1 Thermocouple Disagrees With EGT2 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-71146 EGT1 THERMOCOUPLE DISAGREES WITH EGT2
- (2) This fault is set when the two Exhaust Gas Temperature (EGT) Thermocouples disagree by more than 150°F (66°C) for 10 seconds and the Auxiliary Power Unit (APU) speed is more than 95%. The difference of the two EGT Thermocouples must be less than 30°F (-1°C) during the APU operation. A high resistance in the EGT Thermocouple circuit is related to a low EGT temperature indication. Clogged fuel nozzles can also cause this maintenance message to show on the Control Display Unit (CDU) Display. During the APU start cycle and the APU speed is less than 95%, the two EGT Thermocouples can disagree by more than 150°F (66°C) but the fault will not set. If this failure occurs, a loss of one of the two EGT signals is permitted to continue the APU operation.
- (3) The APU FAULT Light, on the Forward Overhead Panel, P5, can show for this maintenance message.

B. Possible Causes

- (1) Wire harness
- (2) Electronic Control Unit (ECU), M1709
- (3) EGT Thermocouple 1 (2), YAAT009 (YAAT010)
- (4) Clogged fuel nozzles
- (5) APU
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-71-21
- (4) WDM 49-71-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU Display does not show this maintenance message on the CURRENT STATUS Page, then there was an intermittent problem.

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- (b) If the CDU Display shows this maintenance message on the CURRENT STATUS Page, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY Page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
- (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- 1) If there was a problem with the engine wire harness, then do these steps:
- NOTE: You can repair or replace the engine wire harness.
- a) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- b) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU Display.
- c) Do the Repair Confirmation at the end of this task.
- 2) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU Master Switch is OFF.
- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
- 1) If there was a problem with the airplane wire harness, then do these steps:
- a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- b) Do the Repair Confirmation at the end of this task.
- 2) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the EGT Thermocouple 1, YAAT009:
- (a) Make sure the APU Master Switch is OFF and install a DO NOT OPERATE tag, STD-858.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Make sure the four EGT leads are installed tightly.
- (d) Remove the two nuts that attach the two EGT leads to the EGT Thermocouple 1, YAAT009.
- (e) Remove the two EGT leads from the two terminal studs.

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- (f) Examine the two EGT leads and two terminal studs. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the two EGT leads or two terminal studs, then do these steps:
- 1) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 1, YAAT009.

NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.

- a) Make sure the two EGT leads are connected to the correct studs.
 - 2) Re-install the two nuts on the EGT Thermocouple 1, YAAT009.
- NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
- a) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
 - b) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - 6) Do the Repair Confirmation at the end of this task.
- (h) If the two EGT leads and two terminal studs are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of terminal studs on the EGT Thermocouple 1, YAAT009 (SSM 49-71-21):
 - a) Terminal stud chromel and terminal stud alumel, specified resistance of less than 20 ohms.
 - b) Terminal stud chromel and structural ground (mount flange), specified resistance of more than 100K Ohms (open circuit).
 - c) Terminal stud alumel and structural ground (mount flange), specified resistance of more than 100K Ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of terminal studs, then do these steps:
 - a) Replace the EGT Thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - <1> Do not do the installation test for the EGT Thermocouple 1, YAAT009.
 - <2> Do the APU operational test to complete the Fault Isolation Task for this maintenance message.

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- b) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- e) Do the Repair Confirmation at the end of this task.
- 3) If the resistance is in the range specified for each pair of terminal studs, then do these steps and continue:
- a) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 1, YAAT009.
- NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.
- <1> Make sure the two EGT leads are connected to the correct studs.
- b) Re-install the two nuts on the EGT Thermocouple 1, YAAT009.
- NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
- c) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
- d) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
- e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU Master Switch is OFF and install a DO NOT OPERATE tag, STD-858.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 Bulkhead.
- (d) Make sure the four EGT leads are installed tightly.
- (e) Remove the two nuts that attach the two EGT leads to the EGT Thermocouple 1, YAAT009.
- (f) Remove the two EGT leads from the two terminal studs.
- (g) Examine the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads and two terminal studs. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (h) If there was a problem with the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads or two terminal studs, then do these steps:
 - 1) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 1, YAAT009.
NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.
 - a) Make sure the two EGT leads are connected to the correct studs.
 - 2) Re-install the two nuts on the EGT Thermocouple 1, YAAT009.
NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
 - a) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
 - b) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
 - 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 Bulkhead.
 - 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 6) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 7) Do the Repair Confirmation at the end of this task.
- (i) If the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads and two terminal studs are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) as follows (SSM 49-71-21):

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APU FIREWALL DISCONNECT D10912/P1		APU FIREWALL DISCONNECT D10912/P1	
pin 1		pin 5	> 100K Ω (open circuit)
pin 1	.....	GND	> 100K Ω (open circuit)
pin 5	.....	GND	> 100K Ω (open circuit)

- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:

- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU Display.

- b) Do the Repair Confirmation at the end of this task.

- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:

- a) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 1, YAAT009.

NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.

<1> Make sure the two EGT leads are connected to the correct studs.

- b) Re-install the two nuts on the EGT Thermocouple 1, YAAT009.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- c) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
d) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
e) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 Bulkhead.
f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- g) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.

- (5) Do this check of the airplane wire harness:

- (a) Make sure the APU Master Switch is OFF.

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- (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do not do the installation test for the ECU.
 - b) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
 - 2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 5) Do the Repair Confirmation at the end of this task.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the ECU, M1709 as follows (SSM 49-71-21):

ECU, M1709		ECU, M1709	
D3599A		D3599A	
pin C6	.....	pin D6	< 35 Ω
pin C6	.....	GND	> 100K Ω (open circuit)
pin D6	.....	GND	> 100K Ω (open circuit)

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) If there was a problem with the circuit, do not do the installation test for the ECU.
 - <1> Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
 - b) If the circuit is satisfactory, then do the installation test for the ECU to complete the Fault Isolation Task for this maintenance message.
- 4) If there was a problem with the circuit, then do these steps:

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- a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- d) Do the Repair Confirmation at the end of this task.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:

- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the ECU, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- 1) Do not do the installation test for the ECU.
- 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (7) Do these steps to replace the EGT Thermocouple 1, YAAT009:
- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the EGT Thermocouple 1, YAAT009. These are the tasks:
- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
- 1) Do not do the installation test for the EGT Thermocouple 1, YAAT009.
- 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.

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- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (8) Do these steps to replace the EGT Thermocouple 2, YAAT010:
- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the EGT Thermocouple 2, YAAT010. These are the tasks:
- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
- 1) Do not do the installation test for the EGT Thermocouple 2, YAAT010.
 - 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.

- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (9) Do these steps to replace the ten fuel nozzles:
- (a) Make sure the APU Master Switch is OFF.



CAUTION

DO NOT REMOVE ALL THE FUEL NOZZLES FROM THE COMBUSTOR HOUSING AT THE SAME TIME. YOU CAN REMOVE THE FUEL NOZZLE IF THERE ARE TWO ADJACENT FUEL NOZZLES. THE MAXIMUM NUMBER OF FUEL NOZZLES THAT YOU CAN REMOVE AT THE SAME TIME IS FIVE. IF YOU REMOVE ALL THE FUEL NOZZLES, THE COMBUSTOR LINER WILL NOT ALIGN WITH THE FUEL NOZZLES ON THE COMBUSTOR HOUSING.

- (b) Replace the ten fuel nozzles. These are the tasks:
- Fuel Nozzle Removal, AMM TASK 49-31-14-000-801

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- Fuel Nozzle Installation, AMM TASK 49-31-14-400-801

- 1) During the APU operation, examine the fuel nozzles for signs of fuel leakage and repair the leakage.
- 2) Do not do the installation test for the fuel nozzle.
- 3) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.

- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (10) Do these steps to replace the APU:
- (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU Display.
- (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.
- (3) Look at the CURRENT STATUS Page on the CDU Display to see if this maintenance message shows.
 - (a) If the CDU Display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU Display shows this maintenance message, then continue the Fault Isolation Procedure at the subsequent step.
- (4) Set the APU Master Switch to the OFF position.

————— **END OF TASK** —————

802. EGT1 Thermocouple Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-71147 EGT1 THERMOCOUPLE SHOWS OPEN CIRCUIT

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- (2) This fault is set when there is an open in the EGT thermocouple 1 circuit. The electronic control unit does a check of the temperature indication for the EGT thermocouple 1. An open in the EGT thermocouple 1 circuit shows the temperature indication is less than -200°F (-129°C). If this failure occurs, a loss of one of the two EGT signals is permitted to continue the APU operation.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the EGT thermocouple 1, YAAT009
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709
- (7) EGT thermocouple 1, YAAT009.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-71-21
- (4) WDM 49-71-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the EGT thermocouple 1, YAAT009:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Make sure the four EGT leads are installed tightly.
- (d) Remove the two nuts that attach the two EGT leads to the EGT thermocouple 1, YAAT009.
- (e) Remove the two EGT leads from the terminal studs.

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- (f) Examine the two EGT leads and two terminal studs. To examine them, do this task:
Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the two EGT leads or two terminal studs, then do these steps:

- 1) Re-connect the two EGT leads to the two terminal studs on the EGT thermocouple 1, YAAT009.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud.
Make sure the two EGT leads are connected to the correct studs.

- 2) Re-install the two nuts on the EGT thermocouple 1, YAAT009.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- a) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
- b) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (h) If the two EGT leads and two terminal studs are satisfactory, then continue to the subsequent two applicable steps.
- (i) If you have a new or serviceable EGT thermocouple 1, YAAT009, then do these steps:
- 1) Connect the two EGT leads to the two terminal studs on the new or serviceable EGT thermocouple 1, YAAT009.
- NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud.
Make sure the two EGT leads are connected to the correct studs.
- 2) Re-install the two nuts on the EGT thermocouple 1, YAAT009.
- NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

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- a) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
 - b) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 8) If the CDU display does not show this maintenance message, then do these steps:
 - a) Set the APU master switch to the OFF position.
 - b) Replace the EGT thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
- 9) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the two nuts that attach the two EGT leads to the new or serviceable EGT thermocouple 1, YAAT009.
- d) Remove the two EGT leads from the two terminal studs.
- e) Re-connect the two EGT leads to the two terminal studs on the used EGT thermocouple 1, YAAT009.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud. Make sure the two EGT leads are connected to the correct studs.

NOTE: The used EGT thermocouple 1 that is installed on the APU is satisfactory.

- f) Re-install the two nuts on the used EGT thermocouple 1, YAAT009.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- g) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
- h) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
- i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- j) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (j) If you do not have a new or serviceable EGT thermocouple 1, YAAT009, then do these steps:
- 1) Make sure the APU master switch is OFF and the DO-NOT-OPERATE tag is installed.
 - 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Make sure the two EGT leads are removed from the two terminal studs.
- 4) Measure the resistance between the terminal stud chromel and terminal stud alumel on the EGT thermocouple 1, YAAT009 (SSM 49-71-21).

NOTE: The resistance must be less than 20 ohms.

- 5) If the resistance is more than 20 ohms, then do these steps:
 - a) Replace the EGT thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is less than 20 ohms, then do these steps and continue:
 - a) Re-connect the two EGT leads to the two terminal studs on the EGT thermocouple 1, YAAT009.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud. Make sure the two EGT leads are connected to the correct studs.
 - b) Re-install the two nuts on the EGT thermocouple 1, YAAT009.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
 - c) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
 - d) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
 - e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 1 and pin 5 on the electrical connector D10912 (P1) (SSM 49-71-21).

NOTE: The resistance must be less than 20 ohms.
 - 2) If the resistance is more than 20 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 20 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C6 and pin D6 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-71-21).

NOTE: The resistance must be less than 35 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the EGT thermocouple 1, YAAT009:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the EGT thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

803. EGT2 Thermocouple Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-71148 EGT2 THERMOCOUPLE SHOWS OPEN CIRCUIT

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- (2) This fault is set when there is an open in the EGT thermocouple 2 circuit. The electronic control unit does a check of the temperature indication for the EGT thermocouple 2. An open in the EGT thermocouple 2 circuit shows the temperature indication is less than -200°F (-129°C). If this failure occurs, a loss of one of the two EGT signals is permitted to continue the APU operation.
- (3) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the EGT thermocouple 2, YAAT010
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709
- (7) EGT thermocouple 2, YAAT010.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-71-21
- (4) WDM 49-71-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the EGT thermocouple 2, YAAT010:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Make sure the four EGT leads are installed tightly.
- (d) Remove the two nuts that attach the two EGT leads to the EGT thermocouple 2, YAAT010.
- (e) Remove the two EGT leads from the two terminal studs.

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- (f) Examine the two EGT leads and two terminal studs. To examine them, do this task:
Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (g) If there was a problem with the two EGT leads or two terminal studs, then do these steps:

- 1) Re-connect the two EGT leads to the two terminal studs on the EGT thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud.
Make sure the two EGT leads are connected to the correct studs.

- 2) Re-install the two nuts on the EGT thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- a) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
- b) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (h) If the two EGT leads and two terminal studs are satisfactory, then continue to the subsequent two applicable steps.
- (i) If you have a new or serviceable EGT thermocouple 2, YAAT010, then do these steps:
- 1) Connect the two EGT leads to the two terminal studs on the new or serviceable EGT thermocouple 2, YAAT010.
- NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud.
Make sure the two EGT leads are connected to the correct studs.
- 2) Re-install the two nuts on the EGT thermocouple 2, YAAT010.
- NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

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- a) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
 - b) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 8) If the CDU display does not show this maintenance message, then do these steps:
 - a) Set the APU master switch to the OFF position.
 - b) Replace the EGT thermocouple 2, YAAT010. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
- 9) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the two nuts that attach the two EGT leads to the new or serviceable EGT thermocouple 2, YAAT010.
- d) Remove the two EGT leads from the two terminal studs.
- e) Re-connect the two EGT leads to the two terminal studs on the used EGT thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud. Make sure the two EGT leads are connected to the correct studs.

NOTE: The used EGT thermocouple 2 that is installed on the APU is satisfactory.

- f) Re-install the two nuts on the used EGT thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- g) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
- h) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
- i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- j) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (j) If you do not have a new or serviceable EGT thermocouple 2, YAAT010, then do these steps:
- 1) Make sure the APU master switch is OFF and the DO-NOT-OPERATE tag is installed.
 - 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- 3) Make sure the two EGT leads are removed from the two terminal studs.
- 4) Measure the resistance between the terminal stud chromel and terminal stud alumel on the EGT thermocouple 2, YAAT010 (SSM 49-71-21).

NOTE: The resistance must be less than 20 ohms.

- 5) If the resistance is more than 20 ohms, then do these steps:
 - a) Replace the EGT thermocouple 2, YAAT010. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is less than 20 ohms, then do these steps and continue:
 - a) Re-connect the two EGT leads to the two terminal studs on the EGT thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT thermocouple is larger than the chromel stud. Make sure the two EGT leads are connected to the correct studs.
 - b) Re-install the two nuts on the EGT thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
 - c) Tighten the nut for the alumel stud to 24-40 pound-inches (2.7-4.5 newton-meters).
 - d) Tighten the nut for the chromel stud to 15-20 pound-inches (1.7-2.3 newton-meters).
 - e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 15 and pin 16 on the electrical connector D10912 (P1) (SSM 49-71-21).

NOTE: The resistance must be less than 20 ohms.
 - 2) If the resistance is more than 20 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 20 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C7 and pin D7 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-71-21).

NOTE: The resistance must be less than 35 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the EGT thermocouple 2, YAAT010:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the EGT thermocouple 2, YAAT010. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

804. EGT2 Thermocouple Disagrees With EGT1 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-71149 EGT2 THERMOCOUPLE DISAGREES WITH EGT1

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- (2) This fault is set when the two EGT Thermocouples disagree by more than 150°F (66°C) for 10 seconds and the APU speed is more than 95%. The difference of the two EGT Thermocouples must be less than 30°F (-1°C) during the APU operation. A high resistance in the EGT Thermocouple circuit is related to a low EGT temperature indication. Clogged fuel nozzles can also cause this maintenance message to show on the CDU Display. During the APU start cycle and the APU speed is less than 95%, the two EGT Thermocouples can disagree by more than 150°F (66°C) but the fault will not set. If this failure occurs, a loss of one of the two EGT signals is permitted to continue the APU operation.
- (3) The APU FAULT Light, on the Forward Overhead Panel, P5, can show for this maintenance message.

B. Possible Causes

- (1) Wire harness
- (2) ECU, M1709
- (3) EGT Thermocouple 1 (2), YAAT009 (YAAT010)
- (4) Clogged fuel nozzles
- (5) APU
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-71-21
- (4) WDM 49-71-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU Display does not show this maintenance message on the CURRENT STATUS Page, then there was an intermittent problem.
 - (b) If the CDU Display shows this maintenance message on the CURRENT STATUS Page, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY Page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- 1) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- a) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.

- b) Replace the engine wire harness. These are the tasks:

- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
- Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU Display.

- c) Do the Repair Confirmation at the end of this task.

- 2) If the engine wire harness is satisfactory, then continue.

- (2) Do a general visual inspection of the airplane wire harness:

- (a) Make sure the APU Master Switch is OFF.

- (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

- 1) If there was a problem with the airplane wire harness, then do these steps:

- a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

- b) Do the Repair Confirmation at the end of this task.

- 2) If the airplane wire harness is satisfactory, then continue.

- (3) Do this check of the EGT Thermocouple 2, YAAT010:

- (a) Make sure the APU Master Switch is OFF and install a DO NOT OPERATE tag, STD-858.

- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Make sure the four EGT leads are installed tightly.

- (d) Remove the two nuts that attach the two EGT leads to the EGT Thermocouple 2, YAAT010.

- (e) Remove the two EGT leads from the two terminal studs.

- (f) Examine the two EGT leads and two terminal studs. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

- (g) If there was a problem with the two EGT leads or two terminal studs, then do these steps:

- 1) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.

- a) Make sure the two EGT leads are connected to the correct studs.

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- 2) Re-install the two nuts on the EGT Thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- a) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
- b) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 6) Do the Repair Confirmation at the end of this task.

- (h) If the two EGT leads and two terminal studs are satisfactory, then do these steps:

- 1) Measure the resistance between these pairs of terminal studs on the EGT Thermocouple 2, YAAT010 (SSM 49-71-21):

- a) Terminal stud chromel and terminal stud alumel, specified resistance of less than 20 ohms.
- b) Terminal stud chromel and structural ground (mount flange), specified resistance of more than 100K Ohms (open circuit).
- c) Terminal stud alumel and structural ground (mount flange), specified resistance of more than 100K Ohms (open circuit).

- 2) If the resistance is not in the range specified for each pair of terminal studs, then do these steps:

- a) Replace the EGT Thermocouple 2, YAAT010. These are the tasks:

- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
- Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801

<1> Do not do the installation test for the EGT Thermocouple 2, YAAT010.

<2> Do the APU operational test to complete the Fault Isolation Task for this maintenance message.

- b) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - d) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - e) Do the Repair Confirmation at the end of this task.
- 3) If the resistance is in the range specified for each pair of terminal studs, then do these steps and continue:
- a) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 2, YAAT010.
NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.
<1> Make sure the two EGT leads are connected to the correct studs.
 - b) Re-install the two nuts on the EGT Thermocouple 2, YAAT010.
NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
 - c) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
 - d) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
 - e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU Master Switch is OFF and install a DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 Bulkhead.

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- (d) Make sure the four EGT leads are installed tightly.
- (e) Remove the two nuts that attach the two EGT leads to the EGT Thermocouple 2, YAAT010.
- (f) Remove the two EGT leads from the two terminal studs.
- (g) Examine the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads and two terminal studs. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (h) If there was a problem with the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads or two terminal studs, then do these steps:

- 1) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.

- a) Make sure the two EGT leads are connected to the correct studs.

- 2) Re-install the two nuts on the EGT Thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.

- a) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
- b) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).

- 3) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 Bulkhead.
- 4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 5) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 6) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 7) Do the Repair Confirmation at the end of this task.
- (i) If the electrical connector D10912 (P1), APU firewall receptacle D10912, two EGT leads and two terminal studs are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) as follows (SSM 49-71-21):

APU FIREWALL DISCONNECT D10912/P1		APU FIREWALL DISCONNECT D10912/P1	
pin 15		pin 16	> 100K Ω (open circuit)
pin 15		GND	> 100K Ω (open circuit)
pin 16		GND	> 100K Ω (open circuit)

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- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU Display.
 - b) Do the Repair Confirmation at the end of this task.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the two EGT leads to the two terminal studs on the EGT Thermocouple 2, YAAT010.

NOTE: The alumel stud on the EGT Thermocouple is larger than the chromel stud.

<1> Make sure the two EGT leads are connected to the correct studs.
 - b) Re-install the two nuts on the EGT Thermocouple 2, YAAT010.

NOTE: There are two different nuts that attach the two EGT leads to each thermocouple. The nut for the alumel stud is larger than the nut for the chromel stud.
 - c) Tighten the nut for the alumel stud to 24 in-lb (2.7 N·m) - 40 in-lb (4.5 N·m).
 - d) Tighten the nut for the chromel stud to 15 in-lb (1.7 N·m) - 20 in-lb (2.3 N·m).
 - e) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 Bulkhead.
 - f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- g) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU Master Switch is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - a) Do not do the installation test for the ECU.

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- b) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- 2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 5) Do the Repair Confirmation at the end of this task.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the ECU, M1709 as follows (SSM 49-71-21):

ECU, M1709		ECU, M1709	
D3599A		D3599A	
pin C7	.....	pin D7	< 35 Ω
pin C7	.....	GND	> 100K Ω (open circuit)
pin D7	.....	GND	> 100K Ω (open circuit)

- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
- 3) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- a) If there was a problem with the circuit, do not do the installation test for the ECU.
- <1> Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- b) If the circuit is satisfactory, then do the installation test for the ECU to complete the Fault Isolation Task for this maintenance message.
- 4) If there was a problem with the circuit, then do these steps:
- a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

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- d) Do the Repair Confirmation at the end of this task.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the ECU, M1709:
- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the ECU, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- 1) Do not do the installation test for the ECU.
- 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (7) Do these steps to replace the EGT Thermocouple 2, YAAT010:
- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the EGT Thermocouple 2, YAAT010. These are the tasks:
- Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
- 1) Do not do the installation test for the EGT Thermocouple 2, YAAT010.
- 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- (f) Do the Repair Confirmation at the end of this task.
- (8) Do these steps to replace the EGT Thermocouple 1, YAAT009:

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- (a) Make sure the APU Master Switch is OFF.
- (b) Replace the EGT Thermocouple 1, YAAT009. These are the tasks:
 - Exhaust Gas Temperature Thermocouple Removal, AMM TASK 49-71-21-000-801
 - Exhaust Gas Temperature Thermocouple Installation, AMM TASK 49-71-21-400-801
 - 1) Do not do the installation test for the EGT Thermocouple 1, YAAT009.
 - 2) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (f) Do the Repair Confirmation at the end of this task.
- (9) Do these steps to replace the ten fuel nozzles:
- (a) Make sure the APU Master Switch is OFF.



CAUTION

DO NOT REMOVE ALL THE FUEL NOZZLES FROM THE COMBUSTOR HOUSING AT THE SAME TIME. YOU CAN REMOVE THE FUEL NOZZLE IF THERE ARE TWO ADJACENT FUEL NOZZLES. THE MAXIMUM NUMBER OF FUEL NOZZLES THAT YOU CAN REMOVE AT THE SAME TIME IS FIVE. IF YOU REMOVE ALL THE FUEL NOZZLES, THE COMBUSTOR LINER WILL NOT ALIGN WITH THE FUEL NOZZLES ON THE COMBUSTOR HOUSING.

- (b) Replace the ten fuel nozzles. These are the tasks:
 - Fuel Nozzle Removal, AMM TASK 49-31-14-000-801
 - Fuel Nozzle Installation, AMM TASK 49-31-14-400-801
 - 1) During the APU operation, examine the fuel nozzles for signs of fuel leakage and repair the leakage.
 - 2) Do not do the installation test for the fuel nozzle.
 - 3) Do the APU operational test to complete the Fault Isolation Task for this maintenance message.
- (c) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - (f) Do the Repair Confirmation at the end of this task.
 - (10) Do these steps to replace the APU:
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU Display.
- (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.
- (3) Look at the CURRENT STATUS Page on the CDU Display to see if this maintenance message shows.
 - (a) If the CDU Display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU Display shows this maintenance message, then continue the Fault Isolation Procedure at the subsequent step.
- (4) Set the APU Master Switch to the OFF position.

————— **END OF TASK** —————

805. Data Memory Module Power Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72101 DATA MEMORY MODULE POWER SHOWS HIGH CURRENT
- (2) This fault is set when there is a short across the data memory module. The electronic control unit (ECU) does a check of the current to the data memory module during its power-up and rolldown cycles. If there is an overcurrent condition, then the ECU driver is set to off. The data memory module cannot be read or written if this fault occurs. If this failure occurs, the ECU uses its internal non-volatile data until the fault is corrected. If this fault is not corrected, then the loss of input monitoring data from the data memory module will occur if the electronic control unit is replaced. You must do a check of the wiring first before you replace the data memory module and electronic control unit.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

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B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Wiring problem with the engine wire harness
- (4) Wiring problem with the airplane wire harness
- (5) Data memory module, YAAM003
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (e) Examine the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10436 (P2) or P11 or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - 2) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) at the 1088 bulkhead (SSM 49-62-12):
- a) Pin 18 and pin 32, specified resistance of more than 100K ohms (open circuit).
- b) Pin 18 and structural ground, specified resistance of more than 100K ohms (open circuit).
- c) Pin 32 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P11 to the data memory module, YAAM003.
- b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.

- (4) Do this check of the airplane wire harness:

- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (d) Examine the electrical connectors D3599 and P11. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D3599 or P11, then do these steps:
 - 1) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and P11 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin C1 and pin D1, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C1 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D1 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 3) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - 4) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 5) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 6) If the circuit is satisfactory, then continue.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.



YOU MUST USE A BLANK DATA MEMORY MODULE. DO NOT USE A DATA MEMORY MODULE FROM A DIFFERENT APU OR A DATA MEMORY MODULE WITH APU DATA. IF YOU DO NOT USE A BLANK DATA MEMORY MODULE, LOSS OF DATA OR INCORRECT DATA CAN OCCUR.

- (5) Do these steps to replace the data memory module, YAAM003:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the data memory module, YAAM003. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

NOTE: It is not necessary to start the APU to load the APU data to the blank data memory module.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - a) After 30 seconds, set the APU master switch to the OFF position.

NOTE: The time period to load the APU data to the blank data memory module is 10 seconds.
 - 2) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Replace the new data memory module, YAAM003, with the data memory module that you removed. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801

NOTE: The data memory module with the APU data that you removed is satisfactory.

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- b) Send the new data memory module, YAAM003, for calibration or disposition to remove the APU data.

NOTE: The new data memory module receives the APU data when the APU master switch is set to the ON position.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.

- (6) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

806. Data Memory Module Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72103 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE
- (2) This test does a check of the APU serial number in the data memory module. This fault is set when the APU serial number does not agree, not correct or cannot be read. The data memory module cannot be read or written if this fault occurs. If this failure occurs, the ECU uses its internal non-volatile data until the fault is corrected. If this fault is not corrected, then the loss of input monitoring data from the data memory module will occur if the electronic control unit is replaced. You must do a check of the wiring first before you replace the data memory module and electronic control unit.
- (3) The DMM is mounted to the APU and is used to store usage statistics, health monitoring, and life usage information for the core APU, as well as IGV bias information, which is set during engine power-up. The DMM cannot be read or written to if this fault occurs. The ECU and DMM must not be replaced at the same time, or the data will be lost. The DMM must always be replaced with a newly initialized unit.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Wiring problem with the engine wire harness.
- (2) Wiring problem with the airplane wire harness.

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- (3) Engine wire harness problem.
- (4) Airplane wire harness problem.
- (5) Electrical connector P11 for the data memory module, YAAM003.
- (6) Data memory module, YAAM003.
- (7) Electronic control unit, M1709.

C. Circuit Breakers`

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) SSM 49-62-12
- (4) WDM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to inspect the electrical connector P11 for the data memory module, YAAM003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (d) Examine the electrical connector P11. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P11 to the data memory module, YAAM003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P11, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 2) Set the APU master switch to the ON position.
- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P11 is satisfactory, then continue.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (e) Examine the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10436 (P2) or P11 or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - 2) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 6) Set the APU master switch to the ON position.
- 7) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 8) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) (SSM 49-62-12):
 - a) Pin 19 and pin 35, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 19 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 35 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 8 and socket 9 on the electrical connector P11 at the data memory module, YAAM003.
 - 3) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2):
 - a) Pin 19 and pin 35, specified resistance of less than 10 ohms.
 - b) Pin 33 and pin 34, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 33 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin 34 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 10 and socket 11 on the electrical connector P11.
 - 6) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2):
 - a) Pin 20 and pin 36, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 20 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 33 and pin 34, specified resistance of less than 10 ohms.
 - d) Pin 36 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 7) Remove the jumper.
 - 8) Install the jumper between socket 6 and socket 7 on the electrical connector P11.
 - 9) Measure the resistance between pin 20 and pin 36 on the electrical connector D10436 (P2).

NOTE: The resistance must be less than 10 ohms.
 - 10) Remove the jumper.
 - 11) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 12) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- a) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.

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- 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D11 and pin D12, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 19 and socket 35 on the APU firewall receptacle D10436 at the 1088 bulkhead.
 - 3) Measure the resistance between these pairs of pins on the electrical connector D3599B:
 - a) Pin C13 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D11 and pin D12, specified resistance of less than 10 ohms.
 - d) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 4) Remove the jumper.
 - 5) Install the jumper between socket 33 and socket 34 on the APU firewall receptacle D10436.
 - 6) Measure the resistance between these pairs of pins on the electrical connector D3599B:
 - a) Pin C11 and pin C12, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin C12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin C13 and pin D13, specified resistance of less than 10 ohms.
 - 7) Remove the jumper.
 - 8) Install the jumper between socket 20 and socket 36 on the APU firewall receptacle D10436.
 - 9) Measure the resistance between pin C11 and pin C12 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
 - 10) Remove the jumper.
 - 11) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
 - 12) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 13) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 14) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 15) If the circuit is satisfactory, then continue.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.



YOU MUST USE A BLANK DATA MEMORY MODULE. DO NOT USE A DATA MEMORY MODULE FROM A DIFFERENT APU OR A DATA MEMORY MODULE WITH APU DATA. IF YOU DO NOT USE A BLANK DATA MEMORY MODULE, LOSS OF DATA OR INCORRECT DATA CAN OCCUR.

- (6) Do these steps to replace the data memory module, YAAM003:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the data memory module, YAAM003. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

NOTE: It is not necessary to start the APU to load the APU data to the blank data memory module.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - a) After 30 seconds, set the APU master switch to the OFF position.

NOTE: The time period to load the APU data to the blank data memory module is 10 seconds.
 - 2) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Replace the new data memory module, YAAM003, with the data memory module that you removed. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801

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- Data Memory Module Installation, AMM TASK 49-72-11-400-801

NOTE: The data memory module with the APU data that you removed is satisfactory.

- b) Send the new data memory module, YAAM003, for calibration or disposition to remove the APU data.

NOTE: The new data memory module receives the APU data when the APU master switch is set to the ON position.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.

- (7) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

807. Data Memory Module Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this Maintenance Message:
 - (a) 49-72104 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE
- (2) The ECU does a check of the transmit and read circuits for the Data Memory Module (DMM) during its power-up cycle. This problem is set when the ECU senses an external problem with the transmit and read circuits. The DMM cannot be read or written if this problem occurs. If this failure occurs, the ECU uses its internal non-volatile data until the problem is corrected. If this problem is not corrected, then the loss of input monitoring data from the DMM will occur if the ECU is replaced. You must do a check of the wiring first before you replace the DMM and ECU.
- (3) The DMM is mounted to the APU and is used to store usage statistics, health monitoring, and life usage information for the core APU, as well as Inlet Guide Vane (IGV) bias information, which is set during engine power-up. The DMM cannot be read or written to if this problem occurs. The ECU and DMM must not be replaced at the same time, or the data will be lost. The DMM must always be replaced with a newly initialized unit.
- (4) No APU indication lights on the P5 forward overhead panel will show for this Maintenance Message.

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B. Possible Causes

- (1) Wiring
- (2) DMM, YAAM003
- (3) ECU, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) WDM 49-62-12
- (4) SSM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this Maintenance Message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this Maintenance Message on the CURRENT STATUS page, then there was an intermittent problem.

NOTE: You can find other occurrences of this Maintenance Message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the Engine Wire Harness, W4724:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the Engine Wire Harness, W4724, then do these steps:

NOTE: You can repair or replace the Engine Wire Harness, W4724.

 - 1) Repair the Engine Wire Harness, W4724. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the Engine Wire Harness, W4724. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
- (2) Do a general visual inspection of the Starter-Generator Wire Harness, W4726:
 - (a) At the P5 Forward Overhead Panel, make sure that the APU Master Switch, S248, is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.

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- (c) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 49-62-12):
 - (a) At the P5 Forward Overhead Panel, make sure that the APU Master Switch, S248, is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the Electrical Connector D10436 from the APU Firewall Receptacle D10436.
- (d) Disconnect the Electrical Connector P11 from the DMM, YAAM003.
- (e) Examine the Electrical Connectors D10436 (P11 and APU Firewall Receptacle D10436). This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If the Electrical Connectors D10436 (P11 and APU Firewall Receptacle D10436) are satisfactory, then do these steps:
 - 1) Re-connect the Electrical Connector P11 to the DMM, YAAM003.
 - 2) Re-connect the Electrical Connector D10436 to the APU Firewall Receptacle D10436.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
- 5) Do the Repair Confirmation at the end of this task.
- (g) If there was a problem with the Electrical Connector D10436 (P11 or APU Firewall Receptacle D10436), then do these steps:
 - 1) Measure the resistance between these pairs of pins on the Electrical Connector D10436 (SSM 49-62-12):

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APU FIREWALL DISCONNECT D10436		APU FIREWALL DISCONNECT D10436	
pin 19		pin 35	> 100K Ω
pin 19		GND	> 100K Ω
pin 35		GND	> 100K Ω

- 2) At the DMM, YAAM003, Electrical Connector P11, install a jumper between pin 8 and pin 9.
- 3) Measure the resistance between these pairs of pins on the Electrical Connector D10436:

APU FIREWALL DISCONNECT D10436		APU FIREWALL DISCONNECT D10436	
pin 19		pin 35	< 10 Ω
pin 33		pin 34	> 100K Ω
pin 33		GND	> 100K Ω
pin 34		GND	> 100K Ω

- 4) Remove the jumper.
- 5) At the DMM, YAAM003, Electrical Connector P11, install a jumper between pin 10 and pin 11.
- 6) Measure the resistance between these pairs of pins on the Electrical Connector D10436:

APU FIREWALL DISCONNECT D10436		APU FIREWALL DISCONNECT D10436	
pin 20		pin 36	> 100K Ω
pin 20		GND	> 100K Ω
pin 33		pin 34	< 10 Ω
pin 36		GND	> 100K Ω

- 7) Remove the jumper.
- 8) At the DMM, YAAM003, Electrical Connector P11, install a jumper between pin 6 and pin 7.
- 9) Measure the resistance between these pair of pins on the Electrical Connector D10436:

APU FIOREWALL DISCONNECT D10436		APU FIREWALL DISCONNECT D10436	
pin 20		pin 36	< 10 Ω

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- 10) Remove the jumper.
- 11) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the Engine Wire Harness, W4724. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
- 12) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the Electrical Connector P11 to the DMM, YAAM003.
 - b) Re-connect the Electrical Connector D10436 to the APU Firewall Receptacle D10436.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
 - e) Do the Repair Confirmation at the end of this task.
 - (4) Do this wiring check (WDM 49-62-12):
 - (a) At the P5 Forward Overhead Panel, make sure that the APU Master Switch, S248, is OFF.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the Electrical Connector D10436 from the APU Firewall Receptacle D10436.
 - (d) Examine the Electrical Connectors D3599 (D10436 and APU Firewall Receptacle D10436). This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If the Electrical Connectors D3599 (D10436 and APU Firewall Receptacle D10436) are satisfactory, then do these steps:
 - 1) Re-connect the Electrical Connector D10436 to the APU Firewall Receptacle D10436.
 - 2) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (f) If there was a problem with the Electrical Connector D3599 (D10436 or APU Firewall Receptacle D10436), then do these steps:
 - 1) Measure the resistance between these pairs of pins on the Electrical Connector D3599B at the ECU, M1709 (SSM 49-62-12):

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ECU		ECU	
D3599B		D3599B	
pin D11		pin D12	> 100KΩ
pin D11		GND	> 100KΩ
pin D12		GND	> 100KΩ

- 2) At the APU Firewall Receptacle, D10436, install a jumper between pin 19 and pin 35.
- 3) Measure the resistance between these pairs of pins on the Electrical Connector D3599B:

ECU		ECU	
D3599B		D3599B	
pin C13	.....	pin D13	> 100KΩ
pin C13	.....	GND	> 100KΩ
pin D11	.....	pin D12	< 10Ω
pin D13	.....	GND	> 100KΩ

- 4) Remove the jumper.
- 5) At the APU Firewall Receptacle, D10436, install a jumper between pin 33 and pin 34.
- 6) Measure the resistance between these pairs of pins on the Electrical Connector D3599B:

ECU		ECU	
D3599B		D3599B	
pin C11	.....	pin C12	> 100KΩ
pin C11	.....	GND	> 100KΩ
pin C12	.....	GND	> 100KΩ
pin C13	.....	pin D13	< 10Ω

- 7) Remove the jumper.
- 8) At the APU Firewall Receptacle, D10436, install a jumper between pin 20 and pin 36.
- 9) Measure the resistance between this pair of pins on the Electrical Connector D3599B:

ECU		ECU	
D3599B		D3599B	
pin C11	.....	pin C12	< 10Ω

- 10) Remove the jumper.
- 11) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 12) Re-connect the Electrical Connector D10436 to the APU Firewall Receptacle D10436.
- 13) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 14) Do the Repair Confirmation at the end of this task.

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DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.

- (5) Do these steps to replace the DMM, YAAAM003:
- (a) At the P5 Forward Overhead Panel, make sure that the APU Master Switch, S248, is OFF.
 - (b) Replace the DMM, YAAM003. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
 - (c) Do the Repair Confirmation at the end of this task.
- (6) Replace the new DMM, YAAM003, with the DMM that you removed. These are the tasks:
- Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
- NOTE:** The DMM with the APU data that you removed is satisfactory.
- (a) Send the new DMM, YAAM003, for calibration or disposition to remove the APU data.

NOTE: The new DMM receives the APU data when the APU Master Switch is set to the ON position.
 - (b) Do the Repair Confirmation at the end of this task.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.

- (7) Do these steps to replace the ECU, M1709:
- (a) At the P5 Forward Overhead Panel, make sure that the APU Master Switch, S248, is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) At the P5 Forward Overhead Panel, set the APU Master Switch, S248, to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if this Maintenance Message shows.
 - (a) If the CDU display does not show this Maintenance Message, then you corrected the problem.
 - 1) At the P5 Forward Overhead Panel, set the APU Master Switch, S248, to the OFF position.

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- (b) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

808. Data Memory Module Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72105 DATA MEMORY MODULE SHOWS CIRCUIT FAILURE
- (2) The electronic control unit does a check of the APU serial number, hours, minutes or cycles from the data memory module during its power-up and shutdown cycles. This fault is set when the electronic control unit finds that these data do not agree with the written values. The data memory module cannot be read or written if this fault occurs. If this failure occurs, the ECU uses its internal non-volatile data until the fault is corrected. If this fault is not corrected, then the loss of input monitoring data from the data memory module will occur if the electronic control unit is replaced. You must do a check of the wiring first before you replace the data memory module and electronic control unit.
- (3) The DMM is mounted to the APU and is used to store usage statistics, health monitoring, and life usage information for the core APU, as well as IGV bias information, which is set during engine power-up. The DMM cannot be read or written to if this fault occurs. The ECU and DMM must not be replaced at the same time, or the data will be lost. The DMM must always be replaced with a newly initialized unit.
- (4) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Electrical connector P11 for the data memory module, YAAM003
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.
- (7) Data memory module, YAAM003
- (8) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)

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- (3) SSM 49-62-12
- (4) WDM 49-62-12

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.

 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.

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- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do these steps to inspect the electrical connector P11 for the data memory module, YAAM003:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (d) Examine the electrical connector P11. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Re-connect the electrical connector P11 to the data memory module, YAAM003.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If there was a problem with the electrical connector P11, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (i) If the electrical connector P11 is satisfactory, then continue.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
- (d) Disconnect the electrical connector P11 from the data memory module, YAAM003.
- (e) Examine the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D10436 (P2) or P11 or APU firewall receptacle D10436, then do these steps:
- 1) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - 2) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 5) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 6) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 7) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 8) Set the APU master switch to the ON position.
 - 9) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 10) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D10436 (P2) and P11 and APU firewall receptacle D10436 are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2) (SSM 49-62-12):
 - a) Pin 19 and pin 35, specified resistance of more than 100K ohms (open circuit).

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- b) Pin 19 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 35 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 8 and socket 9 on the electrical connector P11 at the data memory module, YAAM003.
- 3) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2):
 - a) Pin 19 and pin 35, specified resistance of less than 10 ohms.
 - b) Pin 33 and pin 34, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 33 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin 34 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 4) Remove the jumper.
- 5) Install the jumper between socket 10 and socket 11 on the electrical connector P11.
- 6) Measure the resistance between these pairs of pins on the electrical connector D10436 (P2):
 - a) Pin 20 and pin 36, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 20 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin 33 and pin 34, specified resistance of less than 10 ohms.
 - d) Pin 36 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 7) Remove the jumper.
- 8) Install the jumper between socket 6 and socket 7 on the electrical connector P11.
- 9) Measure the resistance between pin 20 and pin 36 on the electrical connector D10436 (P2).

NOTE: The resistance must be less than 10 ohms.
- 10) Remove the jumper.
- 11) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU display.
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.

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- f) Set the APU master switch to the OFF position.
- 12) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P11 to the data memory module, YAAM003.
 - b) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - (5) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Disconnect the electrical connector D10436 (P2) from the APU firewall receptacle D10436 on the 1088 bulkhead.
 - (d) Examine the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D3599 or D10436 (P2) or APU firewall receptacle D10436, then do these steps:
 - 1) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D3599 and D10436 (P2) and APU firewall receptacle D10436 are satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-12):
 - a) Pin D11 and pin D12, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D12 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between socket 19 and socket 35 on the APU firewall receptacle D10436 at the 1088 bulkhead.
- 3) Measure the resistance between these pairs of pins on the electrical connector D3599B:
 - a) Pin C13 and pin D13, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C13 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin D11 and pin D12, specified resistance of less than 10 ohms.
 - d) Pin D13 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 4) Remove the jumper.
- 5) Install the jumper between socket 33 and socket 34 on the APU firewall receptacle D10436.
- 6) Measure the resistance between these pairs of pins on the electrical connector D3599B:
 - a) Pin C11 and pin C12, specified resistance of more than 100K ohms (open circuit).
 - b) Pin C11 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin C12 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - d) Pin C13 and pin D13, specified resistance of less than 10 ohms.
- 7) Remove the jumper.
- 8) Install the jumper between socket 20 and socket 36 on the APU firewall receptacle D10436.
- 9) Measure the resistance between pin C11 and pin C12 on the electrical connector D3599B.

NOTE: The resistance must be less than 10 ohms.
- 10) Remove the jumper.
- 11) If there is a problem with the circuit, then repair the wiring (WDM 49-62-12).
- 12) Re-connect the electrical connector D10436 (P2) to the APU firewall receptacle D10436 on the 1088 bulkhead.

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- 13) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

- 14) If there was a problem with the circuit, then do these steps:
- Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 15) If the circuit is satisfactory, then continue.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.



YOU MUST USE A BLANK DATA MEMORY MODULE. DO NOT USE A DATA MEMORY MODULE FROM A DIFFERENT APU OR A DATA MEMORY MODULE WITH APU DATA. IF YOU DO NOT USE A BLANK DATA MEMORY MODULE, LOSS OF DATA OR INCORRECT DATA CAN OCCUR.

- (6) Do these steps to replace the data memory module, YAAM003:
- Make sure the APU master switch is OFF.
 - Replace the data memory module, YAAM003. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801
 - Data Memory Module Installation, AMM TASK 49-72-11-400-801
- NOTE: It is necessary to do the installation test for the data memory module to see if this maintenance message shows on the CDU display.
- Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
 - If the CDU display shows this maintenance message, then do these steps and continue:
 - Replace the new data memory module, YAAM003, with the data memory module that you removed. These are the tasks:
 - Data Memory Module Removal, AMM TASK 49-72-11-000-801

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- Data Memory Module Installation, AMM TASK 49-72-11-400-801

NOTE: The data memory module with the APU data that you removed is satisfactory.

- b) Send the new data memory module, YAAM003, for calibration or disposition to remove the APU data.

NOTE: The new data memory module receives the APU data when the APU master switch is set to the ON position.



DO NOT REMOVE AND REPLACE THE DATA MEMORY MODULE AND THE APU ELECTRONIC CONTROL UNIT AT THE SAME TIME. THIS WILL PREVENT THE LOSS OF THE AUXILIARY COPY OF THE MEMORY MODULE INFORMATION THAT IS CONTAINED IN THE ELECTRONIC CONTROL UNIT.

- (7) Do these steps to replace the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
- Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

809. Fault Light Circuit Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 49-72205 FAULT LIGHT CIRCUIT SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

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- (2) The APU fault driver circuit furnishes a voltage indication that is used to turn off the driver. If the output voltage is out of limit in the APU a fault is declared. If an overcurrent is found, the driver will be turned off. After one second, the driver will be enabled. When the fault is present, the driver will be turned off in test mode long enough to for the test to pass or fail only when powered from the CDU.

SIA ALL

- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem with the airplane wire harness
- (3) P5-4 module for the AC system generator and APU
- (4) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 2) Set the APU master switch to the ON position.
- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (d) Examine the electrical connectors D634 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D634 or D3599, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D634 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A13 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 6 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between pin A13 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 6) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.

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- 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 9) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the P5-4 module for the AC system generator and APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Set the APU master switch to the ON position.



WHEN YOU USE THE FIRE HANDLE, YOU ARM THE FIRE EXTINGUISHER. DO NOT TURN THE FIRE HANDLE BEFORE YOU MAKE SURE THERE IS A FIRE IN THE APU COMPARTMENT. WHEN YOU TURN THE FIRE HANDLE, THE APU FIRE BOTTLE RELEASES ITS CONTENTS INTO THE APU COMPARTMENT.

- (d) If you are in the airplane, pull the APU fire switch, S10, on the P8-1 engine and APU fire control panel.

NOTE: The APU fire switch, S10, is also referred to as the fire handle.
- (e) If you are not in the airplane, pull the APU remote fire switch, S16, on the P28 remote APU control panel.

NOTE: The remote fire switch, S16, is also referred to as the fire handle.

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- (f) Make sure the APU FAULT light comes on.
NOTE: The APU FAULT light is on the P5 forward overhead panel.
- (g) Set the APU master switch to the OFF position.
- (h) Set the applicable fire handle back to its initial (stowed) position.
- (i) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (j) Set the APU master switch to the ON position.
- (k) Make sure the APU FAULT light goes off.
- (l) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (m) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

810. LOP Indicator Circuit Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72206 LOP INDICATOR CIRCUIT SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

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- (2) This fault is set when there is an low voltage condition in the APU LOW OIL PRESSURE light driver. The APU fault driver circuit furnishes a voltage indication that is used to turn off the driver. If the output voltage is out of limit in the APU a fault is declared. If an overcurrent is found, the driver will be turned off. After one second, the driver will be enabled. When the fault is present, the driver will be turned off in test mode long enough to for the test to pass or fail only when powered from the CDU.

SIA ALL

- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem with the airplane wire harness
- (3) P5-4 module for the AC system generator and APU
- (4) Electronic control unit, M1709.

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.

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- (d) Examine the electrical connectors D634 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D634 or D3599, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (f) If the electrical connectors D634 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A12 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-94-21).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 18 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between pin A12 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 6) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the P5-4 module for the AC system generator and APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the P5-4 module for the AC system generator and APU. These are the tasks:

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- AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
- AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
- (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

811. Maintenance Indicator Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72207 MAINTENANCE INDICATOR SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

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- (2) This fault is set when there is a low voltage condition in the APU MAINT light driver. The APU fault driver circuit furnishes a voltage indication that is used to turn off the driver. If the output voltage is out of limit in the APU a fault is declared. If an overcurrent is found, the driver will be turned off. After one second, the driver will be enabled. When the fault is present, the driver will be turned off in test mode long enough to for the test to pass or fail only when powered from the CDU.

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- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem with the airplane wire harness
- (3) P5-4 module for the AC system generator and APU
- (4) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 2) Set the APU master switch to the ON position.
- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (d) Examine the electrical connectors D634 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D634 or D3599, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D634 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin A14 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-94-21).

NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 19 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between pin A14 and structural ground on the electrical connector D3599B.

NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 6) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.

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- 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the P5-4 module for the AC system generator and APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (d) Disconnect the electrical connector P16 from the oil level sensor, YAAT001.
- (e) Install a jumper between socket 1 and socket 2 on the electrical connector P16 at the oil level sensor, YAAT001.

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- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (g) Set the APU master switch to the ON position.
(h) Make sure the APU MAINT light comes on.
NOTE: The APU MAINT light is on the P5 forward overhead panel.
(i) Set the APU master switch to the OFF position.
(j) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (k) Remove the jumper.
(l) Re-connect the electrical connector P16 to the oil level sensor, YAAT001.
(m) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (n) Do this task: APU BITE Procedure, 49-60 TASK 801.
(o) Set the APU master switch to the ON position.
(p) Make sure the APU MAINT light goes off.
(q) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 1) If the CDU display does not show this maintenance message, then you corrected the fault.
(r) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

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812. Overspeed Indicator Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72208 OVERSPEED INDICATOR SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

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- (2) This fault is set when there is an overcurrent condition in the APU OVER SPEED light driver. The APU fault driver circuit furnishes a voltage indication that is used to turn off the driver. If the output voltage is out of limit in the APU a fault is declared. If an overcurrent is found, the driver will be turned off. After one second, the driver will be enabled. When the fault is present, the driver will be turned off in test mode long enough to for the test to pass or fail only when powered from the CDU.

SIA ALL

- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem with the airplane wire harness
- (3) P5-4 module for the AC system generator and APU
- (4) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) (SSM 49-62-11)
- (4) (WDM 49-62-11)

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E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.
- NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.
 - (d) Examine the electrical connectors D634 and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (e) If there was a problem with the electrical connector D634 or D3599, then do these steps:
 - 1) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (f) If the electrical connectors D634 and D3599 are satisfactory, then do these steps:

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- 1) Measure the resistance between pin A15 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 30 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Measure the resistance between pin A15 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - 4) Remove the jumper.
 - 5) If there is a problem with the circuit, then repair the wiring (WDM 49-62-11).
 - 6) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 8) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 9) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the P5-4 module on the AC system generator and APU panel:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

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- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (d) Set the APU master switch to the ON position.
- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

END OF TASK

813. Ready to Load Circuit Shows High Current - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-72209 READY TO LOAD CIRCUIT SHOWS HIGH CURRENT

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: Nuisance messages 49-72205 through 49-72209 can appear in MAINTENANCE HISTORY but do not require maintenance action. These nuisance messages are only shown on APU'S WITH ECU S/W 491A-TUS-A51-00 (CCC). These nuisance messages do not show with APU ECU software pre or post this S/W version.

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SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

- (2) This fault is set when there is a short across the ready to load (APU GEN OFF BUS) light driver. The APU fault driver circuit furnishes a voltage indication that is used to turn off the driver. If the output voltage is out of limit in the APU a fault is declared. If an overcurrent is found, the driver will be turned off. After one second, the driver will be enabled. When the fault is present, the driver will be turned off in test mode long enough to for the test to pass or fail only when powered from the CDU.

SIA ALL

- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Airplane wire harness problem
- (2) Wiring problem with the airplane wire harness
- (3) P5-4 module for the AC system generator and APU
- (4) APU generator control unit, G14
- (5) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT
F	12	C01285	GENERATOR APU GEN CONT UNIT

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	9	C01326	APU GEN CONT UNIT

D. Related Data

- (1) Component Location (49-70 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-70 TASK SUPPORT Figure 302)
- (3) (SSM 24-22-31)
- (4) (SSM 49-62-11)
- (5) (WDM 24-22-31)
- (6) (WDM 49-62-11)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the airplane wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If the airplane wire harness is satisfactory, then continue.
- (2) Do this check of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Remove the P5-4 module for the AC system generator and APU. To remove it, do this task: AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801.

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- (d) Remove the APU generator control unit, G14, from the E2-1 electrical shelf. To remove it, do this task: Generator Control Unit Removal, AMM TASK 24-21-81-000-801.
- (e) Examine the electrical connectors D634, D10896A and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D634, D10896A or D3599, then do these steps:
 - 1) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 2) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (g) If the electrical connectors D634 and D3599 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin B11 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-62-11).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) Install a jumper between socket 31 and structural ground on the electrical connector D634 at the P5-4 module for the AC system generator and APU.
 - 3) Install a jumper between socket 11 and structural ground on the electrical connector D10896A at the APU generator control unit, G14.
 - 4) Measure the resistance between pin B11 and structural ground on the electrical connector D3599B.
NOTE: The resistance must be less than 100 ohms.
 - 5) Remove the two jumpers.
 - 6) If there is a problem with the circuit, then repair the wiring (WDM 24-22-31), (WDM 49-62-11).
 - 7) Re-install the APU generator control unit, G14. To re-install it, do this task: Generator Control Unit Installation, AMM TASK 24-21-81-400-801.
 - 8) Re-install the P5-4 module for the AC system generator and APU. To re-install it, do this task: AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801.
 - 9) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 10) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.

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- c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 11) If the circuit is satisfactory, then continue.
- (3) Do these steps to replace the P5-4 module for the AC system generator and APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the P5-4 module for the AC system generator and APU. These are the tasks:
 - AC System Generator and APU Module Removal, AMM TASK 24-21-51-000-801
 - AC System Generator and APU Module Installation, AMM TASK 24-21-51-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the APU generator control unit, G14:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU generator control unit, G14, on the E2-1 electrical shelf. These are the tasks:
 - Generator Control Unit Removal, AMM TASK 24-21-81-000-801
 - Generator Control Unit Installation, AMM TASK 24-21-81-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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FAULT ISOLATION MANUAL**

- (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

D633A103-SIA

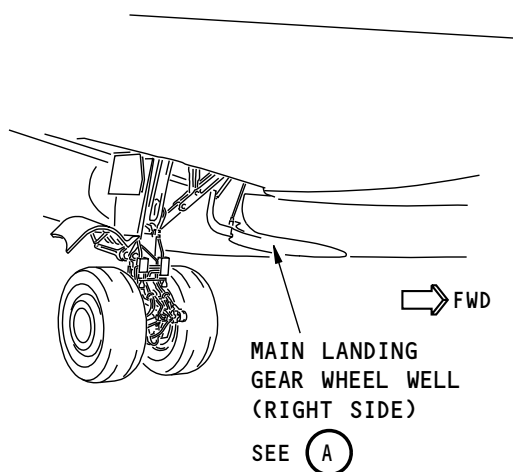
ECCN 9E991 BOEING PROPRIETARY - See title page for details

49-70 TASK 813

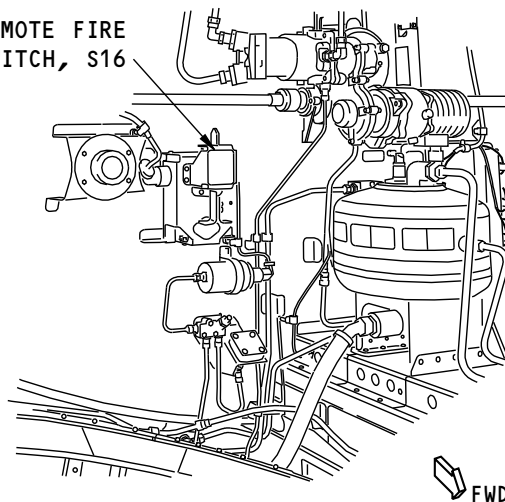
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737-600/700/800/900
FAULT ISOLATION MANUAL

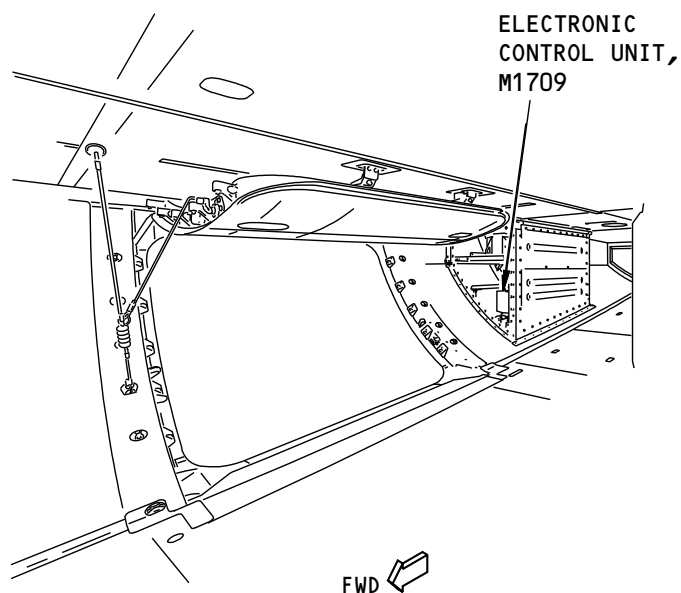
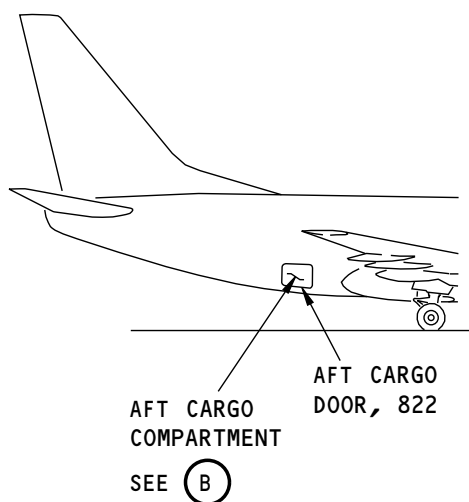


REMOTE FIRE
SWITCH, S16



(RIGHT SIDE)

(A)



AFT CARGO COMPARTMENT

(B)

H19857 S0006745355_V1

APU Indicating System Component Location
Figure 301/49-70-00-990-801 (Sheet 1 of 2)

EFFECTIVITY
SIA ALL

49-70 TASK SUPPORT

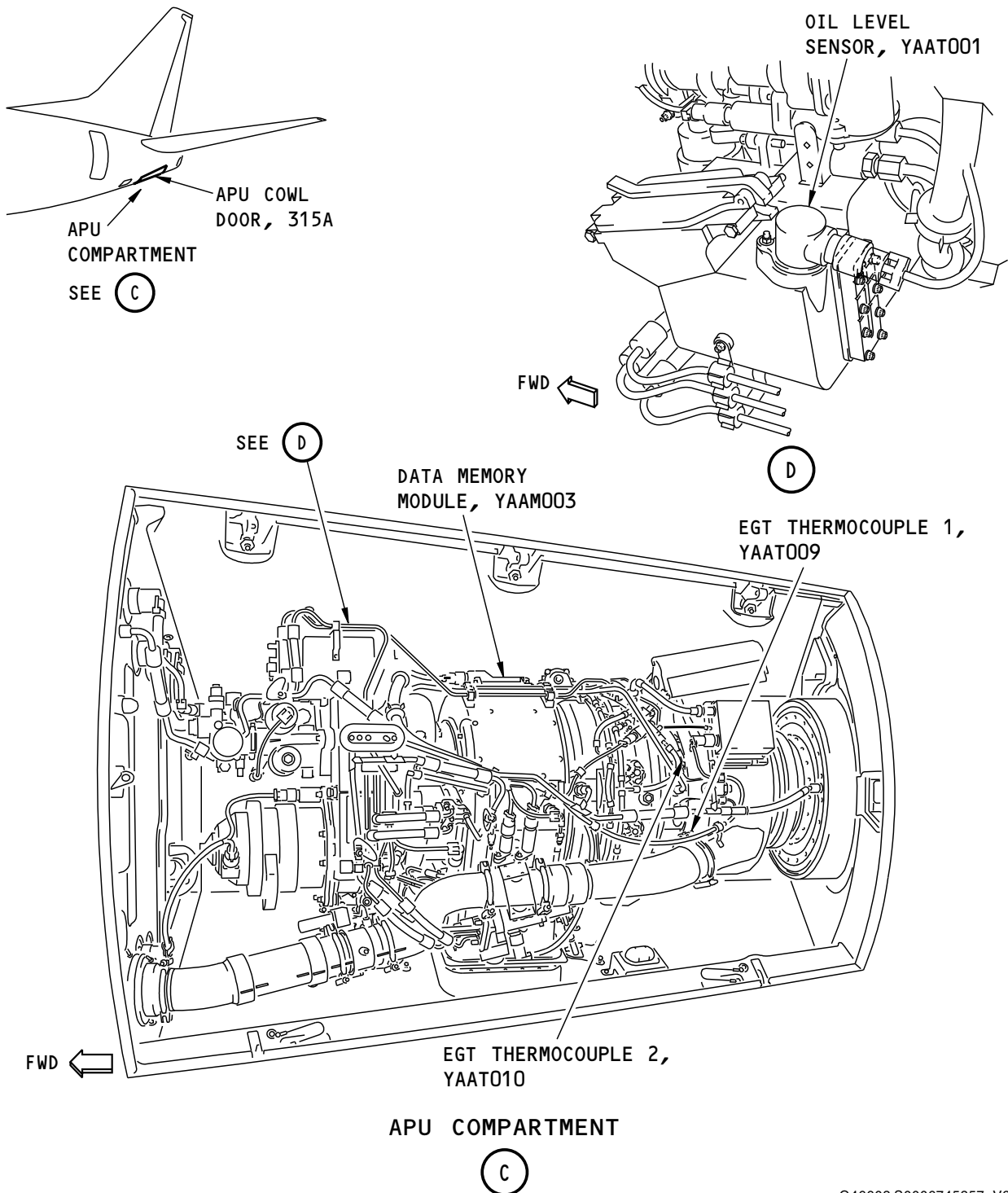
D633A103-SIA

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



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G46603 S0006745357_V2

APU Indicating System Component Location
Figure 301/49-70-00-990-801 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

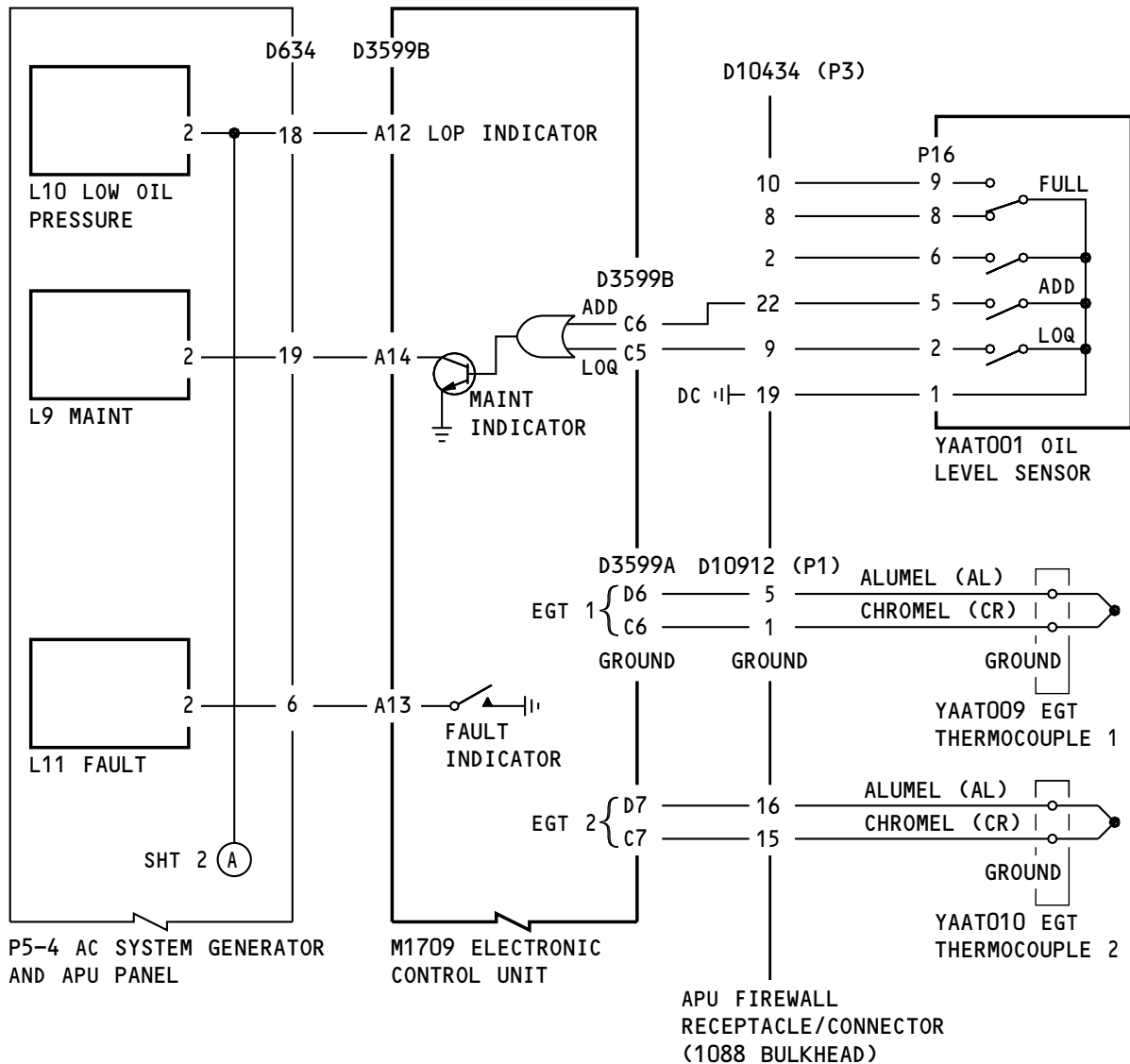
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WDM 24-22-31 SSM 24-22-31
49-62-11 49-62-11
49-62-12 49-62-12
49-71-21 49-71-21
49-94-21 49-94-21

G46759 S0006745360_V1

APU Indicating System Simplified Schematic
Figure 302/49-70-00-990-802 (Sheet 1 of 2)

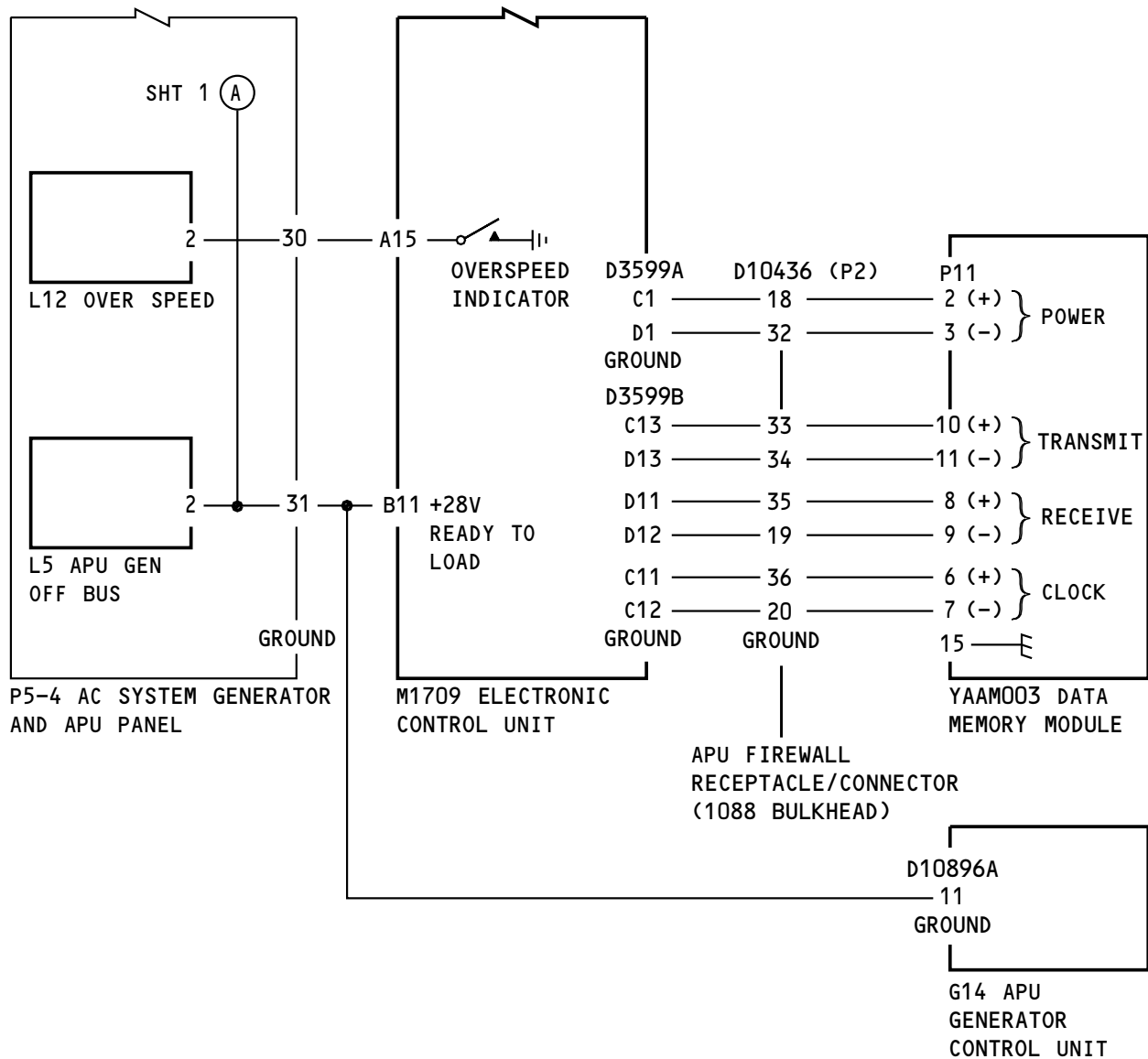
EFFECTIVITY
SIA ALL

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BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL



H17285 S0006745361_V2

APU Indicating System Simplified Schematic
Figure 302/49-70-00-990-802 (Sheet 2 of 2)

EFFECTIVITY
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**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. APU EGT Indicator Does Not Operate Correctly - Fault Isolation

A. Description

- (1) The APU exhaust gas temperature (EGT) indicator does not show the correct temperature indication during an APU operation. The APU EGT indicator is on the P5 forward overhead panel.

B. Possible Causes

- (1) Electronic control unit, M1709
- (2) Exhaust gas temperature (EGT) indicator, N24
- (3) Wiring problem between the E2-1 electrical shelf and the electronic control unit, M1709
- (4) Wiring problem between the two receptacles D40926J and D40564J on the E2-1 electrical shelf
- (5) Wiring problem between the E2-1 electrical shelf and the EGT indicator, N24.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-75 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-75 TASK SUPPORT Figure 302)
- (3) (WDM 49-71-21)

E. Fault Isolation Procedure

- (1) Do these steps to replace the electronic control unit, M1709:

- (a) Make sure the APU master switch is OFF.
- (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to make sure the EGT indicator operates correctly.

- (c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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49-75 TASK 801

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**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (e) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 1) During the APU operational test, look at the EGT indicator.
 - 2) If the EGT indicator shows the correct temperature indication, then you corrected the fault.
 - 3) If the EGT indicator does not show the correct temperature indication, then continue.
- (2) Do these steps to replace the EGT indicator, N24:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (c) Replace the EGT indicator, N24. These are the tasks:
- Exhaust Gas Temperature Indicator Removal, AMM TASK 49-71-11-000-801
 - Exhaust Gas Temperature Indicator Installation, AMM TASK 49-71-11-400-801
- (d) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 19 | C01344 | APU FIRE SW POWER |
- F/O Electrical System Panel, P6-4**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------|
| A | 14 | C00033 | AUX POWER UNIT CONT |
- (e) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (f) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- 1) During the APU operational test, look at the EGT indicator.
 - 2) If the EGT indicator shows the correct temperature indication, then you corrected the fault.
 - 3) If the EGT indicator does not show the correct temperature indication, then continue.
- (3) Do this check of the wiring between the E2-1 electrical shelf and the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Disconnect the electrical connector D40926P from the E2-1 electrical shelf.

EFFECTIVITY
SIA ALL

49-75 TASK 801

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FAULT ISOLATION MANUAL**

(d) Examine the electrical connectors D40926P and D3599. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.

(e) If there was a problem with the electrical connector D40926P or D3599, then do these steps:

- 1) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.
- 2) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: Do not do the installation test for the electronic control unit. You must do the APU operational test to make sure the EGT indicator operates correctly.

- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.

- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.

- a) During the APU operational test, look at the EGT indicator.
- b) If the EGT indicator shows the correct temperature indication, then you corrected the fault.

(f) If the electrical connectors D40926P and D3599 are satisfactory, then do these steps:

- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (WDM 49-71-21):
 - a) Pin A1 and pin A2, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A1 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin A2 and structural ground, specified resistance of more than 100K ohms (open circuit).

- 2) Install a jumper between socket A08 and socket B08 on the electrical connector D40926P at the E2-1 electrical shelf.

- 3) Measure the resistance between pin A1 and pin A2 on the electrical connector D3599A.

NOTE: The resistance must be less than 100 ohms.

- 4) Remove the jumper.
- 5) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
- 6) Re-connect the electrical connector D40926P to the E2-1 electrical shelf.

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737-600/700/800/900 FAULT ISOLATION MANUAL

- 7) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

NOTE: If there was a problem with the circuit, then do not do the installation test for the electronic control unit. You must do the APU operational test to make sure the EGT indicator operates correctly.

NOTE: If the circuit is satisfactory, then do the installation test for the electronic control unit.

- 8) If there was a problem with the circuit, then do these steps:
- a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- b) Remove the DO-NOT-OPERATE tag from the APU master switch.
- c) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- d) During the APU operational test, look at the EGT indicator.
- e) If the EGT indicator shows the correct temperature indication, then you corrected the fault.

- 9) If the circuit is satisfactory, then continue.

- (4) Do this check of the wiring between the two receptacles D40926J and D40564J on the E2-1 electrical shelf:

- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connectors D40926P and D40564P from the E2-1 electrical shelf.
- (d) Examine the electrical connectors D40926P and D40564P. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D40926P or D40564P, then do these steps:
- 1) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.

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FAULT ISOLATION MANUAL**

- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
- a) During the APU operational test, look at the EGT indicator.
 - b) If the EGT indicator shows the correct temperature indication, then you corrected the fault.
- (f) If the electrical connectors D40926P and D40564P are satisfactory, then do these steps:
- 1) Measure the resistance between these pairs of pins on the receptacle D40926J at the E2-1 electrical shelf (WDM 49-71-21):
- a) Pin A08 and pin B08, specified resistance of more than 100K ohms (open circuit).
 - b) Pin A08 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - c) Pin B08 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between pin A09 and pin A10 on the receptacle D40564J at the E2-1 electrical shelf.
- 3) Measure the resistance between pin A08 and pin B08 on the receptacle D40926J.
NOTE: The resistance must be less than 100 ohms.
- 4) Remove the jumper.
- 5) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
- 6) Re-connect the electrical connectors D40926P and D40564P to the E2-1 electrical shelf.
- 7) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 8) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 9) If there was a problem with the circuit, then do these steps:
- a) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - b) During the APU operational test, look at the EGT indicator.

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**737-600/700/800/900
FAULT ISOLATION MANUAL**

- c) If the EGT indicator shows the correct temperature indication, then you corrected the fault.
- 10) If the circuit is satisfactory, then continue.
- (5) Do this check of the wiring between the E2-1 electrical shelf and the EGT indicator, N24:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D40564P from the E2-1 electrical shelf.
- (d) Remove the EGT indicator, N24. To remove it, do this task: Exhaust Gas Temperature Indicator Removal, AMM TASK 49-71-11-000-801.
- (e) Examine the electrical connectors D40564P and D446. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (f) If there was a problem with the electrical connector D40564P or D446, then do these steps:
 - 1) Re-install the EGT indicator, N24. To install it, do this task: Exhaust Gas Temperature Indicator Installation, AMM TASK 49-71-11-400-801.
 - 2) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
 - 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 4) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 5) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - a) During the APU operational test, look at the EGT indicator.
 - b) If the EGT indicator shows the correct temperature indication, then you corrected the fault.
- (g) If the electrical connectors D40564P and D446 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of sockets on the electrical connector D40564P at the E2-1 electrical shelf (WDM 49-71-21):
 - a) Socket A09 and socket A10, specified resistance of more than 100K ohms (open circuit).

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- b) Socket A09 and structural ground, specified resistance of more than 100K ohms (open circuit).
- c) Socket A10 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) Install a jumper between pin 1 and pin 2 on the electrical connector D446 at the EGT indicator, N24.
- 3) Measure the resistance between socket A09 and socket A10 on the electrical connector D40564P.
NOTE: The resistance must be less than 100 ohms.
- 4) Remove the jumper.
- 5) If there is a problem with the circuit, then repair the wiring (WDM 49-71-21).
- 6) Re-install the EGT indicator, N24. To install it, do this task: Exhaust Gas Temperature Indicator Installation, AMM TASK 49-71-11-400-801.
- 7) Re-connect the electrical connector D40564P to the E2-1 electrical shelf.
- 8) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 9) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 10) Do this task: APU Operational Test, AMM TASK 49-11-00-710-801.
 - a) During the APU operational test, look at the EGT indicator.
 - b) If the EGT indicator shows the correct temperature indication, then you corrected the fault.

———— **END OF TASK** ————

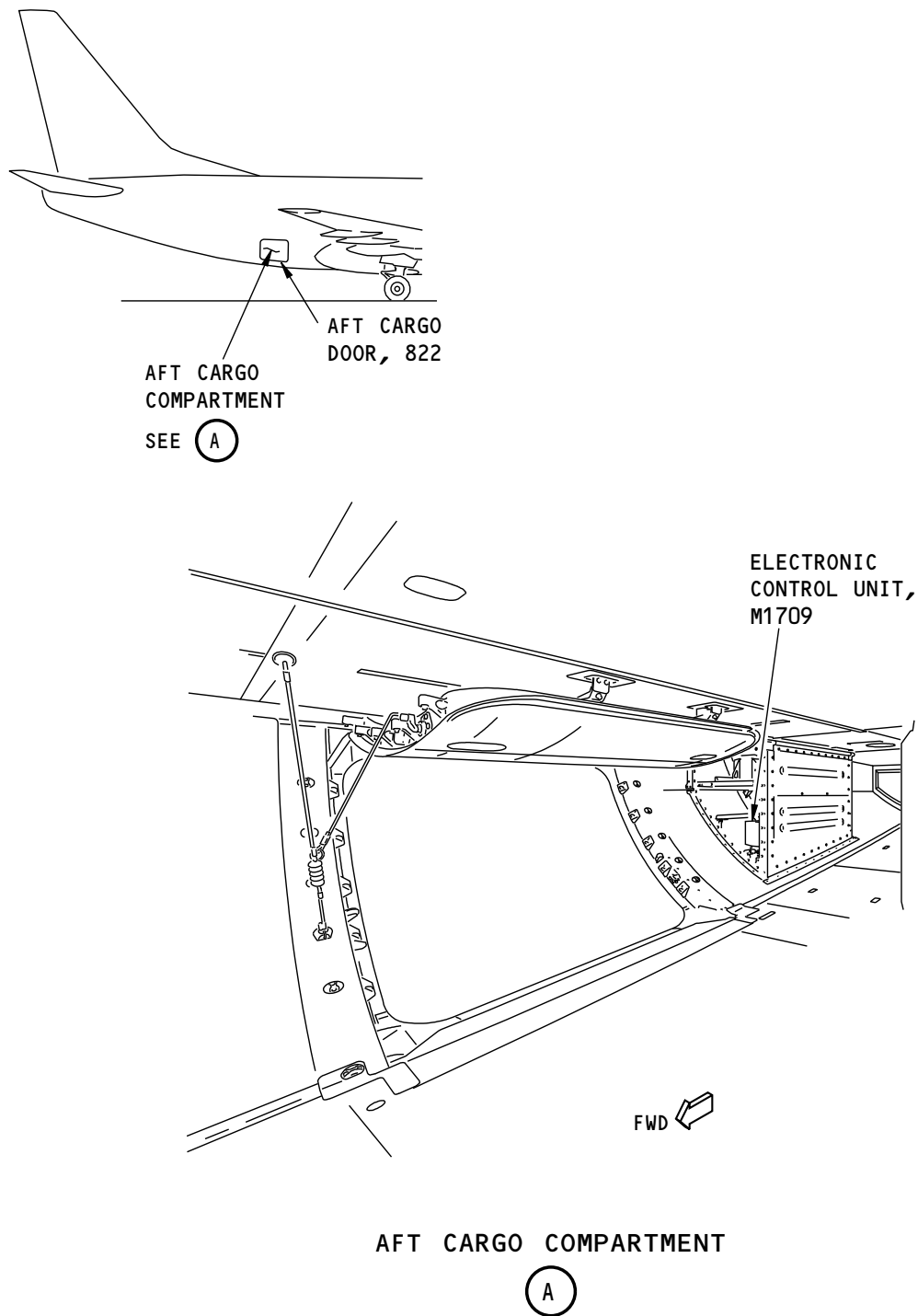
EFFECTIVITY
SIA ALL

49-75 TASK 801

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H19885 S0006745368_V1

APU EGT Indicator Component Location
Figure 301/49-75-00-990-801

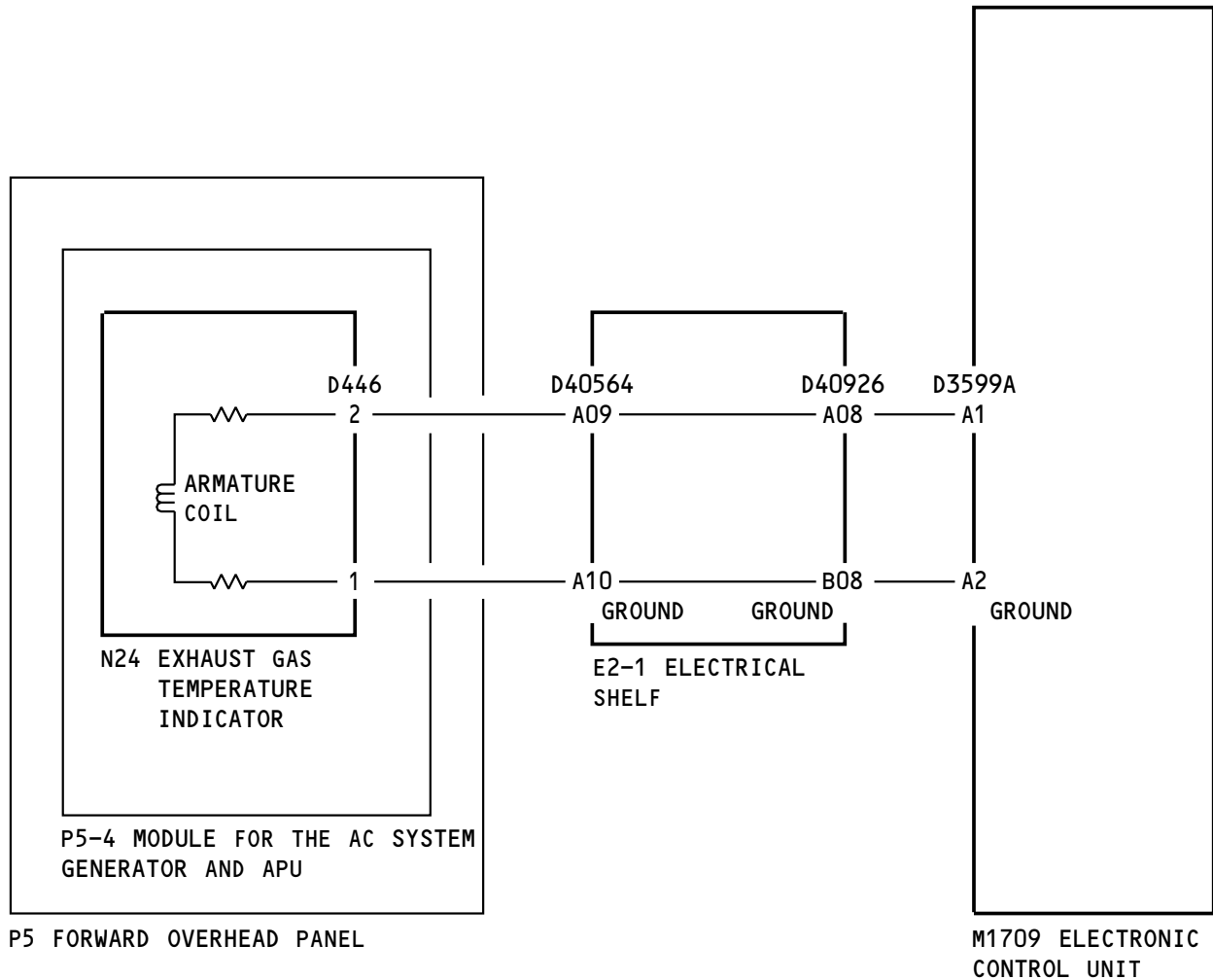
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WDM 49-71-21

G88059 S0006745370_V1

APU EGT Indicator Simplified Schematic
Figure 302/49-75-00-990-802

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SIA ALL

49-75 TASK SUPPORT

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737-600/700/800/900 FAULT ISOLATION MANUAL

801. High Oil Temp Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-91005 HIGH OIL TEMP SHUTDOWN
- (2) The oil temperature is more than 300°F (149°C) for 10 seconds.
- (3) The APU FAULT light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Oil leakage, blockage of materials or damage to the oil cooler and the eductor housing
- (2) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (3) APU rotation problem
- (4) Temperature control valve
- (5) Starter-generator, YAAG013
- (6) Oil temperature sensor, YAAT006
- (7) Electronic control unit, M1709
- (8) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

Battery Shield, J9

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C00142	BATTERY CHARGER

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

SIA ALL PRE SB 737-49-1150 REV 0 OR POST SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL

A	11	C01336	APU START CONV

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1

B	14	C01424	AUX POWER UNIT SCU FAN POWER (INOP)

EFFECTIVITY
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FAULT ISOLATION MANUAL**

SIA ALL POST SB 737-49-1150 REV 0 AND PRE SB 737-49-1150 REV 1 (Continued)

SIA ALL

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the control display unit (CDU) display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a visual inspection of the oil cooler and the eductor housing:
 - (a) Do this task: Oil Cooler Inspection, AMM TASK 49-91-41-200-801.
 - (b) If there was oil leakage, blockage of materials, damage to the eductor housing or the oil cooler was replaced, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If there were no oil leakage, no blockage of materials and no damage to the oil cooler and the eductor housing, then continue.
- (2) Do these steps to inspect the magnetic drain plug:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (3) Do these steps to manually rotate the APU:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Manually Turn the APU Engine, AMM TASK 49-21-00-980-801.
 - (c) If the APU does not turn freely, then do these steps:
 - 1) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.

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- 3) Set the APU master switch to the ON position.
- 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (d) If the APU turns freely, then continue.
- (4) Do these steps to replace the temperature control valve:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the temperature control valve. These are the tasks:
 - Temperature Control Valve Removal, AMM TASK 49-91-21-000-801
 - Temperature Control Valve Installation, AMM TASK 49-91-21-400-801
 - NOTE: It is necessary to do the installation test for the temperature control valve to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (5) Do these steps to replace the starter-generator, YAAG013:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the starter-generator, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
 - NOTE: It is necessary to do the installation test for the starter-generator to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (6) Do these steps to replace the oil temperature sensor, YAAT006:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the oil temperature sensor, YAAT006. These are the tasks:

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- Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
- Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801

NOTE: It is necessary to do the installation test for the oil temperature sensor to see if this maintenance message shows on the CDU display.

- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (7) Do these steps to replace the electronic control unit, M1709:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- NOTE:** It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
- NOTE:** It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.

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- (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

802. Inlet Overheat Shutdown - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-91006 INLET OVERHEAT SHUTDOWN
- (2) The Auxiliary Power Unit (APU) Inlet Temperature Sensor, YAAT002, is more than 350°F (177°C) for three seconds.
- (3) The APU FAULT Light, on the Forward Overhead Panel, P5, will show for this maintenance message.

B. Possible Causes

- (1) Blockage of unwanted materials in the Air Inlet Duct and Compressor Inlet Plenum for the APU
- (2) Electrical connector P21 for the Inlet Temperature Sensor, YAAT002 problem
- (3) Inlet Temperature Sensor, YAAT002
- (4) Electronic Control Unit (ECU), M1709
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) SSM 49-71-21
- (3) WDM 49-71-21

E. Initial Evaluation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
 - (a) If the Control Display Unit (CDU) Display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the Air Inlet Duct and Compressor Inlet Plenum for the APU:
 - (a) Make sure that the APU Master Switch is OFF.

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- (b) Set the APU Master Switch to the ON position and install a DO NOT OPERATE tag, STD-858.
- (c) Visually examine the Air Inlet Duct for blockage of unwanted materials and signs of fire damage:
- 1) If you find blockage of unwanted materials, then remove the blockage.
 - 2) If you find fire damage, then repair the problems that you find or replace the Air Inlet Duct.
- (d) Visually examine the Compressor Inlet Plenum for signs of fire damage:
- 1) Loosen the eight captive screws that attach the Access Door to the Compressor Inlet Plenum.
 - 2) Remove the Access Door from the Compressor Inlet Plenum.
NOTE: A lanyard is attached to the Access Door to keep the Access Door with the APU.
 - 3) Visually examine the Compressor Inlet Plenum for signs of fire damage.
 - 4) If you find fire damage, then do these steps:
 - a) Re-install the Access Door to the Compressor Inlet Plenum with the eight captive screws.
 - b) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - c) Set the APU Master Switch to the OFF position.
 - d) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - 5) If you did not find fire damage, then do these steps:
 - a) Re-install the Access Door to the Compressor Inlet Plenum with the eight captive screws.
 - b) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - c) Set the APU Master Switch to the OFF position.
- (e) If there was blockage of materials or fire damage to the Air Inlet Duct or Compressor Inlet Plenum for the APU, then do these steps:
- 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do the Repair Confirmation at the end of this task.
- (f) If there were no blockage of materials and no fire damage to the Air Inlet Duct and Compressor Inlet Plenum for the APU, then continue.
- (2) Do a wiring check between the Inlet Temperature Sensor, YAAT002 and the APU ECU, M1709 (WDM 49-71-21):
- (a) Make sure that the APU Master Switch is OFF and install a DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P21 from the Inlet Temperature Sensor, YAAT002.
- (d) Examine the electrical connector P21. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) Remove the ECU, M1709 from the E6-3 Shelf. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (f) Do a wiring check as follows:

**INLET
TEMPERATURE
SENSOR (T2)
P21**

pin A pin C3
pin B pin D3

**APU
ELECTRONIC
CONTROL UNIT
D3599A**

- 1) If you find a problem with the electrical connector P21 or wiring, then do these steps:
 - a) Repair the wiring as necessary.
 - b) Re-connect the electrical connector P21 to the Inlet Temperature Sensor, YAAT002.
 - c) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Remove the DO NOT OPERATE tag, STD-858, from the APU Master Switch.
 - f) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - g) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - h) Do the Repair Confirmation at the end of this task.
- 2) If the electrical connector P21 and wiring are satisfactory, then do this step and continue:
 - a) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (3) Replace the Inlet Temperature Sensor, YAAT002 as follows:
 - (a) Make sure that the APU Master Switch is OFF.

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- (b) Replace the Inlet Temperature Sensor, YAAT002. These are the tasks:
 - Inlet Temperature Sensor Removal, AMM TASK 49-61-31-000-801
 - Inlet Temperature Sensor Installation, AMM TASK 49-61-31-400-801
- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (d) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (e) Do the Repair Confirmation at the end of this task.
- (4) Replace the ECU, M1709 as follows:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - NOTE: It is necessary to do the installation test for the ECU to see if this maintenance message shows on the CDU Display.
 - (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.
- (3) Look at the FAULT HISTORY page on the CDU Display to see if this maintenance message shows.
 - (a) If the CDU Display does not show this maintenance message again in the last APU cycle, then you corrected the problem.
 - (b) If the CDU Display shows this maintenance message again in the last APU cycle, then continue the Fault Isolation Procedure at the subsequent step.
- (4) Set the APU Master Switch to the OFF position.

————— **END OF TASK** —————

803. Oil Pressure Shutdown Low Oil Pressure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-91007 OIL PRESSURE SHUTDOWN LOW OIL PRESSURE
- (2) This APU protective shutdown occurs after the APU speed is more than 95% and the electronic control unit senses a low oil pressure for 20 seconds.
- (3) The APU LOW OIL PRESSURE light on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Low oil quantity
- (2) Silver color particles or large quantity of metal particles on the magnetic drain plug
- (3) Low oil pressure switch, YAAT008
- (4) Lube module
- (5) Oil leakage or damage to the oil cooler
- (6) Oil cooler

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- (7) Electronic control unit, M1709
- (8) APU.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do a check for other related maintenance messages on the CURRENT STATUS page:
 - 1) 49-91227
 - 2) 49-94226.
 - 3) If you find the above maintenance message(s), then do the Fault Isolation Procedure(s) for these message(s).
 - 4) Do these steps after you do the Fault Isolation Procedure for each maintenance message:
 - a) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - b) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - d) Set the APU master switch to the ON position.
 - e) Look at the FAULT HISTORY page on the CDU display to see if maintenance message 49-91007 shows.
 - f) If the CDU display does not show maintenance message 49-91007 again in the last APU cycle, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
 - h) If the CDU display shows maintenance message 49-91007 again in the last APU cycle, then continue.
 - (b) If the CDU display shows this maintenance message on the FAULT HISTORY page for the last APU cycle, then do the Fault Isolation Procedure below.

NOTE: You can find other occurrences of this maintenance message on the FAULT HISTORY page.

F. Fault Isolation Procedure

- (1) Do a visual inspection of the APU oil level:
 - (a) Do this task: APU Oil Level Inspection, AMM TASK 12-13-31-200-801.

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- (b) If you add oil to the APU gearbox, then do these steps:
- 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
- (c) If you did not add oil to the APU gearbox, then continue.
- (2) Do a visual inspection of the magnetic drain plug:
- (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.
 - (c) If you do not find metal particles on the magnetic drain plug, then continue.
- (3) Do these steps to replace the low oil pressure switch, YAAT008:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the low oil pressure switch, YAAT008. These are the tasks:
 - Low Oil Pressure Switch Removal, AMM TASK 49-94-22-000-801
 - Low Oil Pressure Switch Installation, AMM TASK 49-94-22-400-801
- NOTE: It is necessary to do the installation test for the low oil pressure switch to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (4) Do these steps to replace the lube module:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the lube module. These are the tasks:
 - Lube Module Removal, AMM TASK 49-91-11-000-801
 - Lube Module Installation, AMM TASK 49-91-11-400-801
- NOTE: It is necessary to do the installation test for the lube module to see if this maintenance message shows on the CDU display.
- (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.

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- (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
- (f) Set the APU master switch to the OFF position.
- (5) Do a visual inspection of the oil cooler and the eductor housing:
 - (a) Do this task: Oil Cooler Inspection, AMM TASK 49-91-41-200-801.
 - (b) If there was oil leakage or damage to the eductor housing or the oil cooler was replaced, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If there were no oil leakage and no damage to the oil cooler and the eductor housing, then continue.
- (6) Do a bottom external surface inspection of the oil cooler:
 - (a) Do this task: Oil Cooler Removal, AMM TASK 49-91-41-000-801.
 - (b) Visually examine the bottom external surfaces of the oil cooler for cracks, damage and oil leakage.
 - (c) If there were cracks, damage or oil leakage on the oil cooler, then do these steps:
 - 1) Install a new or serviceable oil cooler. To install it, do this task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
NOTE: It is necessary to do the installation test for the oil cooler to see if this maintenance message shows on the CDU display.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (d) If there were no cracks, damage and oil leakage to the oil cooler, do this step and continue:
 - 1) Re-install the oil cooler. To install it, do this task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
- (7) Do these steps to replace the electronic control unit, M1709:

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- (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801

NOTE: It is necessary to do the installation test for the electronic control unit to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - 2) If the CDU display shows this maintenance message again in the last APU cycle, then continue.
 - (f) Set the APU master switch to the OFF position.
- (8) Do these steps to replace the APU:
- (a) Make sure the APU master switch is OFF.
 - (b) Replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: It is necessary to do the installation test for the APU to see if this maintenance message shows on the CDU display.
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the FAULT HISTORY page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message again in the last APU cycle, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

———— **END OF TASK** ————

804. Low Oil Quantity - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-91227 LOW OIL QUANTITY

SIA ALL; APUS WITH ECU S/W 491A-TUS-A51-00 (CCC) AND SUBSEQUENT

NOTE: This message will appear in MAINTENANCE HISTORY (if the APU has previously been shut down with the APU battery switches instead of with the procedure in the AMM) but does not require maintenance action. To verify if the APU was turned off with the battery switches, look for DC Power loss fault 49-11019.

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- (2) This fault is set when there is a low oil quantity in the APU gearbox or a problem in the oil level sensor circuit.
- (3) The MAINT light on the P5 forward overhead panel can show for this maintenance message. The MAINT light will show if there was no deactivation of the MAINT light from page 2 of the IDENT CONFIG page.

B. Possible Causes

- (1) Low oil quantity
- (2) Engine wire harness problem
- (3) Airplane wire harness problem
- (4) Internal problem with the oil level sensor, YAAT001
- (5) Wiring problem with the engine wire harness
- (6) Wiring problem with the airplane wire harness
- (7) Oil leakage or damage to the oil cooler
- (8) Oil cooler
- (9) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Make sure the APU does not operate for five minutes before you do the APU BITE Procedure.
NOTE: The five minutes are necessary for the oil to collect at the bottom of the APU gearbox.
- (2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) Make sure the position of the air/ground switch shows GRD on the INPUT MONITORING page for the AIR/GROUND indication. To find it, do this task: APU Operation Limits, AMM TASK 49-11-00-710-802.

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- (b) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do these steps:

NOTE: The electronic control unit does a check of the APU oil level during its power-up cycle only. The electronic control unit cannot sense a change in the oil level or do a repair confirmation of an oil system component when energized for this maintenance message. To remove and then apply power to the electronic control unit, make sure the APU master switch is in the OFF position and then you do the APU BITE procedure.

- 1) Set the APU master switch to the OFF position.
- 2) After 30 seconds, set the APU master switch to the ON position.
- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - b) If the CDU display shows this maintenance message, then do the Fault Isolation Procedure below.
- (c) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a visual inspection of the APU oil level:
 - (a) Do this task: APU Oil Level Inspection, AMM TASK 12-13-31-200-801.
 - 1) Do the steps for the 'Oil Sight Glass Procedure'.
 - (b) If you add oil to the APU gearbox, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If you did not add oil to the APU gearbox, then continue.
- (2) Do a general visual inspection of the engine wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (d) If the engine wire harness is satisfactory, then continue.
- (3) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (4) Do this check of the oil level sensor, YAAT001:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P16 from the oil level sensor, YAAT001.
- (d) Examine the electrical connector P16. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P16, then do these steps:
 - 1) Re-connect the electrical connector P16 to the oil level sensor, YAAT001.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P16 is satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the oil level sensor, YAAT001 (SSM 49-94-21):
 - a) Pin 1 and pin 2, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 2 and pin 5, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the oil level sensor, YAAT001. These are the tasks:
 - Oil Level Sensor Removal, AMM TASK 49-94-11-000-801
 - Oil Level Sensor Installation, AMM TASK 49-94-11-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P16 to the oil level sensor, YAAT001.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the engine wire harness:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10434 (P3) at the 1088 bulkhead (SSM 49-94-21):
 - a) Pin 9 and pin 19, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 9 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the resistance is not in the range specified for each pair of pins, then do these steps:

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- a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins on the electrical connector D10434 (P3), then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:

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- 1) Measure the resistance between pin C5 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-94-21).
NOTE: The resistance must be more than 100K ohms (open circuit).
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (7) Do a visual inspection of the oil cooler and the eductor housing:
- (a) Do this task: Oil Cooler Inspection, AMM TASK 49-91-41-200-801.
 - (b) If there was oil leakage or damage to the eductor housing or the oil cooler was replaced, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (c) If there were no oil leakage and no damage to the oil cooler and the eductor housing, then continue.
- (8) Do a bottom external surface inspection of the oil cooler:
- (a) Do this task: Oil Cooler Removal, AMM TASK 49-91-41-000-801.
 - (b) Visually examine the bottom external surfaces of the oil cooler for cracks, damage and oil leakage.
 - (c) If there were cracks, damage or oil leakage on the oil cooler, then do these steps:
 - 1) Install a new or serviceable oil cooler. To install it, do this task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.

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- (d) If there were no cracks, damage and oil leakage to the oil cooler, do this step and continue:
 - 1) Re-install the oil cooler. To install it, do this task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
- (9) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

805. Low Oil Pressure Switch Shows Open Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94226 LOW OIL PRESSURE SWITCH SHOWS OPEN CIRCUIT
- (2) This fault is set when there is an open in the low oil pressure switch circuit. The low oil pressure switch is a normally-closed switch. If the APU does not operate, then there is no oil pressure and the low oil pressure switch is closed. Before the APU does a start cycle, the electronic control unit does a check for an open in the low oil pressure switch circuit or if there is a switch problem in which the switch stays in the open position only.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the low oil pressure switch, YAAT008
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.

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- 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 4) Set the APU master switch to the OFF position.
- (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the low oil pressure switch, YAAT008:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P14 from the low oil pressure switch, YAAT008.
- (d) Examine the electrical connector P14. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P14, then do these steps:
 - 1) Re-connect the electrical connector P14 to the low oil pressure switch, YAAT008.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P14 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin 1 and pin 2 on the low oil pressure switch, YAAT008 (SSM 49-94-21).

NOTE: The resistance must be less than 10 ohms.
 - 2) If the resistance is more than 10 ohms, then do these steps:

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- a) Replace the low oil pressure switch, YAAT008. These are the tasks:
 - Low Oil Pressure Switch Removal, AMM TASK 49-94-22-000-801
 - Low Oil Pressure Switch Installation, AMM TASK 49-94-22-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 10 ohms, then do these steps and continue:
- a) Re-connect the electrical connector P14 to the low oil pressure switch, YAAT008.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 11 and pin 12 on the electrical connector D10434 (P3) (SSM 49-94-21).
- NOTE: The resistance must be less than 10 ohms.
- 2) If the resistance is more than 10 ohms, then do these steps:
- a) Replace the engine wire harness. These are the tasks:
- Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
- c) Set the APU master switch to the ON position.
- d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- e) If the CDU display does not show this maintenance message, then you corrected the fault.
- f) Set the APU master switch to the OFF position.
- 3) Measure the resistance between socket 12 and structural ground on the APU firewall receptacle D10434 (SSM 49-94-21).
- NOTE: The resistance must be less than 5 ohms (short circuit).
- 4) If the resistance is more than 5 ohms, then do these steps:
- a) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
- b) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- d) Remove the DO-NOT-OPERATE tag from the APU master switch.
- e) Do this task: APU BITE Procedure, 49-60 TASK 801.
- f) Set the APU master switch to the ON position.
- g) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- h) If the CDU display does not show this maintenance message, then you corrected the fault.
- i) Set the APU master switch to the OFF position.
- 5) If the resistance is less than 10 ohms from pin 11 to pin 12 on the electrical connector D10434 (P3) and less than 5 ohms from socket 12 to structural ground on the APU firewall receptacle D10434, then do these steps and continue:
- a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
- (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (d) If there was a problem with the electrical connector D3599, then do these steps:
- 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 3) Set the APU master switch to the ON position.

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- 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 5) Set the APU master switch to the OFF position.
- (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin B4 and structural ground on the electrical connector D3599B at the electronic control unit, M1709 (SSM 49-94-21).

NOTE: The resistance must be less than 10 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
 - 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

806. Oil Temperature Sensor Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94228 OIL TEMPERATURE SENSOR SHOWS SHORT CIRCUIT

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- (2) This fault is set when there is a short to ground in the oil temperature sensor circuit. The electronic control unit does a check of the voltage across the positive side of the resistance temperature device (RTD) for the oil temperature sensor. A short to ground in the oil temperature sensor circuit shows the current is greater than 0.7 mA.

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- (3) If this failure occurs, the oil temperature is set to an alternate value that is a function of the fuel temperature and inlet temperature, YAAT002, and continues the APU operation. If this fault is not corrected, a high oil temperature protective shutdown can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the oil temperature sensor, YAAT006
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the oil temperature sensor, YAAT006:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P15 from the oil temperature sensor, YAAT006.

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- (d) Examine the electrical connector P15. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P15, then do these steps:
- 1) Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P15 is satisfactory, then continue to the subsequent two applicable steps.
- (g) If you have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
- 1) Connect the electrical connector P15 to the new or serviceable oil temperature sensor, YAAT006.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 7) If the CDU display does not show this maintenance message, then do these steps:
 - a) Set the APU master switch to the OFF position.
 - b) Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801

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- Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) Set the APU master switch to the ON position.
- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- f) If the CDU display does not show this maintenance message, then you corrected the fault.
- g) Set the APU master switch to the OFF position.
- 8) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector P15 from the new or serviceable oil temperature sensor, YAAT006.
- d) Re-connect the electrical connector P15 to the used oil temperature sensor, YAAT006.

NOTE: The used oil temperature sensor that is installed on the APU is satisfactory.

- e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If you do not have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
 - 1) Make sure the APU master switch is OFF and the DO-NOT-OPERATE tag is installed.

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- 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Make sure the electrical connector P15 is disconnected from the oil temperature sensor, YAAT006.
- 4) Measure the resistance between these pairs of pins on the oil temperature sensor, YAAT006 (SSM 49-94-21):
- Pin A and structural ground, specified resistance of more than 100K ohms (open circuit).
 - Pin B and structural ground, specified resistance of more than 100K ohms (open circuit).
- 5) If the resistance is not in the range specified for each pair of pins, then do these steps:
- Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
 - Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 6) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
- Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:

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- (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between these pairs of pins on the electrical connector D10912 (P1) at the 1088 bulkhead (SSM 49-94-21):
 - a) Pin 34 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 36 and structural ground, specified resistance of more than 100K ohms (open circuit).

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- 2) If the resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:

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- 1) Measure the resistance between these pairs of pins on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-94-21):
 - a) Pin C2 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - b) Pin D2 and structural ground, specified resistance of more than 100K ohms (open circuit).
- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
- 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

807. Oil Temperature Sensor Shows Out of Range High - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94229 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE HIGH

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- (2) This fault is set when there is an open in the oil temperature sensor circuit. An open circuit shows infinite resistance and thus, infinite temperature. The value of infinite resistance in this FIM chapter 49 is more than 100K ohms. . The highest possible operating temperature is limited to 290°F (143°C). The temperature range for the oil conditioning circuit is between -94°F (-70°C) and 451°F (233°C).

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- (3) If this failure occurs, the oil temperature is set to an alternate value that is a function of the fuel temperature and inlet temperature, YAAT002, and continues the APU operation. If this fault is not corrected, a high oil temperature protective shutdown can occur.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the oil temperature sensor, YAAT006
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Internal problem with the oil temperature sensor connector
- (7) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

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F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 4) Set the APU master switch to the ON position.
 - 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 6) Set the APU master switch to the OFF position.
 - (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the oil temperature sensor, YAAT006:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P15 from the oil temperature sensor, YAAT006.

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- (d) Examine the electrical connector P15. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P15, then do these steps:
- 1) Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P15 is satisfactory, then continue to the subsequent two applicable steps.
- (g) If you have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
- 1) Connect the electrical connector P15 to the new or serviceable oil temperature sensor, YAAT006.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 7) If the CDU display does not show this maintenance message, then do these steps:
 - a) Set the APU master switch to the OFF position.
 - b) Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801

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- Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) Set the APU master switch to the ON position.
- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- f) If the CDU display does not show this maintenance message, then you corrected the fault.
- g) Set the APU master switch to the OFF position.
- 8) If the CDU display shows this maintenance message, then do these steps and continue:
 - a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector P15 from the new or serviceable oil temperature sensor, YAAT006.
- d) Re-connect the electrical connector P15 to the used oil temperature sensor, YAAT006.

NOTE: The used oil temperature sensor that is installed on the APU is satisfactory.

- e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If you do not have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
 - 1) Make sure the APU master switch is OFF and the DO-NOT-OPERATE tag is installed.

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- 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Make sure the electrical connector P15 is disconnected from the oil temperature sensor, YAAT006.
- 4) Measure the resistance between pin A and pin B on the oil temperature sensor, YAAT006 (SSM 49-94-21).

NOTE: The resistance must be less than 200 ohms.

- 5) If the resistance is more than 200 ohms, then do these steps:
- Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
 - Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
 - Do this task: APU BITE Procedure, 49-60 TASK 801.
 - Set the APU master switch to the ON position.
 - Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - If the CDU display does not show this maintenance message, then you corrected the fault.
 - Set the APU master switch to the OFF position.
- 6) If the resistance is less than 200 ohms, then do these steps and continue:
- Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
- Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
- 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
 - 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 5) Set the APU master switch to the ON position.
 - 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
- 1) Measure the resistance between pin 34 and pin 36 on the electrical connector D10912 (P1) (SSM 49-94-21).

NOTE: The resistance must be less than 200 ohms.
 - 2) If the resistance is more than 200 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

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- b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 3) If the resistance is less than 200 ohms, then do these steps and continue:
- a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C2 and pin D2 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-94-21).

NOTE: The resistance must be less than 200 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.
- 5) If the circuit is satisfactory, then continue.
- (6) Do the steps that follow to examine the electrical connector (P15) for the oil temperature sensor:
 - (a) Disconnect the electrical connector (P15) from the oil temperature sensor.
 - (b) Examine the electrical connector, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802 .
 - (c) Connect the electrical connector (P15) to the oil temperature sensor.
- (7) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

————— **END OF TASK** —————

808. Oil Temperature Sensor Shows Out of Range Low - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94230 OIL TEMPERATURE SENSOR SHOWS OUT OF RANGE LOW

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- (2) This fault is set when there is a short across the oil temperature sensor. The near-zero resistance of a short circuit looks like a very low temperature. Lowest possible temperature in operation is around -65 degrees F. Conditioner circuit range is -94°F (-70°C) and 451°F (233°C). The BITE limit at -85°F (-65°C) makes sure that the conditioner can always read the value without saturating. A short to ground could cause an out-of-range reading, so the ground short fault inhibits this.

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- (3) If this failure occurs, the oil temperature is set to an alternate value that is a function of the fuel temperature and inlet temperature, YAAT002, and continues the APU operation. If this fault is not corrected, the APU operation will not have the APU protective shutdown for high oil temperature.
- (4) The APU FAULT light on the P5 forward overhead panel can show for this maintenance message.

B. Possible Causes

- (1) Engine wire harness problem
- (2) Airplane wire harness problem
- (3) Internal problem with the oil temperature sensor, YAAT006
- (4) Wiring problem with the engine wire harness
- (5) Wiring problem with the airplane wire harness
- (6) Electronic control unit, M1709.

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) (SSM 49-94-21)
- (4) (WDM 49-94-21)

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

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- 1) Repair the engine wire harness. To repair it, do this task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
- 3) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 4) Set the APU master switch to the ON position.
- 5) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 6) Set the APU master switch to the OFF position.
- (c) If the engine wire harness is satisfactory, then continue.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure the APU master switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Set the APU master switch to the ON position.
 - 3) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 4) Set the APU master switch to the OFF position.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (3) Do this check of the oil temperature sensor, YAAT006:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P15 from the oil temperature sensor, YAAT006.
- (d) Examine the electrical connector P15. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P15, then do these steps:
 - 1) Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.

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- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector P15 is satisfactory, then continue to the subsequent two applicable steps.
- (g) If you have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
- 1) Connect the electrical connector P15 to the new or serviceable oil temperature sensor, YAAT006.
- 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
- 7) If the CDU display does not show this maintenance message, then do these steps:
- a) Set the APU master switch to the OFF position.
- b) Replace the oil temperature sensor, YAAT006. These are the tasks:
- Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
 - Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
- c) Do this task: APU BITE Procedure, 49-60 TASK 801.
- d) Set the APU master switch to the ON position.

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- e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - f) If the CDU display does not show this maintenance message, then you corrected the fault.
 - g) Set the APU master switch to the OFF position.
- 8) If the CDU display shows this maintenance message, then do these steps and continue:
- a) Set the APU master switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector P15 from the new or serviceable oil temperature sensor, YAAT006.
- d) Re-connect the electrical connector P15 to the used oil temperature sensor, YAAT006.

NOTE: The used oil temperature sensor that is installed on the APU is satisfactory.

- e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (h) If you do not have a new or serviceable oil temperature sensor, YAAT006, then do these steps:
- 1) Make sure the APU master switch is OFF and the DO-NOT-OPERATE tag is installed.
 - 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Make sure the electrical connector P15 is disconnected from the oil temperature sensor, YAAT006.
- 4) Measure the resistance between pin A and pin B on the oil temperature sensor, YAAT006 (SSM 49-94-21).

NOTE: The resistance must be more than 60 ohms.

- 5) If the resistance is less than 60 ohms, then do these steps:
 - a) Replace the oil temperature sensor, YAAT006. These are the tasks:
 - Oil Temperature Sensor Removal, AMM TASK 49-94-21-000-801
 - Oil Temperature Sensor Installation, AMM TASK 49-94-21-400-801
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
- 6) If the resistance is more than 60 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P15 to the oil temperature sensor, YAAT006.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (4) Do this check of the engine wire harness:
 - (a) Make sure the APU master switch is OFF and install a DO-NOT-OPERATE tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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- (c) Disconnect the electrical connector D10912 (P1) from the APU firewall receptacle D10912 on the 1088 bulkhead.
- (d) Examine the electrical connector D10912 (P1) and APU firewall receptacle D10912. To examine them, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10912 (P1) or APU firewall receptacle D10912, then do these steps:
 - 1) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do this task: APU BITE Procedure, 49-60 TASK 801.
- 5) Set the APU master switch to the ON position.
- 6) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
- 7) Set the APU master switch to the OFF position.
- (f) If the electrical connector D10912 (P1) and APU firewall receptacle D10912 are satisfactory, then do these steps:
 - 1) Measure the resistance between pin 34 and pin 36 on the electrical connector D10912 (P1) (SSM 49-94-21).

NOTE: The resistance must be more than 60 ohms.
 - 2) If the resistance is less than 60 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - c) Set the APU master switch to the ON position.
 - d) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - e) If the CDU display does not show this maintenance message, then you corrected the fault.
 - f) Set the APU master switch to the OFF position.
 - 3) If the resistance is more than 60 ohms, then do these steps and continue:

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- a) Re-connect the electrical connector D10912 (P1) to the APU firewall receptacle D10912 on the 1088 bulkhead.
- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE tag from the APU master switch.
- (5) Do this check of the airplane wire harness:
- (a) Make sure the APU master switch is OFF.
 - (b) Remove the electronic control unit, M1709. To remove it, do this task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599. To examine it, do this task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599, then do these steps:
 - 1) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 3) Set the APU master switch to the ON position.
 - 4) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - a) If the CDU display does not show this maintenance message, then you corrected the fault.
 - 5) Set the APU master switch to the OFF position.
 - (e) If the electrical connector D3599 is satisfactory, then do these steps:
 - 1) Measure the resistance between pin C2 and pin D2 on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-94-21).

NOTE: The resistance must be more than 60 ohms.
 - 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - 3) Re-install the electronic control unit, M1709. To re-install it, do this task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 4) If there was a problem with the circuit, then do these steps:
 - a) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - b) Set the APU master switch to the ON position.
 - c) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - d) If the CDU display does not show this maintenance message, then you corrected the fault.
 - e) Set the APU master switch to the OFF position.

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- 5) If the circuit is satisfactory, then continue.
- (6) Do these steps to replace the electronic control unit, M1709:
 - (a) Make sure the APU master switch is OFF.
 - (b) Replace the electronic control unit, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (d) Set the APU master switch to the ON position.
 - (e) Look at the CURRENT STATUS page on the CDU display to see if this maintenance message shows.
 - 1) If the CDU display does not show this maintenance message, then you corrected the fault.
 - (f) Set the APU master switch to the OFF position.

END OF TASK

809. Starter Generator Oil Filter Shows Clogged - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94299 STARTER GENERATOR OIL FILTER SHOWS CLOGGED
- (2) This fault is set when the ECU senses an impending bypass of the Starter-Generator Filter Element. If there is no problem with the Filter Bypass Switch and the oil temperature is more than 100°F (37.8°C) during the APU operation, then the filter element is clogged. If the oil pressure differential is more than 50 psi (344.7 kPa), then the oil will bypass the filter element. The Starter-Generator Filter Element must be examined for too much contamination and metal particles. Too much contamination and metal particles can cause an initial problem with the Starter-Generator.
 - (a) The APU Oil System Supply Filter does not have any automated monitoring for bypass and relies on a periodic visual inspection of the pressure indicator or a requirement to change the supply filter whenever the Starter-Generator Scavenge Filter bypasses. The Lube Filter should be replaced whenever the Starter-Generator Filter is replaced, the APU and the Starter-Generator share a common oil supply.
- (3) The APU FAULT Light, on the Forward Overhead Panel, P5, can show for this maintenance message.

B. Possible Causes

- (1) Oil Filter Elements
- (2) Filter Bypass Switch for the Starter-Generator, YAAT011
- (3) Internal problem with the Filter Bypass Switch for the Starter-Generator, YAAT011
- (4) Problem with the Starter-Generator Drive Shaft Assembly, YAAT011
- (5) Engine wire harness problem
- (6) Airplane wire harness problem
- (7) APU
- (8) Lube Module

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(9) APU ECU, M1709

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C. Circuit Breakers

(1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

(1) Component Location (49-90 TASK SUPPORT Figure 301)

E. Initial Evaluation

(1) Do this task: APU BITE Procedure, 49-60 TASK 801.

(a) If the CDU Display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

(b) If the CDU Display shows this maintenance message on the CURRENT STATUS page, then do these steps:

1) Do this task: Magnetic Drain Plug Inspection, AMM TASK 49-91-81-200-801.

a) If you find metal particles on the magnetic drain plug, then do the corrective action as specified in the inspection procedure.

2) Do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do these steps to inspect the oil filter elements:

(a) Make sure that the APU Master Switch is OFF.

(b) Inspect the oil filter elements. These are the tasks:

- Lube Filter Element Removal, AMM TASK 49-91-12-000-802

- Starter-Generator Filter Element Removal, AMM TASK 49-91-12-000-803

NOTE: There is no system monitoring for the Lube Filter Element, it must be replaced when the Starter-Generator Filter Element is replaced.

1) After removal of the Starter-Generator Filter Element, do a visual inspection of the filter element for contamination. If no contamination is visible, then re-install the filters using the new packings. These are the tasks:

- Lube Filter Element Installation, AMM TASK 49-91-12-400-802

- Starter-Generator Filter Element Installation, AMM TASK 49-91-12-400-803

a) Then proceed to step (2).

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- 2) If contamination is found, then repair the problem or replace the Starter-Generator or Starter-Generator Drive Shaft Assembly, YAAG013. These are the tasks:
 - Starter-Generator Removal, AMM TASK 49-41-21-000-801
 - Starter-Generator Installation, AMM TASK 49-41-21-400-801
- (c) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (d) Operate the APU for a minimum of five minutes.
- (e) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (f) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the Filter Bypass Switch for the Starter-Generator, YAAT011:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P24 from the Filter Bypass Switch, YAAT011.
- (d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
- (f) Operate the APU for a minimum of five minutes.
- (g) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (h) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (i) Look at the CURRENT STATUS page on the CDU Display to see if this maintenance message shows.
- (j) If the CDU Display does not show this maintenance message, then do these steps:
 - 1) Replace the Filter Bypass Switch, YAAT011. These are the tasks:
 - Oil Filter Indicator Removal (Starter-Generator Filter Housing), AMM TASK 49-91-13-000-803

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- Oil Filter Indicator Installation (Starter-Generator Filter Housing), AMM TASK 49-91-13-400-803

NOTE: The Filter Bypass Switch is also referred to as the oil filter indicator on the Starter-Generator filter housing.

NOTE: It is necessary to do the installation test for the Filter Bypass Switch to see if this maintenance message shows on the CDU Display.

- 2) Do the Repair Confirmation at the end of this task.
- (k) If the CDU Display shows this maintenance message, then do these steps and continue:
 - 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 2) Re-connect the electrical connector P24 to the Filter Bypass Switch, YAAT011.
- 3) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (3) Do these steps to replace the Filter Bypass Switch for the Starter-Generator, YAAT011:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the Filter Bypass Switch, YAAT011. These are the tasks:
 - Oil Filter Indicator Removal (Starter-Generator Filter Housing), AMM TASK 49-91-13-000-803
 - Oil Filter Indicator Installation (Starter-Generator Filter Housing), AMM TASK 49-91-13-400-803
 - NOTE: The Filter Bypass Switch is also referred to as the oil filter indicator on the Starter-Generator filter housing.
 - NOTE: It is necessary to do the installation test for the Filter Bypass Switch to see if this maintenance message shows on the CDU Display.
 - (c) Do the Repair Confirmation at the end of this task.
- (4) Do a general visual inspection of the engine wire harness:
 - (a) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (b) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

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- 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
- 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802

NOTE: It is necessary to do the installation test for the engine wire harness to see if this maintenance message shows on the CDU Display.
- 3) Do the Repair Confirmation at the end of this task.
- (c) If the engine wire harness is satisfactory, then continue.
- (5) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 2) Operate the APU for a minimum of five minutes.
 - 3) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If the airplane wire harness is satisfactory, then continue.
- (6) If the oil filters were not replaced in a prior step, then replace the oil filter elements. These are the tasks:
 - Lube Filter Element Removal, AMM TASK 49-91-12-000-802
 - Lube Filter Element Installation, AMM TASK 49-91-12-400-802
 - Starter-Generator Filter Element Removal, AMM TASK 49-91-12-000-803
 - Starter-Generator Filter Element Installation, AMM TASK 49-91-12-400-803
 - (a) Do the Repair Confirmation at the end of this task.
- (7) Do these steps to inspect the APU turbine section for an out of balance condition:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Borescope the APU turbine section. This is the task: First Stage Stator and First Stage Turbine Inspection, AMM TASK 49-21-00-200-802.
 - (c) Replace the APU if you find damage, These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801
 - (d) If the APU is satisfactory, then continue.
- (8) Do these steps to replace the Lube Module:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the Lube Module. These are the tasks:
 - Lube Module Removal, AMM TASK 49-91-11-000-801
 - Lube Module Installation, AMM TASK 49-91-11-400-801

NOTE: It is necessary to do the installation test for the lube module to see if this maintenance message shows on the CDU Display.

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- (c) Do the Repair Confirmation at the end of this task.

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- (9) Do these steps to replace the APU ECU, M1709:
- (a) Make sure that the APU Master Switch is OFF.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - (c) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Set the APU Master Switch to the ON position.

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- (a) If you replaced the APU ECU, M1709, wait 30 seconds.

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- (3) Look at the CURRENT STATUS page on the CDU Display to see if this maintenance message shows.
 - (a) If the CDU Display does not show this maintenance message, then you corrected the problem.
 - (b) If the CDU Display shows this maintenance message, then continue the Fault Isolation Procedure at the subsequent step.
- (4) Set the APU Master Switch to the OFF position.

————— **END OF TASK** —————

810. Oil Filter Switch Shows Short Circuit - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94300 OIL FILTER SWITCH SHOWS SHORT CIRCUIT
- (2) This fault is set when there is a short across the filter bypass switch for the starter-generator. The electronic control unit senses an impending bypass of the starter-generator filter element. When the APU does not operate, the filter bypass switch is normally open.
- (3) No APU indication lights on the P5 forward overhead panel will show for this maintenance message.

B. Possible Causes

- (1) Engine Wire Harness Problem
- (2) Airplane Wire Harness Problem
- (3) Oil Filter Indicator
- (4) Starter Generator Filter Bypass Switch Internal problem, YAAT011
- (5) APU ECU, M1709

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C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) 49-90 TASK SUPPORT Figure 302
- (3) WDM 49-94-21
- (4) SSM 49-94-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU Display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.
 - (b) If the CDU Display shows this maintenance message on the CURRENT STATUS Page, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the Engine Wire Harness. This is the task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (a) If you find a problem with the Engine Wire Harness, then repair or replace the harness as necessary. These are the applicable tasks:

NOTE: You can repair or replace the Engine Wire Harness.

 - APU Harness Repair, AMM TASK 49-11-01-300-801
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the Engine Wire Harness is satisfactory, then continue.
- (2) Do a general visual inspection of the Airplane Wire Harness:
 - (a) Make sure that the APU Master Switch is OFF.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - 1) If you find a problem, do the indicated repairs.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Airplane Wire Harness is satisfactory, then continue.
- (3) Do an inspection of the Oil Filter Indicator to make sure that the Oil Filter Element is not clogged:

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- (a) Do this task: Oil Filter Indicator Servicing, AMM TASK 49-91-13-600-801
 - 1) If you find a problem with the Oil Filter Indicator, do the indicated corrective action.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Oil Filter Indicator is satisfactory, then continue.
- (4) Do this check of the Starter-Generator Filter Bypass Switch, YAAT011:
 - (a) Make sure the APU Master Switch is OFF and install a DO-NOT-OPERATE Tag.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P24 from the Filter Bypass Switch, YAAT011.
- (d) Examine the electrical connector P24. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P24, then do these steps:
 - 1) Re-connect the electrical connector P24 to the Filter Bypass Switch, YAAT011.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU master switch.
- 4) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector P24 is satisfactory, then continue to the subsequent two applicable steps.
- (g) If you have a new or serviceable Filter Bypass Switch, YAAT011, then do these steps:
 - 1) Connect the electrical connector P24 to the new or serviceable Filter Bypass Switch, YAAT011.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE Tag from the APU Master Switch.
- 4) Do the Repair Confirmation at the end of this task.
- 5) If the maintenance message does not show, then do these steps:
 - a) Set the APU Master Switch to the OFF position.
 - b) Replace the Filter Bypass Switch, YAAT011. These are the tasks:
 - Oil Filter Indicator Removal (Starter-Generator Filter Housing), AMM TASK 49-91-13-000-803
 - Oil Filter Indicator Installation (Starter-Generator Filter Housing), AMM TASK 49-91-13-400-803

NOTE: The filter bypass switch is also referred to as the oil filter indicator on the starter-generator filter housing.

- c) Do the Repair Confirmation at the end of this task.
- 6) If the maintenance message still shows, then do these steps and continue:
 - a) Put the APU Master Switch to the OFF position and install a DO-NOT-OPERATE tag.
 - b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Disconnect the electrical connector P24 from the new or serviceable Filter Bypass Switch, YAAT011.
 - d) Re-connect the electrical connector P24 to the used Filter Bypass Switch, YAAT011.

NOTE: The used Filter Bypass Switch that is installed on the APU is satisfactory.

- e) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- f) Remove the DO-NOT-OPERATE tag from the APU master switch.

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- (h) If you do not have a new or serviceable Filter Bypass Switch, YAAT011, then do these steps:

- 1) Make sure that the APU Master Switch is OFF and the DO-NOT-OPERATE Tag is installed.
- 2) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Make sure the electrical connector P24 is disconnected from the Filter Bypass Switch, YAAT011.
- 4) Measure the Resistance between these pairs of pins on the Filter Bypass Switch, YAAT011 (SSM 49-94-21):
 - a) Pin 1 and pin 2, specified Resistance of more than 100K Ohms (open circuit).
 - b) Pin 1 and pin 3, specified Resistance of more than 100K Ohms (open circuit).
- 5) If the Resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the Filter Bypass Switch, YAAT011. These are the tasks:
 - Oil Filter Indicator Removal (Starter-Generator Filter Housing), AMM TASK 49-91-13-000-803
 - Oil Filter Indicator Installation (Starter-Generator Filter Housing), AMM TASK 49-91-13-400-803

NOTE: The Filter Bypass Switch is also referred to as the Oil Filter Indicator on the Starter-Generator Filter Housing.

 - b) Do the Repair Confirmation at the end of this task.
- 6) If the Resistance is in the range specified for each pair of pins, then do these steps and continue:
 - a) Re-connect the electrical connector P24 to the Filter Bypass Switch, YAAT011.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- c) Remove the DO-NOT-OPERATE Tag from the APU Master Switch.
- (5) Do this check of the Engine Wire Harness:
- (a) Make sure that the APU Master Switch is OFF and install a DO-NOT-OPERATE Tag.

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- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU Firewall Receptacle, D10434, on the 1088 Bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU Firewall Receptacle, D10434. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU Firewall Receptacle D10434, then do these steps:
- 1) Re-connect the electrical connector D10434 (P3) to the APU Firewall Receptacle D10434 on the 1088 Bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Remove the DO-NOT-OPERATE tag from the APU Master Switch.
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector D10434 (P3) and APU Firewall Receptacle D10434 are satisfactory, then do these steps:
- 1) Measure the Resistance between these pairs of pins on the electrical connector D10434 (P3) (SSM 49-94-21):
 - a) Pin 13 and pin 29, specified resistance of more than 100K ohms (open circuit).
 - b) Pin 29 and structural ground, specified resistance of more than 100K ohms (open circuit).
 - 2) If the Resistance is not in the range specified for each pair of pins, then do these steps:
 - a) Replace the Engine Wire Harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
 - 3) Measure the Resistance between socket 13 and structural ground on the APU Firewall Receptacle D10434 (SSM 49-94-21).

NOTE: The Resistance must be less than 5 Ohms (short circuit).

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- 4) If the Resistance is more than 5 Ohms, then do these steps:
- If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - Re-connect the electrical connector D10434 (P3) to the APU Firewall Receptacle D10434 on the 1088 Bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
 - Do the Repair Confirmation at the end of this task.
- 5) If the Resistance is in the range specified for each pair of pins on the electrical connector D10434 (P3) and less than 5 Ohms from socket 13 to structural ground on the APU Firewall Receptacle D10434, then do these steps and continue:
- Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the DO-NOT-OPERATE tag from the APU master switch.
- (6) Do this check of the Airplane Wire Harness:
- Make sure that the APU Master Switch is OFF.
 - Remove the APU ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - Examine the electrical connector D3599. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - If there was a problem with the electrical connector D3599, then do these steps:
 - Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - Do the Repair Confirmation at the end of this task.
 - If the electrical connector D3599 is satisfactory, then do these steps:
 - Measure the resistance between pin C12 and structural ground on the electrical connector D3599A at the electronic control unit, M1709 (SSM 49-94-21).

NOTE: The Resistance must be more than 100K Ohms (open circuit).

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- 2) If there is a problem with the circuit, then repair the wiring (WDM 49-94-21).
 - a) Re-install the APU ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - b) Do the Repair Confirmation at the end of this task.
- 3) If the circuit is satisfactory, then continue.
- (7) Do these steps to replace the APU ECU, M1709:
 - (a) Make sure the APU Master Switch is OFF.
 - (b) Replace the APU ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801
 - Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Put the APU Master Switch to the ON position.
- (3) Look at the CURRENT STATUS Page on the CDU Display to see if the maintenance message still shows.
 - (a) if the maintenance message does not show, then you corrected the problem.
 - 1) Put the APU Master Switch to the OFF position.
 - (b) If the maintenance message still shows, then put the APU Master Switch to the OFF position and continue the Fault Isolation Procedure at the applicable step.

END OF TASK

811. Oil Level Sensor Shows Circuit Failure - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 49-94304 OIL LEVEL SENSOR SHOWS CIRCUIT FAILURE
- (2) This fault is set when the oil level sensor does not send the add oil indication to the electronic control unit and the low oil quantity software does.

B. Possible Causes

- (1) Internal problem with the oil level sensor, T1(YAA)
- (2) ECU, M1709.
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

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D. Related Data

- (1) Component Location (49-90 TASK SUPPORT Figure 301)
- (2) Simplified Schematic (49-90 TASK SUPPORT Figure 302)
- (3) SSM 49-94-21
- (4) SSM 49-94-21

E. Initial Evaluation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - (a) If the CDU display shows this maintenance message on the CURRENT STATUS page, then do the Fault Isolation Procedure below.
 - (b) If the CDU display does not show this maintenance message on the CURRENT STATUS page, then there was an intermittent fault.

NOTE: You can find other occurrences of this maintenance message on the MAINTENANCE HISTORY page.

F. Fault Isolation Procedure

- (1) Do a general visual inspection of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the engine wire harness, then do these steps:

NOTE: You can repair or replace the engine wire harness.

 - 1) Repair the engine wire harness. This is the task: APU Harness Repair, AMM TASK 49-11-01-300-801.
 - 2) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - 3) Do the Repair Confirmation at the end of this task.
- (2) Do a general visual inspection of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Do this task: Wire Harness Inspection, AMM TASK 49-11-01-200-801.
 - (c) If there was a problem with the airplane wire harness, then do these steps:
 - 1) Do this task: APU BITE Procedure, 49-60 TASK 801.
 - 2) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the oil level sensor, T1(YAA) with the APU gearbox oil below the ADD mark:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P16 from the oil level sensor, T1(YAA).
- (d) Examine the electrical connector P16. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P16, then do these steps:
 - 1) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector P16 is satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is below the ADD mark for no APU operation (APU shutdown).
 - a) If the APU oil level is above the ADD mark, drain the APU oil until the oil level is below the ADD mark. This is the task: Drain the APU Oil, AMM TASK 12-13-31-610-801.
 - 2) Measure the resistance between these pins of the oil level sensor, T1(YAA) (SSM 49-94-21):

NOTE: The resistance must be less than 10 ohms.

T1(YAA)	T1(YAA)	
P16	P16	
pin 1	pin 5	10 ohms

- 3) If the resistance is more than 10 ohms, then do these steps:
 - a) Replace the oil level sensor, T1(YAA). These are the tasks:
 - Oil Level Sensor Removal, AMM TASK 49-94-11-000-801
 - Oil Level Sensor Installation, AMM TASK 49-94-11-400-801
 - b) Do the Repair Confirmation at the end of this task.
- 4) If the resistance is less than 10 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

(4) Do this check of the engine wire harness:

- (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
- (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is below the ADD mark for no APU operation (APU shutdown).
 - a) If the APU oil level is above the ADD mark, drain the APU oil until the oil level is below the ADD mark. This is the task: Drain the APU Oil, AMM TASK 12-13-31-610-801.
 - 2) Measure the resistance between pin 19 and pin 22 on the electrical connector D10434 (P3) at the 1088 bulkhead (SSM 49-94-21).

NOTE: The resistance must be less than 10 ohms.

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D10434	D10434	
D10434 (P3)	D10434 (P3)	
pin 19	pin 22	10 ohms

- 3) If the resistance is more than 10 ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
- 4) If the resistance is less than 10 ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (5) Do this check of the airplane wire harness:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599B, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If the electrical connector D3599B is satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is below the ADD mark for no APU operation (APU shutdown).
 - a) If the APU oil level is above the ADD mark, drain the APU oil until the oil level is below the ADD mark. This is the task: Drain the APU Oil, AMM TASK 12-13-31-610-801.
 - 2) Measure the resistance between pin C6 and structural ground on the electrical connector D3599B at the ECU, M1709 (SSM 49-94-21).

NOTE: The resistance must be less than 10 ohms.

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M1709	M1709
D3599B	D3599B
pin C6	GROUND 10 ohms

- 3) If the resistance is more than 10 ohms, then do these steps:
 - a) Repair the wiring (WDM 49-94-21).
 - b) Re-install the electronic control unit, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Do the Repair Confirmation at the end of this task.
- 4) If the resistance is less than 10 ohms, then do this step and continue:
 - a) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (6) Do this check of the oil level sensor, T1(YAA) with the APU gearbox oil at the FULL mark:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector P16 from the oil level sensor, T1(YAA).
- (d) Examine the electrical connector P16. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector P16, then do these steps:
 - 1) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector P16 is satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is at the FULL mark for no APU operation (APU shutdown). This is the task: Fill the APU Gearbox, AMM TASK 12-13-31-610-803.

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- 2) Measure the resistance between pin 1 and pin 2 on the oil level sensor, T1(YAA) (SSM 49-94-21).

NOTE: The resistance must be more than 100K ohms (open circuit).

T1(YAA)	T1(YAA)	
P16	P16	
pin 1	pin 2	100K ohms

- 3) If the resistance is less than 100K ohms, then do these steps:
- Replace the oil level sensor, T1(YAA). These are the tasks:
 - Oil Level Sensor Removal, AMM TASK 49-94-11-000-801
 - Oil Level Sensor Installation, AMM TASK 49-94-11-400-801
 - Do the Repair Confirmation at the end of this task.
- 4) If the resistance is more than 100K ohms, then do these steps and continue:
- Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (7) Do this check of the wiring between the ECU, M1709, and oil level sensor, T1(YAA).
- Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
- Disconnect the electrical connector P16 from the oil level sensor, T1(YAA).
- Examine the electrical connectors D3599B and P16. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- If there was a problem with the electrical connectors D3599B or P16, then do these steps:
 - Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.

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- 2) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
- 3) Do the Repair Confirmation at the end of this task.
- (g) Do a wiring check between these pins of electrical connector P16 and electrical connector D3599B (WDM 49-94-21):

M1709	T1(YAA)
D3599B	P16
pin C5	pin 2

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - d) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- e) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do these steps and continue:
 - a) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - b) Re-connect the electrical connector P16 to the oil level sensor, T1(YAA).
 - c) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (8) Do this check of the engine wire harness:
 - (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (c) Disconnect the electrical connector D10434 (P3) from the APU firewall receptacle D10434 on the 1088 bulkhead.
- (d) Examine the electrical connector D10434 (P3) and APU firewall receptacle D10434. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
- (e) If there was a problem with the electrical connector D10434 (P3) or APU firewall receptacle D10434, then do these steps:
 - 1) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.
 - 2) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Do the Repair Confirmation at the end of this task.
- (f) If the electrical connector D10434 (P3) and APU firewall receptacle D10434 are satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is at the FULL mark for no APU operation (APU shutdown). This is the task: Fill the APU Gearbox, AMM TASK 12-13-31-610-803.
 - 2) Measure the resistance between pin 9 and pin 19 on the electrical connector D10434 (P3) at the 1088 bulkhead (SSM 49-94-21).

NOTE: The resistance must be more than 100K ohms (open circuit).

D10434	D10434
D10434 (P3)	D10434 (P3)
pin 9	pin 19 100K ohms

- 3) If the resistance is less than 100K ohms, then do these steps:
 - a) Replace the engine wire harness. These are the tasks:
 - Engine Wire Harness Removal, AMM TASK 49-11-01-000-802
 - Engine Wire Harness Installation, AMM TASK 49-11-01-400-802
 - b) Do the Repair Confirmation at the end of this task.
- 4) If the resistance is more than 100K ohms, then do these steps and continue:
 - a) Re-connect the electrical connector D10434 (P3) to the APU firewall receptacle D10434 on the 1088 bulkhead.

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- b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- (9) Do this check of the airplane wire harness:
- (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Remove the ECU, M1709. This is the task: Electronic Control Unit Removal, AMM TASK 49-61-12-000-801.
 - (c) Examine the electrical connector D3599B. This is the task: Electrical Connector and Terminal Inspection, AMM TASK 49-11-01-200-802.
 - (d) If there was a problem with the electrical connector D3599B, then do these steps:
 - 1) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If the electrical connector D3599B is satisfactory, then do these steps:
 - 1) Make sure that the APU oil level on the oil sight glass is at the FULL mark for no APU operation (APU shutdown). This is the task: Fill the APU Gearbox, AMM TASK 12-13-31-610-803.
 - 2) Measure the resistance between pin C5 and structural ground on the electrical connector D3599B at the ECU, M1709 (SSM 49-94-21).
- NOTE:** The resistance must be more than 100K ohms (open circuit).

M1709	M1709	
D3599B	D3599B	
pin C5	GROUND	100K ohms

- 3) If the resistance is less than 100K ohms, then do these steps:
 - a) Repair the wiring (WDM 49-94-21).
 - b) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - 4) If the resistance is more than 100K ohms, then do this step and continue:
 - a) Re-install the ECU, M1709. This is the task: Electronic Control Unit Installation, AMM TASK 49-61-12-400-801.
- (10) Do these steps to replace the ECU, M1709:
- (a) Make sure that the APU master switch is OFF and install the DO NOT OPERATE tag, STD-858.
 - (b) Replace the ECU, M1709. These are the tasks:
 - Electronic Control Unit Removal, AMM TASK 49-61-12-000-801

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- Electronic Control Unit Installation, AMM TASK 49-61-12-400-801
- (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: APU BITE Procedure, 49-60 TASK 801.
- (2) Remove the DO-NOT-OPERATE tag and set the APU master switch to the ON position.
- (3) Look at the CURRENT STATUS page on the CDU display to see if maintenance message shows.
 - (a) If the CDU display does not show maintenance message 49-94304, then you corrected the fault.
 - (b) If the CDU display shows maintenance message 49-94304 on the CURRENT STATUS page, then continue the Fault Isolation Procedure at the subsequent step.
- (4) Set the APU master switch to the OFF position.
- (5) Do this task: Fill the APU Gearbox, AMM TASK 12-13-31-610-803.

———— **END OF TASK** ————

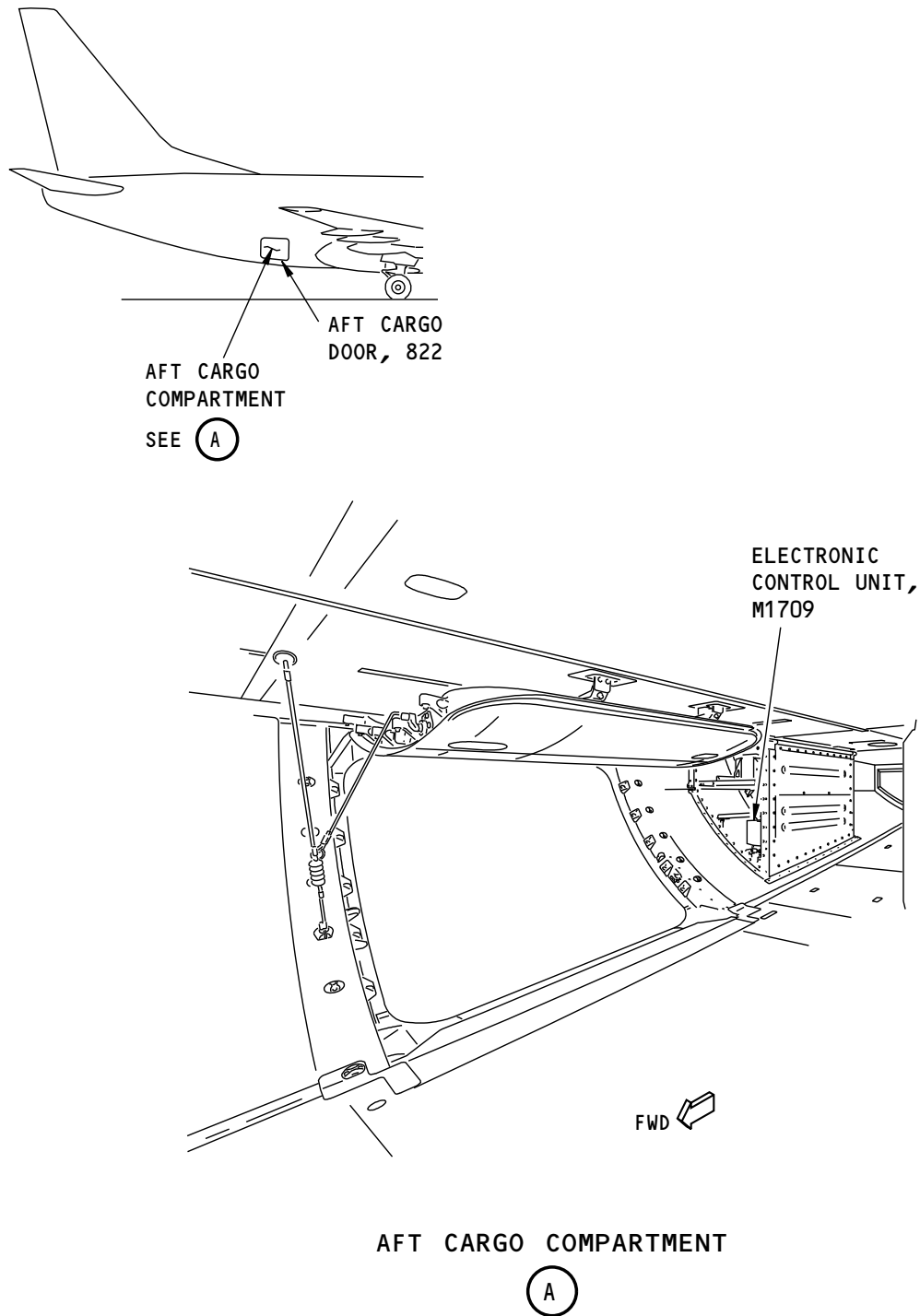
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H19902 S0006745388_V1

APU Lubrication System Component Location
Figure 301/49-90-00-990-801 (Sheet 1 of 2)

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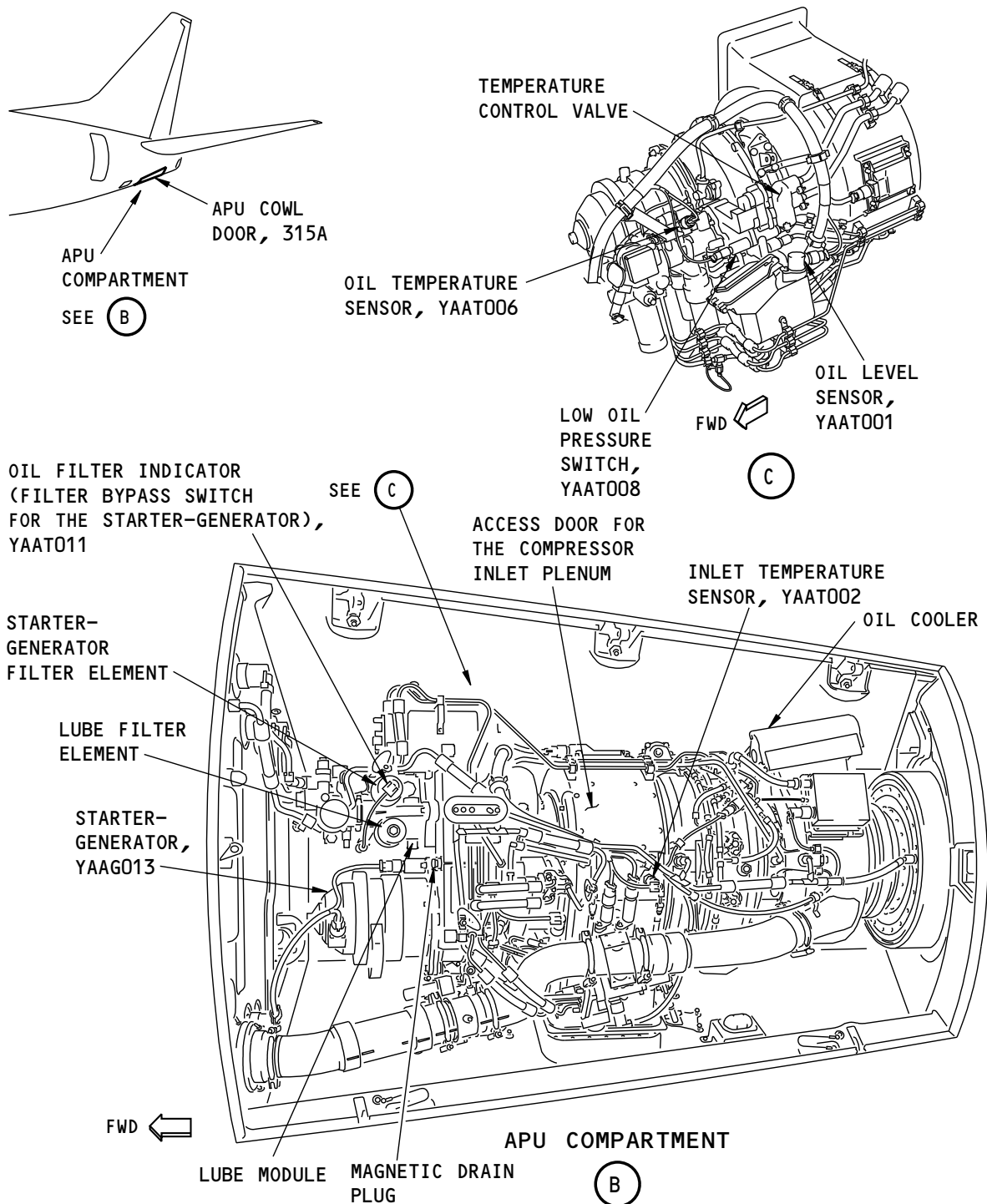
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G47209 S0006745390_V1

APU Lubrication System Component Location
Figure 301/49-90-00-990-801 (Sheet 2 of 2)

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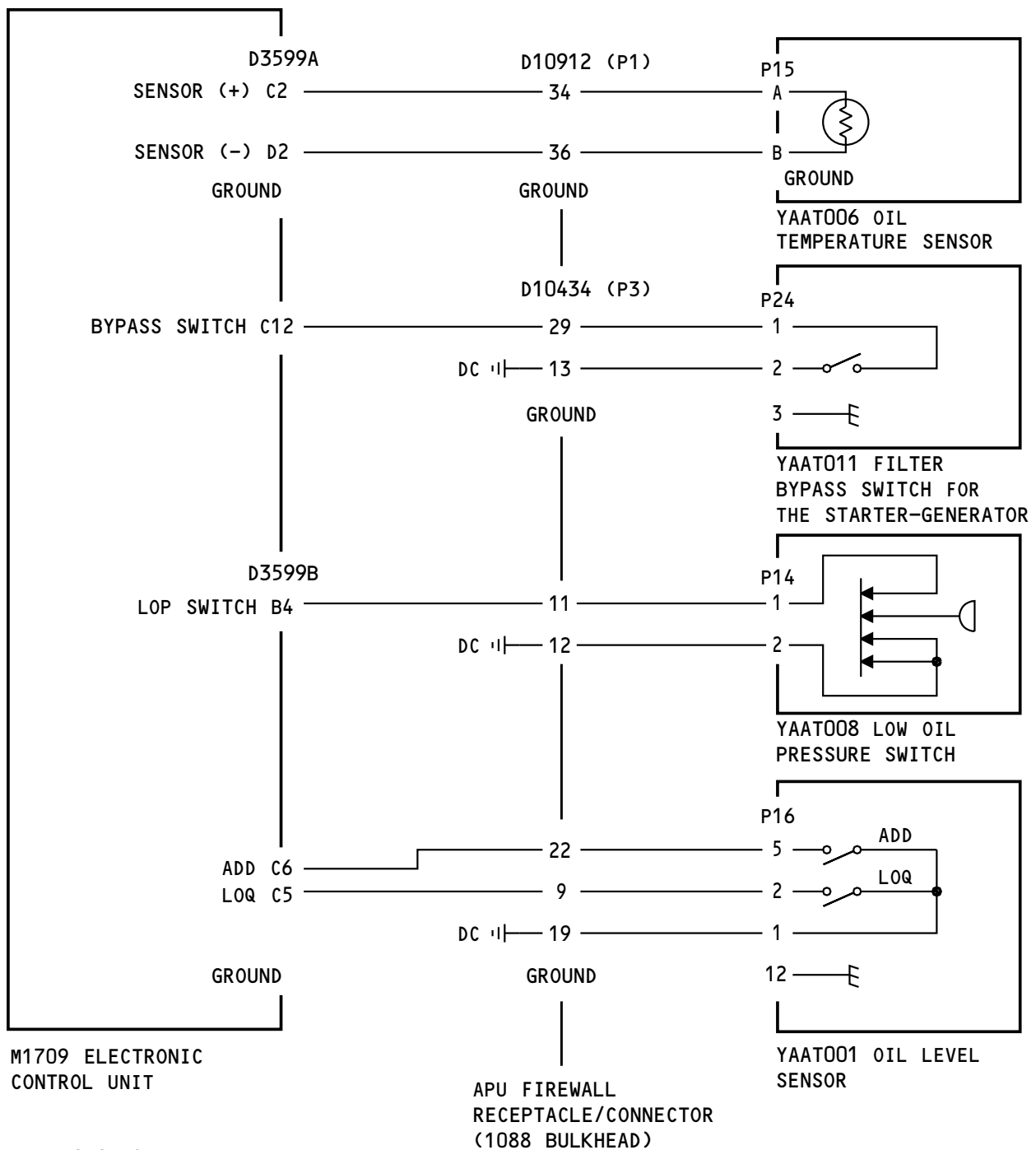
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WDM 49-94-21

SSM 49-94-21

G47228 S0006745391_V1

APU Lubrication System Simplified Schematic
Figure 302/49-90-00-990-802

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801. APU Oil Consumption High - Fault Isolation

A. Description

- (1) Refer to this task: APU Operation Limits, AMM TASK 49-11-00-710-802, for the Oil Consumption Limits.

B. Possible Causes

- (1) Air-Oil Separator Adapter Stationary Seal
- (2) Oil Leakage
- (3) Oil Cooler
- (4) Oil Fill Cap
- (5) Fuel Control Unit (FCU), YAAM2
- (6) Auxiliary Power Unit (APU)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

D. Initial Evaluation

- (1) Do a General Visual Inspection of the APU Drain Seal at the bottom of the APU:
 - (a) Examine the Middle Drain on the APU Drain Seal for signs of Oil Leakage.
 - 1) If you find Oil Leakage from the Middle Drain, then replace the APU. These are the tasks:
 - APU Power Plant Removal, AMM TASK 49-11-00-000-801
 - APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: There is an internal problem with the APU engine.
 - (b) Examine the Forward Drain on the APU Drain Seal for signs of Oil Leakage.
 - 1) If you find Oil Leakage from the Forward Drain, replace the FCU, YAAM2. These are the tasks:
 - Fuel Control Unit Removal, AMM TASK 49-31-11-000-801
 - Fuel Control Unit Installation, AMM TASK 49-31-11-400-801
 - (c) Examine the Aft Drain on the APU Drain Seal for signs of Oil Leakage.
 - 1) If you find Oil Leakage from the Aft Drain, or if there is a High Oil Consumption from the APU, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a General Visual Inspection of the APU Turbine Exhaust Area:
 - (a) If you find external Oil Leakage around the APU Turbine Exhaust area, then replace the Air-Oil Separator Adapter Stationary Seal. These are the tasks:

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- Air-Oil Separator Adapter Stationary Seal - Removal, AMM TASK 49-21-00-000-801
- Air-Oil Separator Adapter Stationary Seal - Installation, AMM TASK 49-21-00-400-801.

- (b) Check the Inner Surface of the APU Turbine Exhaust Duct for excessive Oil Leakage with a fiberscope, COM-4316 through Exhaust Gas Temperature (EGT) Thermocouple Port 1.

NOTE: THE INTERNAL TEMPERATURE OF THE APU SHOULD BE LESS THAN 176°F (80°C) BEFORE YOU PUT THE BORESCOPE INTO THE APU. DAMAGE TO THE BORESCOPE CAN OCCUR.

- 1) Check around the Gearbox Breather Vent Opening near the top of the Duct, near the Turbine Bearing Support Struts for the Oil Leakage.
- 2) If you find Oil Leakage around the APU Turbine Exhaust Duct, then replace the APU. These are the tasks:

- APU Power Plant Removal, AMM TASK 49-11-00-000-801
- APU Power Plant Installation, AMM TASK 49-11-00-400-801

NOTE: If the APU will be replaced at a convenient maintenance interval, avoid use of the APU Bleed Air to run the Air Conditioning Packs.

- 3) If no Oil Leakage is found around the APU Turbine Exhaust Duct, then continue.
- (2) Do a General Visual Inspection of the Oil Tubes, Vent Line, Lube Module, Starter-Generator, YAAG13, Magnetic Drain Plug, Temperature Control Valve, Oil Cooler and APU Gearbox:
- (a) Examine the Oil Tubes, Vent Line, Lube Module, Starter-Generator, YAAG13, Magnetic Drain Plug, Temperature Control Valve and APU Gearbox for signs of Oil Leakage.
 - (b) Do this task: Oil Cooler Inspection, AMM TASK 49-91-41-200-801.
 - (c) If there is Oil Leakage, then do these steps:
 - 1) Make sure the APU Master Switch, S248, is OFF and install a DO NOT OPERATE tag, STD-858.
 - 2) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 3) Repair the problems that you find.
- 4) Do this task: APU Oil Level Inspection, AMM TASK 12-13-31-200-801.

NOTE: Do not do the Oil Check Procedure after you fill the APU Gearbox with oil. You must examine the other APU Components for Oil Leakage during the APU operation.

- 5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	19	C01344	APU FIRE SW POWER

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F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	14	C00033	AUX POWER UNIT CONT

- 6) Remove the DO NOT OPERATE tag, STD-858 from the APU Master Switch, S248.
 - 7) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - 8) During the APU operation, examine the APU Oil Components for signs of Oil Leakage.
 - 9) If there is Oil Leakage, then do these steps to repair the leakage:
 - a) Do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
 - b) Install a DO NOT OPERATE tag, STD-858 to the APU Master Switch, S248.
 - c) Repair the cause of the Oil Leakage.
 - d) Remove the DO NOT OPERATE tag, STD-858 from the APU Master Switch, S248.
 - e) Do this task: APU Starting and Operation, AMM TASK 49-11-00-860-801.
 - f) During the APU operation, examine the APU Oil Components for signs of Oil Leakage.
 - g) If there is Oil Leakage, then do the leakage repair again.
 - 10) If there is no Oil Leakage, then do this task: APU Usual Shutdown, AMM TASK 49-11-00-860-802.
- (d) If there is no Oil Leakage, then continue.
- (3) Do a Bottom External Surface Inspection of the Oil Cooler:
- (a) Remove the Oil Cooler. This is the task: Oil Cooler Removal, AMM TASK 49-91-41-000-801.
 - (b) Visually examine the Bottom External Surfaces of the Oil Cooler for cracks, damage and Oil Leakage.
 - (c) If there were cracks, damage or Oil Leakage on the Oil Cooler, install a new or serviceable Oil Cooler. Install the Oil Cooler. This is the task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
 - (d) If there were no cracks, damage or Oil Leakage to the Oil Cooler, do this step and continue:
 - 1) Re-install the Oil Cooler. This is the task: Oil Cooler Installation, AMM TASK 49-91-41-400-801.
- (4) Do a Visual Inspection of the Oil Fill Cap:
- NOTE: The Oil Fill Cap is located on the left side of the APU Gearbox.
- (a) Examine the Oil Fill Cap, then do these steps:
 - 1) If the Oil Fill Cap is loose, engage the Latch Handle on the Oil Fill Cap.
 - 2) If the Oil Fill Cap is damaged or missing, replace the Oil Fill Cap.
 - 3) Do this task: APU Oil Level Inspection, AMM TASK 12-13-31-200-801.
 - (b) If the Oil Fill Cap is satisfactory, then continue.
- (5) Replace the APU. These are the tasks:
- APU Power Plant Removal, AMM TASK 49-11-00-000-801

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- APU Power Plant Installation, AMM TASK 49-11-00-400-801

———— **END OF TASK** ————

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