

CHAPTER

22

AUTOFLIGHT



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

**CHAPTER 22
AUTOFLIGHT**

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22-EFFECTIVE PAGES			22-MAINT MSG INDEX (cont)			22-11 TASKS (cont)		
1 thru 7	Oct 15/2023		119	Feb 15/2023		228	Oct 15/2021	
8	BLANK		120	Feb 15/2023		229	Oct 15/2021	
22-HOW TO USE THE FIM			121	Feb 15/2023		230	Oct 15/2022	
1	Oct 15/2021		122	Feb 15/2023		231	Oct 15/2022	
2	Oct 15/2021		123	Feb 15/2023		232	Oct 15/2021	
3	Oct 15/2021		124	Feb 15/2023		233	Oct 15/2021	
4	Oct 15/2021		125	Feb 15/2023		234	Oct 15/2021	
5	Oct 15/2021		126	Feb 15/2023		235	Feb 15/2022	
6	Oct 15/2021		22-11 TASKS			236	Feb 15/2022	
22-FAULT CODE INDEX			201	Oct 15/2021		237	Feb 15/2022	
R 101	Oct 15/2023		202	Oct 15/2021		238	Feb 15/2022	
O 102	Oct 15/2023		203	Oct 15/2021		239	Feb 15/2022	
O 103	Oct 15/2023		204	Oct 15/2021		240	Feb 15/2022	
O 104	Oct 15/2023		205	Oct 15/2021		241	Feb 15/2022	
O 105	Oct 15/2023		206	Oct 15/2021		242	Feb 15/2022	
O 106	Oct 15/2023		207	Oct 15/2021		243	Oct 15/2021	
O 107	Oct 15/2023		208	Oct 15/2021		244	Oct 15/2021	
O 108	Oct 15/2023		209	Oct 15/2021		245	Oct 15/2021	
22-MAINT MSG INDEX			210	Oct 15/2021		246	Oct 15/2021	
101	Oct 15/2021		211	Oct 15/2022		247	Oct 15/2021	
102	Oct 15/2021		212	Feb 15/2023		248	Oct 15/2021	
103	Oct 15/2021		213	Feb 15/2023		249	Oct 15/2021	
104	Oct 15/2021		214	Feb 15/2023		250	Oct 15/2021	
105	Oct 15/2021		215	Feb 15/2023		251	Oct 15/2021	
106	Oct 15/2021		216	Feb 15/2023		252	Feb 15/2023	
107	Oct 15/2021		217	Feb 15/2023		253	Feb 15/2023	
108	Oct 15/2021		218	Feb 15/2023		254	Oct 15/2021	
109	Oct 15/2021		219	Feb 15/2023		255	Feb 15/2023	
110	Feb 15/2023		220	Feb 15/2023		256	Feb 15/2023	
111	Feb 15/2023		221	Feb 15/2023		257	Oct 15/2021	
112	Feb 15/2023		222	Feb 15/2023		258	Oct 15/2021	
113	Feb 15/2023		223	Feb 15/2023		259	Oct 15/2021	
114	Feb 15/2023		224	Feb 15/2023		260	Jun 15/2022	
115	Feb 15/2023		225	Feb 15/2023		261	Jun 15/2022	
116	Feb 15/2023		226	Feb 15/2023		262	Jun 15/2022	
117	Feb 15/2023		227	Feb 15/2023		263	Jun 15/2022	
118	Feb 15/2023							

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22-11 TASKS (cont)			22-11 TASKS (cont)			22-11 TASKS (cont)		
264	Jun 15/2022		298.2	Feb 15/2023		298.38	Feb 15/2023	
265	Jun 15/2022		298.3	Feb 15/2023		298.39	Feb 15/2023	
266	Jun 15/2022		298.4	Feb 15/2023		298.40	Feb 15/2023	
267	Jun 15/2022		298.5	Feb 15/2023		298.41	Feb 15/2023	
268	Jun 15/2022		298.6	Feb 15/2023		R 298.42	Oct 15/2023	
269	Jun 15/2022		298.7	Feb 15/2023		298.43	Feb 15/2023	
270	Jun 15/2022		298.8	Feb 15/2023		298.44	Feb 15/2023	
271	Jun 15/2022		298.9	Feb 15/2023		298.45	Feb 15/2023	
272	Jun 15/2022		298.10	Feb 15/2023		298.46	Feb 15/2023	
273	Jun 15/2022		298.11	Feb 15/2023		298.47	Feb 15/2023	
274	Jun 15/2022		298.12	Feb 15/2023		298.48	Feb 15/2023	
275	Jun 15/2022		298.13	Feb 15/2023		298.49	Feb 15/2023	
276	Jun 15/2022		298.14	Feb 15/2023		298.50	Feb 15/2023	
277	Feb 15/2023		298.15	Feb 15/2023		298.51	Feb 15/2023	
278	Feb 15/2023		298.16	Feb 15/2023		298.52	Feb 15/2023	
279	Feb 15/2023		298.17	Feb 15/2023		298.53	Feb 15/2023	
R 280	Oct 15/2023		298.18	Feb 15/2023		298.54	Feb 15/2023	
R 281	Oct 15/2023		298.19	Feb 15/2023		298.55	Feb 15/2023	
R 282	Oct 15/2023		298.20	Feb 15/2023		298.56	Feb 15/2023	
283	Feb 15/2023		298.21	Feb 15/2023		A 298.57	Oct 15/2023	
284	Feb 15/2023		298.22	Feb 15/2023		A 298.58	Oct 15/2023	
285	Feb 15/2023		298.23	Feb 15/2023		A 298.59	Oct 15/2023	
286	Feb 15/2023		298.24	Feb 15/2023		A 298.60	Oct 15/2023	
287	Feb 15/2023		298.25	Feb 15/2023		22-12 TASKS		
288	Feb 15/2023		298.26	Feb 15/2023		201	Oct 15/2021	
289	Feb 15/2023		298.27	Feb 15/2023		202	Oct 15/2021	
290	Feb 15/2023		298.28	Feb 15/2023		203	Oct 15/2021	
291	Feb 15/2023		298.29	Feb 15/2023		204	Oct 15/2021	
292	Feb 15/2023		298.30	Feb 15/2023		205	Oct 15/2021	
293	Feb 15/2023		298.31	Feb 15/2023		206	Oct 15/2021	
294	Feb 15/2023		298.32	Feb 15/2023		207	Oct 15/2021	
295	Feb 15/2023		298.33	Feb 15/2023		208	Oct 15/2021	
296	Feb 15/2023		298.34	Feb 15/2023		209	Oct 15/2021	
297	Feb 15/2023		298.35	Feb 15/2023		210	Feb 15/2023	
298	Feb 15/2023		298.36	Feb 15/2023		211	Feb 15/2023	
298.1	Feb 15/2023		298.37	Feb 15/2023		212	Feb 15/2022	

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22-12 TASKS (cont)			22-12 TASKS (cont)			22-13 TASKS (cont)		
213	Feb 15/2022		249	Jun 15/2023		206	Jun 15/2022	
214	Feb 15/2022		250	Jun 15/2023		207	Jun 15/2022	
215	Feb 15/2023		R 251	Oct 15/2023		208	Jun 15/2022	
216	Feb 15/2023		252	Jun 15/2023		209	Jun 15/2022	
217	Feb 15/2023		253	Jun 15/2023		210	Jun 15/2022	
218	Feb 15/2023		254	Jun 15/2023		211	Jun 15/2022	
219	Feb 15/2023		255	Jun 15/2023		212	Jun 15/2022	
220	Feb 15/2023		256	Jun 15/2023		213	Jun 15/2022	
221	Feb 15/2023		257	Jun 15/2023		214	Jun 15/2022	
222	Feb 15/2023		258	Jun 15/2023		215	Jun 15/2022	
223	Feb 15/2023		259	Jun 15/2023		216	Feb 15/2023	
224	Feb 15/2023		260	Jun 15/2023		217	Feb 15/2023	
225	Feb 15/2023		261	Jun 15/2023		218	Feb 15/2023	
226	Feb 15/2023		262	Jun 15/2023		219	Feb 15/2023	
227	Feb 15/2023		263	Jun 15/2023		220	Feb 15/2023	
228	Feb 15/2023		264	Jun 15/2023		221	Feb 15/2023	
229	Feb 15/2023		265	Jun 15/2023		222	Jun 15/2023	
230	Feb 15/2023		266	Jun 15/2023		223	Jun 15/2023	
231	Feb 15/2023		267	Jun 15/2023		224	Feb 15/2023	
232	Feb 15/2023		268	Jun 15/2023		225	Feb 15/2023	
233	Feb 15/2023		269	Jun 15/2023		226	Feb 15/2023	
234	Feb 15/2023		270	Jun 15/2023		227	Feb 15/2023	
235	Feb 15/2023		271	Jun 15/2023		228	Feb 15/2023	
236	Feb 15/2023		272	Jun 15/2023		229	Jun 15/2023	
237	Feb 15/2023		273	Jun 15/2023		230	Jun 15/2023	
238	Feb 15/2023		274	Jun 15/2023		231	Jun 15/2023	
239	Feb 15/2023		275	Jun 15/2023		232	Jun 15/2023	
240	Feb 15/2023		276	Jun 15/2023		233	Jun 15/2023	
241	Feb 15/2023		277	Jun 15/2023		234	Feb 15/2023	
242	Feb 15/2023		278	BLANK		235	Feb 15/2023	
R 243	Oct 15/2023		22-13 TASKS			236	Feb 15/2023	
O 244	Oct 15/2023		201	Oct 15/2021		237	Feb 15/2023	
O 245	Oct 15/2023		202	Oct 15/2021		238	Feb 15/2023	
O 246	Oct 15/2023		203	Oct 15/2021		239	Feb 15/2023	
247	Feb 15/2023		204	Jun 15/2022		240	Feb 15/2023	
248	Jun 15/2023		205	Jun 15/2022		241	Feb 15/2023	

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22-13 TASKS (cont)			22-13 TASKS (cont)			22-14 TASKS (cont)		
242	Feb 15/2023		O 278	Oct 15/2023		225	Jun 15/2023	
243	Feb 15/2023		O 279	Oct 15/2023		226	Jun 15/2023	
R 244	Oct 15/2023		O 280	Oct 15/2023		227	Jun 15/2023	
O 245	Oct 15/2023		O 281	Oct 15/2023		228	Jun 15/2023	
O 246	Oct 15/2023		O 282	Oct 15/2023		229	Jun 15/2023	
R 247	Oct 15/2023		O 283	Oct 15/2023		230	Jun 15/2023	
O 248	Oct 15/2023		O 284	Oct 15/2023		231	Jun 15/2023	
O 249	Oct 15/2023		O 285	Oct 15/2023		232	Jun 15/2023	
O 250	Oct 15/2023		O 286	Oct 15/2023		233	Jun 15/2023	
O 251	Oct 15/2023		O 287	Oct 15/2023		234	Jun 15/2023	
O 252	Oct 15/2023		O 288	BLANK		235	Jun 15/2023	
O 253	Oct 15/2023		22-14 TASKS			236	Jun 15/2023	
O 254	Oct 15/2023		201	Oct 15/2021		237	Jun 15/2023	
O 255	Oct 15/2023		202	Oct 15/2021		238	Jun 15/2023	
O 256	Oct 15/2023		203	Oct 15/2021		239	Jun 15/2023	
O 257	Oct 15/2023		204	Feb 15/2023		240	Jun 15/2023	
O 258	Oct 15/2023		205	Feb 15/2023		241	Jun 15/2023	
O 259	Oct 15/2023		206	Oct 15/2021		242	Jun 15/2023	
O 260	Oct 15/2023		207	Oct 15/2021		243	Jun 15/2023	
O 261	Oct 15/2023		208	Oct 15/2021		244	Jun 15/2023	
O 262	Oct 15/2023		209	Oct 15/2021		245	Jun 15/2023	
O 263	Oct 15/2023		210	Oct 15/2021		246	Jun 15/2023	
O 264	Oct 15/2023		211	Oct 15/2021		247	Jun 15/2023	
O 265	Oct 15/2023		212	Oct 15/2021		248	Jun 15/2023	
O 266	Oct 15/2023		213	Oct 15/2021		249	Jun 15/2023	
O 267	Oct 15/2023		R 214	Oct 15/2023		250	Jun 15/2023	
O 268	Oct 15/2023		215	Jun 15/2023		251	Jun 15/2023	
O 269	Oct 15/2023		216	Jun 15/2023		252	Jun 15/2023	
O 270	Oct 15/2023		217	Jun 15/2023		253	Jun 15/2023	
O 271	Oct 15/2023		218	Jun 15/2023		254	Jun 15/2023	
O 272	Oct 15/2023		219	Jun 15/2023		255	Jun 15/2023	
O 273	Oct 15/2023		220	Jun 15/2023		256	Jun 15/2023	
O 274	Oct 15/2023		221	Jun 15/2023		257	Jun 15/2023	
O 275	Oct 15/2023		222	Jun 15/2023		258	Jun 15/2023	
O 276	Oct 15/2023		223	Jun 15/2023		259	Jun 15/2023	
O 277	Oct 15/2023		224	Jun 15/2023		260	Jun 15/2023	

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22-14 TASKS (cont)			22-15 TASKS (cont)			22-15 TASKS (cont)		
261	Jun 15/2023		230	Oct 15/2021		266	Oct 15/2021	
262	Jun 15/2023		231	Oct 15/2021		267	Oct 15/2021	
263	Jun 15/2023		232	Oct 15/2021		268	Oct 15/2021	
264	Jun 15/2023		233	Oct 15/2021		269	Oct 15/2021	
265	Jun 15/2023		234	Oct 15/2021		270	Oct 15/2021	
266	BLANK		235	Oct 15/2021		271	Oct 15/2021	
22-15 TASKS			236	Oct 15/2021		272	Oct 15/2021	
201	Feb 15/2022		237	Oct 15/2021		273	Oct 15/2021	
202	Feb 15/2022		238	Jun 15/2023		274	Feb 15/2022	
203	Feb 15/2022		239	Jun 15/2023		275	Feb 15/2022	
204	Feb 15/2022		240	Jun 15/2023		276	Feb 15/2022	
205	Feb 15/2022		241	Oct 15/2021		277	Feb 15/2022	
206	Feb 15/2022		242	Oct 15/2021		278	Feb 15/2022	
207	Feb 15/2022		243	Oct 15/2021		279	Feb 15/2022	
208	Feb 15/2022		244	Oct 15/2021		280	BLANK	
209	Feb 15/2022		245	Oct 15/2021		22-16 TASKS		
210	Feb 15/2022		246	Oct 15/2021		201	Oct 15/2021	
211	Oct 15/2021		247	Oct 15/2021		202	Oct 15/2021	
212	Oct 15/2021		248	Oct 15/2021		203	Oct 15/2021	
213	Oct 15/2021		249	Oct 15/2021		204	Oct 15/2021	
214	Oct 15/2021		250	Oct 15/2021		205	Oct 15/2021	
215	Oct 15/2021		251	Oct 15/2021		206	Oct 15/2021	
216	Oct 15/2021		252	Oct 15/2021		207	Oct 15/2021	
217	Oct 15/2021		253	Oct 15/2021		208	Oct 15/2021	
R 218	Oct 15/2023		254	Oct 15/2021		209	Oct 15/2021	
219	Oct 15/2021		255	Oct 15/2021		210	Oct 15/2021	
220	Oct 15/2021		256	Oct 15/2021		211	Oct 15/2021	
221	Oct 15/2021		257	Oct 15/2021		212	Oct 15/2021	
222	Oct 15/2021		258	Oct 15/2021		213	Oct 15/2021	
223	Oct 15/2021		259	Oct 15/2021		214	Oct 15/2021	
224	Oct 15/2021		260	Oct 15/2021		215	Oct 15/2021	
225	Oct 15/2021		261	Oct 15/2021		216	Oct 15/2021	
226	Oct 15/2021		262	Oct 15/2021		217	Oct 15/2021	
227	Oct 15/2021		263	Oct 15/2021		218	Oct 15/2021	
228	Oct 15/2021		264	Oct 15/2021		219	Oct 15/2021	
229	Oct 15/2021		265	Oct 15/2021		220	Oct 15/2021	

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22-16 TASKS (cont)			22-17 TASKS (cont)			22-31 TASKS (cont)		
221	Oct 15/2021		216	Oct 15/2022		203	Oct 15/2021	
222	Oct 15/2021		217	Oct 15/2022		204	Oct 15/2021	
223	Oct 15/2021		218	Oct 15/2022		205	Oct 15/2021	
224	Feb 15/2023		219	Oct 15/2022		206	Oct 15/2021	
225	Feb 15/2023		220	BLANK		207	Oct 15/2021	
226	Feb 15/2023		22-23 TASKS			208	Oct 15/2021	
227	Feb 15/2023		201	Oct 15/2021		209	Oct 15/2021	
228	Feb 15/2022		202	Oct 15/2021		210	Oct 15/2021	
229	Feb 15/2022		203	Oct 15/2021		211	Oct 15/2021	
230	Feb 15/2022		204	Oct 15/2021		212	Oct 15/2021	
231	Feb 15/2022		205	Oct 15/2021		213	Oct 15/2021	
232	Feb 15/2022		206	Oct 15/2021		214	Oct 15/2021	
233	Feb 15/2022		207	Oct 15/2021		215	Oct 15/2021	
234	Feb 15/2022		208	Oct 15/2021		216	Oct 15/2021	
235	Feb 15/2022		209	Oct 15/2021		217	Oct 15/2021	
236	Feb 15/2022		210	Oct 15/2021		218	Oct 15/2021	
237	Feb 15/2022		211	Oct 15/2021		219	Oct 15/2021	
238	Feb 15/2022		212	Oct 15/2021		220	Oct 15/2021	
239	Feb 15/2022		213	Oct 15/2021		221	Oct 15/2021	
240	Feb 15/2022		214	Oct 15/2021		222	Oct 15/2021	
22-17 TASKS			215	Oct 15/2021		223	Oct 15/2021	
201	Oct 15/2022		216	Oct 15/2021		224	Oct 15/2021	
202	Oct 15/2022		217	Oct 15/2021		225	Oct 15/2021	
203	Oct 15/2022		218	Oct 15/2021		226	Oct 15/2021	
R 204	Oct 15/2023		219	Oct 15/2021		227	Oct 15/2021	
205	Oct 15/2021		220	Oct 15/2021		228	Oct 15/2021	
206	Oct 15/2021		221	Oct 15/2021		229	Oct 15/2021	
207	Oct 15/2021		222	Oct 15/2022		230	Oct 15/2021	
208	Oct 15/2021		223	Oct 15/2021		231	Oct 15/2021	
209	Oct 15/2021		224	Oct 15/2022		232	Oct 15/2021	
210	Oct 15/2021		225	Oct 15/2022		233	Oct 15/2021	
211	Oct 15/2021		226	Oct 15/2021		234	Oct 15/2021	
212	Oct 15/2021		227	Oct 15/2021		235	Oct 15/2021	
213	Oct 15/2021		228	Oct 15/2022		236	Oct 15/2021	
214	Oct 15/2021		22-31 TASKS			237	Oct 15/2021	
215	Oct 15/2021		201	Oct 15/2021		238	Oct 15/2021	
			202	Oct 15/2021				

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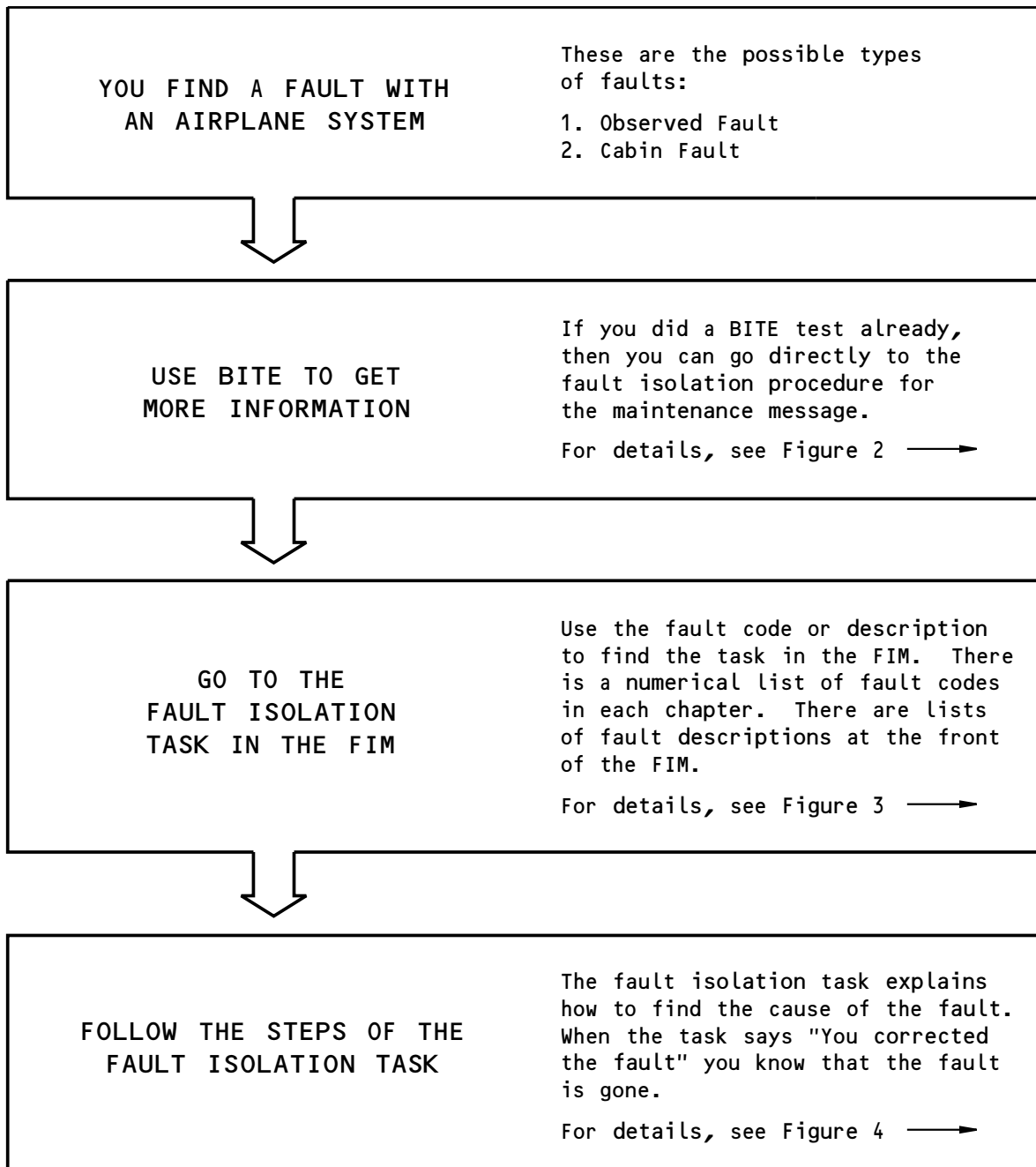
Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
22-31 TASKS (cont)			22-32 TASKS			22-32 TASKS (cont)		
239	Oct 15/2021		201	Oct 15/2021		237	Oct 15/2021	
240	Oct 15/2021		202	Oct 15/2021		238	Oct 15/2021	
R 241	Oct 15/2023		203	Oct 15/2021		239	Oct 15/2021	
242	Jun 15/2022		204	Oct 15/2021		240	Oct 15/2021	
243	Jun 15/2022		205	Oct 15/2021		241	Oct 15/2021	
244	Jun 15/2022		206	Oct 15/2021		242	Oct 15/2021	
245	Jun 15/2022		207	Oct 15/2021		243	Oct 15/2021	
R 246	Oct 15/2023		208	Oct 15/2021		244	Oct 15/2021	
R 247	Oct 15/2023		209	Oct 15/2021		245	Oct 15/2021	
R 248	Oct 15/2023		210	Oct 15/2021		246	Oct 15/2021	
R 249	Oct 15/2023		211	Oct 15/2021		247	Oct 15/2021	
250	Jun 15/2022		212	Oct 15/2021		248	Oct 15/2021	
251	Jun 15/2022		213	Oct 15/2021				
252	Jun 15/2022		214	Oct 15/2021				
253	Jun 15/2022		215	Oct 15/2021				
254	Jun 15/2022		216	Oct 15/2021				
255	Jun 15/2022		217	Oct 15/2021				
256	Jun 15/2022		218	Oct 15/2021				
257	Jun 15/2022		219	Oct 15/2021				
258	Jun 15/2022		220	Oct 15/2021				
259	Jun 15/2022		221	Oct 15/2021				
260	Jun 15/2022		222	Oct 15/2021				
261	Jun 15/2022		223	Oct 15/2021				
262	Jun 15/2022		224	Oct 15/2021				
263	Jun 15/2022		225	Oct 15/2021				
264	Jun 15/2022		226	Oct 15/2021				
265	Jun 15/2022		227	Oct 15/2021				
266	Jun 15/2022		228	Oct 15/2021				
267	Jun 15/2022		229	Oct 15/2021				
268	Jun 15/2022		230	Oct 15/2021				
269	Jun 15/2022		231	Oct 15/2021				
270	Jun 15/2022		232	Oct 15/2021				
271	Jun 15/2022		233	Oct 15/2021				
272	Jun 15/2022		234	Oct 15/2021				
273	Jun 15/2022		235	Oct 15/2021				
274	Jun 15/2022		236	Oct 15/2021				

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

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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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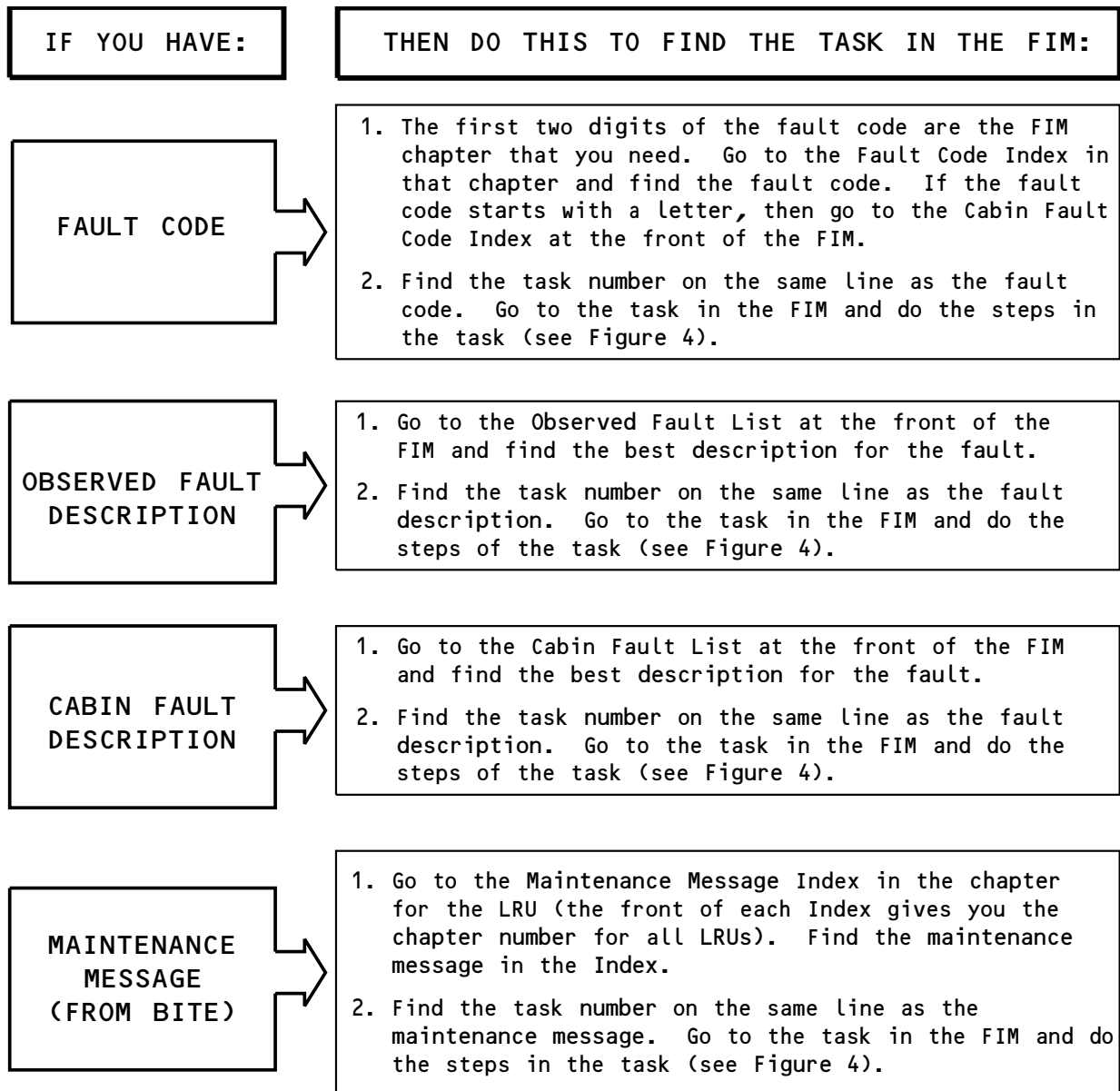
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G04979 S0000148579_V2

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

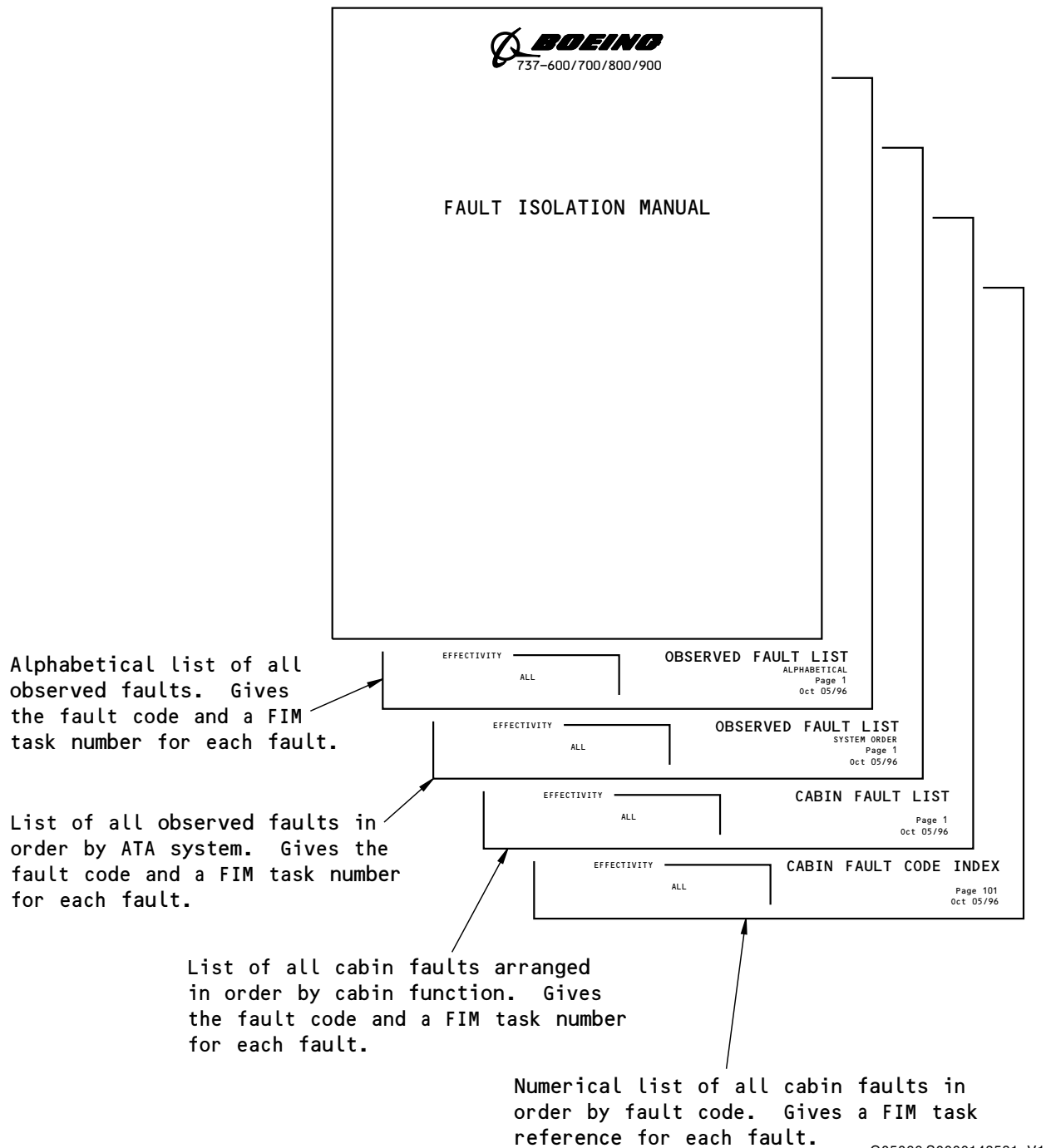
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Subjects at Front of FIM
Figure 5

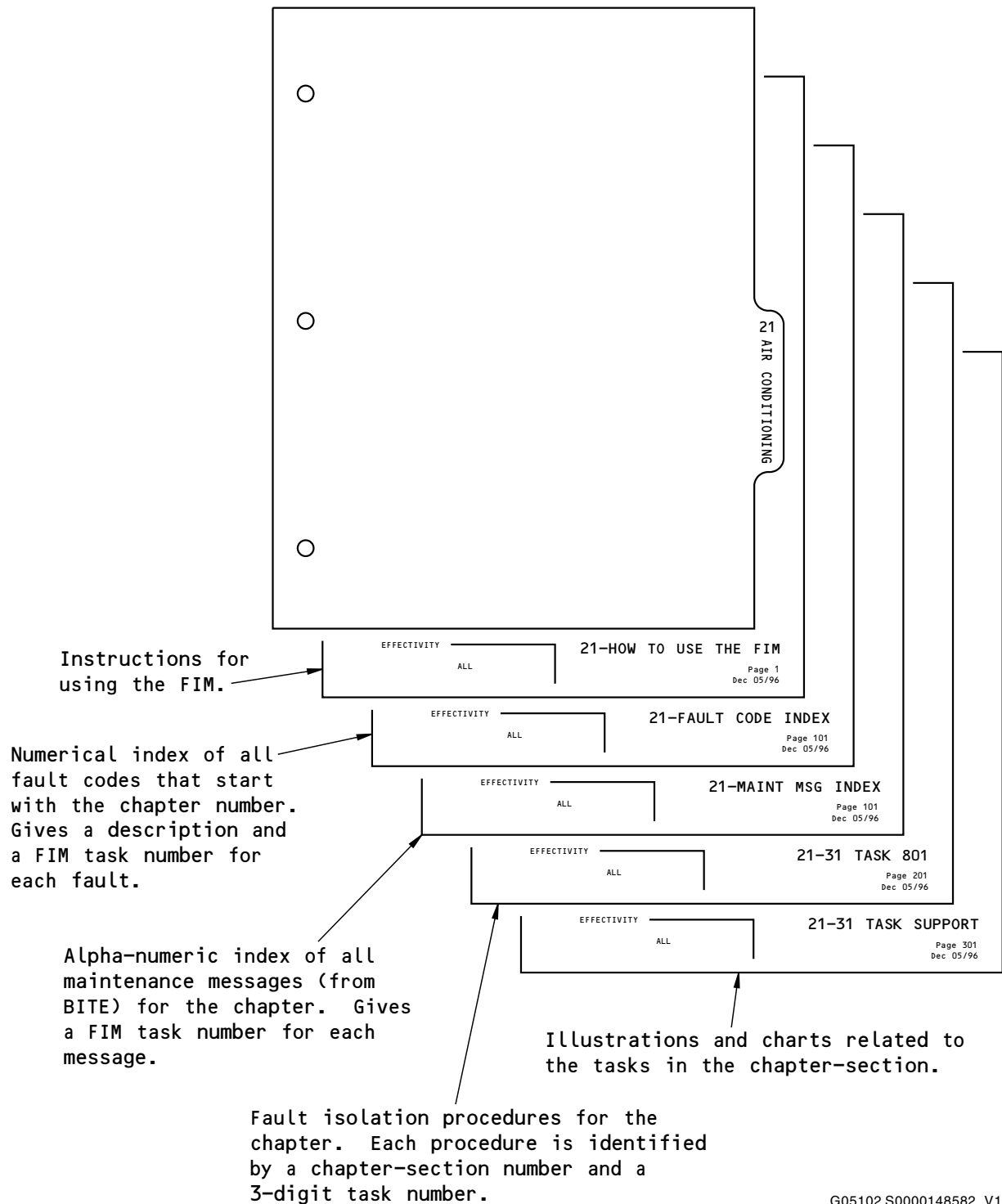
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G05102 S0000148582_V1

Subjects in Each FIM Chapter
Figure 6

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 001 00	Autopilot: Flight Crew is unable to arm LNAV on the Ground before Takeoff.	22-11 TASK 830
221 010 00	Autopilot: A/P red warning annunciator light on steady.	22-11 TASK 801
221 015 00	Autoflight annunciator: FMC annunciator light stays on.	22-11 TASK 858
221 020 00	Autopilot: A/P amber warning annunciator light on flashing, autopilot went to CWS mode.	22-11 TASK 801
221 030 00	MACH TRIM FAIL light: light on.	22-11 TASK 801
221 040 00	MACH TRIM FAIL light: light on when MASTER CAUTION switch is pushed.	22-11 TASK 801
221 050 00	SPEED TRIM FAIL light: light on.	22-11 TASK 849
221 060 00	SPEED TRIM FAIL light on: light on when MASTER CAUTION switch is pushed.	22-11 TASK 850
221 070 00	STAB OUT OF TRIM light: light on.	22-11 TASK 851
221 080 00	Autopilot: disengages automatically - CMD A engaged.	22-11 TASK 801
221 090 00	Autopilot: disengages automatically - CMD B engaged.	22-11 TASK 801
221 100 00	Autopilot: disengages automatically - CMD A or CMD B engaged.	22-11 TASK 801
221 102 00	Autopilot: Flight Crew is unable to arm VNAV on the Ground before Takeoff.	22-11 TASK 831
221 110 00	Autopilot: disengages automatically - CWS A engaged.	22-11 TASK 801
221 120 00	Autopilot: disengages automatically - CWS B engaged.	22-11 TASK 801
221 130 00	Autopilot: disengages automatically - CWS A or CWS B engaged.	22-11 TASK 801
221 140 00	Autopilot: A and B disengage automatically while in dual mode.	22-11 TASK 801
221 150 31	Flight director: FD status does not show on the flight mode annunciator with F/D on - captain's.	22-11 TASK 801
221 150 32	Flight director: FD status does not show on the flight mode annunciator with F/D on - first officer's.	22-11 TASK 801
221 150 48	Flight director: FD status does not show on the flight mode annunciator with F/D on - captain's and first officer's.	22-11 TASK 801
221 160 31	Flight director: does not operate, FD status does not show on the flight mode annunciator, autopilot not on - captain's.	22-11 TASK 801
221 160 32	Flight director: does not operate, FD status does not show on the flight mode annunciator, autopilot not on - first officer's.	22-11 TASK 801
221 160 48	Flight director: does not operate, FD status does not show on the flight mode annunciator, autopilot not on - captain's and first officer's.	22-11 TASK 801
221 165 31	Flight director: bars are biased out of view after TOGA button is pushed - captain's.	22-11 TASK 829

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**737-600/700/800/900
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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 165 32	Flight director: bars are biased out of view after TOGA button is pushed - first officer's.	22-11 TASK 829
221 170 31	Flight director: FD flag shows on flight director display - captain's.	22-11 TASK 801
221 170 32	Flight director: FD flag shows on flight director display - first officer's.	22-11 TASK 801
221 170 48	Flight director: FD flag shows on flight director display - captain's and first officer's.	22-11 TASK 801
221 180 00	Autopilot: Status does not show on the flight mode annunciator, switch lights are on.	22-11 TASK 801
221 190 31	Flight director: TO/GA pitch mode does not show on the flight mode annunciator for takeoff when TO/GA switch is pushed and F/D on - captain's.	22-11 TASK 801
221 190 32	Flight director: TO/GA pitch mode does not show on the flight mode annunciator for takeoff when TO/GA switch is pushed and F/D on - first officer's.	22-11 TASK 801
221 190 48	Flight director: TO/GA pitch mode does not show on the flight mode annunciator for takeoff when TO/GA switch is pushed and F/D on - captain's and first officer's.	22-11 TASK 801
221 200 31	Autopilot: TO/GA pitch mode does not show on the flight mode annunciator for go-around when TO/GA switch is pushed and F/D on - captain's.	22-11 TASK 801
221 200 32	Autopilot: TO/GA pitch mode does not show on the flight mode annunciator for go-around when TO/GA switch is pushed and F/D on - first officer's.	22-11 TASK 801
221 200 48	Autopilot: TO/GA pitch mode does not show on the flight mode annunciator for go-around when TO/GA switch is pushed and F/D on - captain's and first officer's.	22-11 TASK 801
221 201 00	Autopilot: NO AUTOLAND shows on the ENG 1 (ENG 2) Display.	22-11 TASK 838
221 202 00	Autopilot: NO LAND 3 shows on the engine display.	22-11 TASK 855
221 203 00	Autopilot: NLND3 LCH shows in DFCS BITE FAULT HISTORY.	22-17 TASK 807
221 204 00	Autopilot: NO ALND LCH shows in DFCS BITE FAULT HISTORY.	22-17 TASK 807
221 205 00	Autopilot: P MODE FAIL shows in DFCS BITE FAULT HISTORY.	22-11 TASK 801
221 206 00	Autopilot: R MODE FAIL shows in DFCS BITE FAULT HISTORY.	22-11 TASK 801
221 207 00	Autopilot: SPDTRM LCH shows in DFCS BITE FAULT HISTORY.	22-17 TASK 807
221 210 31	Flight director: pitch or roll mode does not engage or disengages automatically, flight command display goes out of view - captain's.	22-11 TASK 801

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 210 32	Flight director: pitch or roll mode does not engage or disengages automatically, flight command display goes out of view - first officer's.	22-11 TASK 801
221 210 48	Flight director: pitch or roll mode does not engage or disengages automatically, flight command display goes out of view - captain's and first officer's.	22-11 TASK 801
221 220 00	Autopilot: pitch or roll mode does not engage or disengages automatically, autopilot went to CWS mode - CMD A engaged.	22-11 TASK 801
221 230 00	Autopilot: pitch or roll mode does not engage or disengages automatically, autopilot went to CWS mode - CMD B engaged.	22-11 TASK 801
221 240 00	Autopilot: pitch or roll mode does not engage or disengages automatically, autopilot went to CWS mode - CMD A or CMD B engaged.	22-11 TASK 801
221 250 00	Autopilot: does not keep pitch attitude - CWS A engaged.	22-11 TASK 801
221 260 00	Autopilot: does not keep pitch attitude - CWS B engaged.	22-11 TASK 801
221 270 00	Autopilot: does not keep pitch attitude - CWS A or CWS B engaged.	22-11 TASK 801
221 280 00	Autopilot: does not keep roll attitude - CWS A engaged.	22-11 TASK 801
221 290 00	Autopilot: does not keep roll attitude - CWS B engaged.	22-11 TASK 801
221 300 00	Autopilot: does not keep roll attitude - CWS A or CWS B engaged.	22-11 TASK 801
221 310 00	Autopilot: Airplane has pitch oscillation (porpoises) during multi-channel approach.	22-16 TASK 801
221 320 00	Autopilot: Airplane has pitch oscillation (porpoises) with any A/P engaged in CMD.	22-16 TASK 801
221 330 00	Autopilot: Airplane does not go to set altitude with V/S, LVL CHG, or VNAV pitch mode set - CMD A engaged.	22-11 TASK 801
221 340 00	Autopilot: Airplane does not go to set altitude with V/S, LVL CHG, or VNAV pitch mode set - CMD B engaged.	22-11 TASK 801
221 350 00	Autopilot: Airplane does not go to set altitude with V/S, LVL CHG, or VNAV pitch mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 360 31	Flight director: Display does not move correctly to guide the airplane to the set altitude - captain's.	22-11 TASK 801
221 360 32	Flight director: Display does not move correctly to guide the airplane to the set altitude - first officer's.	22-11 TASK 801
221 360 48	Flight director: Display does not move correctly to guide the airplane to the set altitude - captain's and first officer's.	22-11 TASK 801
221 370 00	Autopilot: Airplane does not go to the set heading or keep the set heading with HDG SEL roll mode set - CMD A engaged.	22-11 TASK 801
221 380 00	Autopilot: Airplane does not go to the set heading or keep the set heading with HDG SEL roll mode set - CMD B engaged.	22-11 TASK 801

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 390 00	Autopilot: Airplane does not go to the set heading or keep the set heading with HDG SEL roll mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 400 00	Autopilot: Airplane does not keep the set heading - CWS A engaged.	22-11 TASK 801
221 410 00	Autopilot: Airplane does not keep the set heading - CWS B engaged.	22-11 TASK 801
221 420 00	Autopilot: Airplane does not keep the set heading - CWS A or CWS B engaged.	22-11 TASK 801
221 430 00	Autopilot: Airplane does not keep the set airspeed with MCP SPD (LVL CHG) pitch mode set - CMD A engaged.	22-11 TASK 801
221 440 00	Autopilot: Airplane does not keep the set airspeed with MCP SPD (LVL CHG) pitch mode set - CMD B engaged.	22-11 TASK 801
221 450 00	Autopilot: Airplane does not keep the set airspeed with MCP SPD (LVL CHG) pitch mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 460 00	Autopilot: Airplane does not keep the set course with VOR roll mode set - CMD A engaged.	22-11 TASK 801
221 470 00	Autopilot: Airplane does not keep the set course with VOR roll mode set - CMD B engaged.	22-11 TASK 801
221 480 00	Autopilot: Airplane does not keep the set course with VOR roll mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 490 00	Autopilot: Airplane does not keep the same altitude with ALT HLD pitch mode set - CMD A engaged.	22-11 TASK 801
221 500 00	Autopilot: Airplane does not keep the same altitude with ALT HLD pitch mode set - CMD B engaged.	22-11 TASK 801
221 510 00	Autopilot: Airplane does not keep the same altitude with ALT HLD pitch mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 520 00	Autopilot: Airplane does not go to the set vertical speed with V/S pitch mode set - CMD A engaged.	22-11 TASK 801
221 530 00	Autopilot: Airplane does not go to the set vertical speed with V/S pitch mode set - CMD B engaged.	22-11 TASK 801
221 540 00	Autopilot: Airplane does not go to the set vertical speed with V/S pitch mode set - CMD A or CMD B engaged.	22-11 TASK 801
221 550 31	Autopilot: Does not disengage when disengage switch is pushed - captain's control column.	22-13 TASK 809
221 550 32	Autopilot: Does not disengage when disengage switch is pushed - first officer's control column.	22-13 TASK 809
221 560 00	Autopilot: Does not disengage when disengage switch is pushed - mode control panel.	22-11 TASK 803
221 570 00	Autopilot: Does not disengage when CMD switch is pushed to off - CMD A engaged.	22-11 TASK 803

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 580 00	Autopilot: Does not disengage when CMD switch is pushed to off - CMD B engaged.	22-11 TASK 803
221 590 00	Autopilot: Does not disengage when CMD switch is pushed to off - CMD A or CMD B engaged.	22-11 TASK 803
221 600 00	Autopilot: Does not disengage when CWS switch is pushed to off - CWS A engaged.	22-11 TASK 803
221 610 00	Autopilot: Does not disengage when CWS switch is pushed to off - CWS B engaged.	22-11 TASK 803
221 620 00	Autopilot: Does not disengage when CWS switch is pushed to off - CWS A or CWS B engaged.	22-11 TASK 803
221 625 00	Autopilot: does not engage when CMD switch is pushed during flight.	22-11 TASK 856
221 630 00	Autopilot: Does not engage when CMD switch is pushed, switch lights do not come on and CMD status does not show on the flight mode annunciator - CMD A.	22-11 TASK 801
221 640 00	Autopilot: Does not engage when CMD switch is pushed, switch lights do not come on and CMD status does not show on the flight mode annunciator - CMD B.	22-11 TASK 801
221 650 00	Autopilot: Does not engage when CMD switch is pushed, switch lights do not come on and CMD status does not show on the flight mode annunciator - CMD A or CMD B.	22-11 TASK 801
221 660 00	Autopilot: Does not engage when CWS switch is pushed, switch lights do not come on, CWS P and CWS R status do not show on the flight mode annunciator - CWS A.	22-11 TASK 801
221 670 00	Autopilot: Does not engage when CWS switch is pushed, switch lights do not come on, CWS P and CWS R status do not show on the flight mode annunciator - CWS B.	22-11 TASK 801
221 680 00	Autopilot: Does not engage when CWS switch is pushed, switch lights do not come on, CWS P and CWS R status do not show on the flight mode annunciator - CWS A or CWS B.	22-11 TASK 801
221 690 00	Autopilot: Does not engage in dual mode, CMD A engages, CMD B does not engage, FLARE pitch mode does not show on the flight mode annunciator.	22-17 TASK 807
221 700 00	Autopilot: Does not engage in dual mode, CMD B engages, CMD A does not engage, FLARE pitch mode does not show on the flight mode annunciator.	22-17 TASK 807
221 710 00	Autopilot: goes more than the set bank angle limit in HDG SEL or VOR - CMD A engaged.	22-11 TASK 801
221 720 00	Autopilot: goes more than the set bank angle limit in HDG SEL or VOR - CMD B engaged.	22-11 TASK 801
221 730 00	Autopilot: goes more than the set bank angle limit in HDG SEL or VOR - CMD A or CMD B engaged.	22-11 TASK 801

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
221 740 00	Autopilot: goes less than the normal bank angle with any A/P engaged in CMD.	22-11 TASK 801
221 750 00	Autopilot: Airplane does not flare correctly during multi-channel approach, FLARE shows normal on the flight mode annunciator.	22-11 TASK 801
221 760 00	Autopilot: Airplane roll is not smooth (jerky) with any A/P engaged in CMD.	22-11 TASK 801
221 770 00	Mode Control Panel: ALTITUDE window display does not change with altitude selector switch change.	22-11 TASK 803
221 775 00	Mode Control Panel: ALTITUDE window problem - stays at 50000.	22-11 TASK 853
221 780 00	Mode Control Panel: ALTITUDE window display does not show.	22-11 TASK 803
221 790 31	Mode Control Panel: COURSE window display does not change with course selector switch change - captain's.	22-11 TASK 803
221 790 32	Mode Control Panel: COURSE window display does not change with course selector switch change - first officer's.	22-11 TASK 803
221 800 31	Mode Control Panel: COURSE window display does not show - captain's.	22-11 TASK 803
221 800 32	Mode Control Panel: COURSE window display does not show - first officer's.	22-11 TASK 803
221 810 00	Mode Control Panel: HEADING window display does not change with heading selector switch change.	22-11 TASK 803
221 820 00	Mode Control Panel: HEADING window display does not show.	22-11 TASK 803
221 830 00	Mode Control Panel: VERT SPEED window display does not change with vertical speed selector change.	22-11 TASK 803
221 840 00	Mode Control Panel: VERT SPEED window display does not show.	22-11 TASK 803
221 860 00	Mode Control Panel: lower switch light does not come on for all mode switches.	22-11 TASK 803
221 870 00	Mode Control Panel: one of the switch lights does not come on for one mode switch.	22-11 TASK 803
221 880 00	Mode Control Panel: upper switch light does not come on for all mode switches.	22-11 TASK 803
221 890 00	Mode Control Panel: IAS/MACH window display does not change with selector switch change.	22-11 TASK 803
221 900 00	Mode Control Panel: IAS/MACH window display does not show.	22-11 TASK 803
221 935 00	Stabilizer runaway while the autopilot is engaged.	22-11 TASK 839
221 940 00	Autopilot: control columns move when the autopilot engages.	22-16 TASK 802
221 950 00	Autopilot: Control wheels move when the autopilot engages.	22-16 TASK 803
221 960 00	Autopilot: Airplane does not align correctly with runway during approach.	22-11 TASK 825

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
222 010 00	YAW DAMPER light: Does not go off with YAW DAMPER switch at ON.	27-32 TASK 801
222 020 00	Yaw damper: operation not normal.	27-32 TASK 801
222 030 00	Yaw damper: disengaged automatically, YAW DAMPER light came on.	27-32 TASK 801
223 010 31	Autothrottle: selected target speed bug problem on the mach airspeed indicator - captain's.	22-32 TASK 803
223 010 32	Autothrottle: selected target speed bug problem on the mach airspeed indicator - first officer's.	22-32 TASK 803
223 020 48	Autothrottle: does not keep N1 limit in N1 mode - engine 1 and engine 2.	22-32 TASK 801
223 020 51	Autothrottle: does not keep N1 limit in N1 mode - engine 1.	22-32 TASK 801
223 020 52	Autothrottle: does not keep N1 limit in N1 mode - engine 2.	22-32 TASK 801
223 030 48	Autothrottle: does not keep set speed in SPEED mode - engine 1 and engine 2.	22-32 TASK 801
223 030 51	Autothrottle: does not keep set speed in SPEED mode - engine 1.	22-32 TASK 801
223 030 52	Autothrottle: does not keep set speed in SPEED mode - engine 2.	22-32 TASK 801
223 040 48	Autothrottle: engine N1 speed fluctuates, engine N1 speed is normal with autothrottle OFF - engine 1 and engine 2.	22-32 TASK 801
223 040 51	Autothrottle: engine N1 speed fluctuates, engine N1 speed is normal with autothrottle OFF - engine 1.	22-32 TASK 801
223 040 52	Autothrottle: engine N1 speed fluctuates, engine N1 speed is normal with autothrottle OFF - engine 2.	22-32 TASK 801
223 050 00	Autothrottle: Status does not show on Flight Mode Annunciator (FMA).	22-32 TASK 807
223 060 48	Autothrottle: Thrust lever does not move forward when TO/GA switch is pushed - engine 1 and engine 2.	22-32 TASK 804
223 060 51	Autothrottle: Thrust lever does not move forward when TO/GA switch is pushed - engine 1.	22-32 TASK 804
223 060 52	Autothrottle: Thrust lever does not move forward when TO/GA switch is pushed - engine 2.	22-32 TASK 804
223 070 48	Autothrottle: Does not go to full rated N1 when TO/GA switch is pushed a second time during go-around - engine 1 and engine 2.	22-32 TASK 804
223 070 51	Autothrottle: Does not go to full rated N1 when TO/GA switch is pushed a second time during go-around - engine 1.	22-32 TASK 804
223 070 52	Autothrottle: Does not go to full rated N1 when TO/GA switch is pushed a second time during go-around - engine 2.	22-32 TASK 804
223 080 48	Autothrottle: Does not go to reduced N1 when TO/GA switch is pushed one time during go-around - engine 1 and engine 2.	22-32 TASK 804

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
223 080 51	Autothrottle: Does not go to reduced N1 when TO/GA switch is pushed one time during go-around - engine 1.	22-32 TASK 804
223 080 52	Autothrottle: Does not go to reduced N1 when TO/GA switch is pushed one time during go-around - engine 2.	22-32 TASK 804
223 090 00	Autothrottle: Status mode does not change automatically.	22-32 TASK 807
223 100 48	Autothrottle: Thrust lever does not move back in RETARD mode - engine 1 and engine 2.	22-32 TASK 802
223 100 51	Autothrottle: Thrust lever does not move back in RETARD mode - engine 1.	22-32 TASK 802
223 100 52	Autothrottle: Thrust lever does not move back in RETARD mode - engine 2.	22-32 TASK 802
223 110 00	Autothrottle: does not automatically disengage after touchdown.	22-32 TASK 806
223 120 00	Autothrottle: A/T amber warning annunciator light on flashing.	22-32 TASK 801
223 130 00	Autothrottle: disengages automatically.	22-32 TASK 806
223 140 51	Autothrottle: Does not disengage when disengage switch is pushed - engine 1 thrust lever.	22-32 TASK 805
223 140 52	Autothrottle: Does not disengage when disengage switch is pushed - engine 2 thrust lever.	22-32 TASK 805
223 150 00	Autothrottle: overcontrols with A/T mode engaged.	22-32 TASK 808
223 160 48	Autothrottle: Thrust lever problem - engine 1 and engine 2.	22-32 TASK 808
223 160 51	Autothrottle: Thrust lever problem - engine 1.	22-32 TASK 808
223 160 52	Autothrottle: Thrust lever problem - engine 2.	22-32 TASK 808
223 170 00	Autothrottle: does not arm, ARM light does not come on, ARM does not show on the flight mode annunciator.	22-32 TASK 810
223 180 00	Autothrottle: thrust levers are split, OK with autothrottle disengaged.	22-32 TASK 811
223 190 00	Autothrottle: Does not disengage when thrust levers are split.	22-32 TASK 811
223 200 00	Autothrottle: mode does not change when mode switch is pushed.	22-32 TASK 809
223 220 00	A/T LIMIT indication shows on autothrottle thrust mode display.	22-32 TASK 815

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Air Data Inertial Reference System	ADIRS	34
Air Traffic Controller Transponder - 1 (Left)	ATC XPDR - 1 (L)	34
Air Traffic Controller Transponder - 2 (Right)	ATC XPDR - 2 (R)	34
Airborne Vibration Monitor System Signal Conditioner	AVM SIG COND	77
Antiskid Control Unit	ANTISKID	32
Attendant Control Panel	ACP	23
Automatic Direction Finder Receiver - 1	ADF RECVR - 1	34
Automatic Direction Finder Receiver - 2	ADF RECVR - 2	34
Autothrottle Computer	A/T COMPUTER	22
Auxiliary Power Unit	APU	49
Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
Cabin Pressure Controller	CAB PRESS CON	21
Cargo Electronic Unit - Lower Aft	CEU - LWR AFT	26
Cargo Electronic Unit - Lower Forward	CEU - LWR FWD	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Fire Control Panel	CFCP	26
Common Display System	CDS	31
Compartment Overheat Detection Control Module	WING/BODY OHT	26
Digital Flight Control System	DFCS	22
Distance Measurement Equipment Interrogator	DME INTRROGTR	34
Electrical Meters, Battery, and Galley Power Module	P5-13	24
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Electronic Engine Controller - 2	ENGINE - 2	73
Emergency Locator Transmitter	ELT	23
Engine Accessory Unit	EAU	78
Engine Accessory Unit/TR DEPLOY ENG 1	EAU/TR DPLOY-ENG 1	78
Engine Accessory Unit/TR DEPLOY ENG 2	EAU/TR DPLOY-ENG 2	78
Engine Accessory Unit/TR STOW ENG 1	EAU/TR STOW-ENG 1	78
Engine Accessory Unit/TR STOW ENG 2	EAU/TR STOW-ENG 2	78
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Enhanced Digital Flight Control Computer-A	EDFCC-A	22
Enhanced Digital Flight Control System	EDFCS	22
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Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28
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Ground Proximity Computer	GROUND PROX	34
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Multi-Mode Receiver	MMR	34
Nitrogen Generation System BITE Display Unit	NGS	47
Pack Flow Temperature Controller	PFTC	21
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Satellite Communications System	SATCOM	23
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
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Window Heat Control Unit 1 - Left Forward and Right Side	WHCU1 - L FWD/R SIDE	30
Window Heat Control Unit 2 - Right Forward and Left Side	WHCU2 - R FWD/L SIDE	30

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
A/T COMPUTER	EEC 1 PERFORM R NOT IN CTRL	22-31 TASK 806
A/T COMPUTER	EEC 2 PERFORM R NOT IN CTRL	22-31 TASK 806
DFCS	P CMD MON	22-14 TASK 801
DFCS	P2 A/P DISENG TST	22-14 TASK 801
DFCS	P2 AIL CMD MON	22-14 TASK 801
DFCS	P2 E AIL LIM MON FAIL	22-14 TASK 801
DFCS	P2 ELV ACT NOT TRIMMED	22-14 TASK 801
DFCS	P2 ELV CMD MON	22-14 TASK 801
DFCS	P2 ELV CMD WRAP TST	22-14 TASK 801
DFCS	P2 FGN P SPM	22-14 TASK 801
DFCS	P2 FGN R SPM	22-14 TASK 801
DFCS	P2 HB MON	22-14 TASK 801
DFCS	P2 INRACTV RDY	22-14 TASK 801
DFCS	P2 INRACTV TST CMPLT	22-14 TASK 801
DFCS	P2 LCL P SPM	22-14 TASK 801
DFCS	P2 LCL R SPM	22-14 TASK 801
DFCS	P2 LONGTERM PWRUP CMPL	22-14 TASK 801
DFCS	P2 STBTRM DELAY TST	22-14 TASK 801
DFCS	PITCH F/D COMP	22-14 TASK 801
DFCS	POWER SUPPLY	22-14 TASK 801
DFCS	PR 1 10M STACK OVFL	22-14 TASK 801
DFCS	PR 1 10M TASK TICKET	22-14 TASK 801
DFCS	PR 2 50M STACK OVFL	22-14 TASK 801
DFCS	PR 2 50M TASK TICKET	22-14 TASK 801
DFCS	PR 3 100M STACK OVFL	22-14 TASK 801
DFCS	PR 3 100M TASK TICKET	22-14 TASK 801
DFCS	PR 4 BKGND STACK OVFL	22-14 TASK 801
DFCS	PR 4 BKGND TASK TICKET	22-14 TASK 801
DFCS	PWRUP RAM TST	22-14 TASK 801
DFCS	PWRUP ROM TST	22-14 TASK 801
DFCS	R A/P ACT MON	22-14 TASK 801
DFCS	R CMD MON	22-14 TASK 801
DFCS	R CMD MON	22-14 TASK 801
DFCS	RAM TST	22-14 TASK 801
DFCS	RESTART FAIL	22-14 TASK 801

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DFCS	ROM CRC	22-14 TASK 801
DFCS	RUD ACTUATOR (J1A-F11,G11)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1A-K09,J1B-K09)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1B-H06,H07)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1B-K10,J10)	22-17 TASK 804
DFCS	RUD ACTUATOR	22-17 TASK 804
DFCS	RUD POS SEN (J1A-G09,G10,H09)	22-17 TASK 805
DFCS	SERIAL WRAP	22-14 TASK 801
DFCS	STIMS NOT ZEROED	22-14 TASK 801
DFCS	XCHAN DISC WRAP FAIL	22-14 TASK 801
EDFCC-A	22-31001 NO ADIRU(ADC) DATA	22-31 TASK 807
EDFCC-A	22-31004 NO ADIRU(IRU) DATA	22-31 TASK 807
EDFCC-A	22-31005 NO ADIRU(IRU) DATA	22-31 TASK 807
EDFCC-A	22-31011 AOA VANE INV	22-31 TASK 813
EDFCC-A	22-31012 AOA VANE INV	22-31 TASK 813
EDFCC-A	22-31017 AOA INV	22-11 TASK 806
EDFCC-A	22-31018 AOA INV	22-11 TASK 807
EDFCC-A	22-31024 NO ADIRU(ADC) DATA	22-31 TASK 807
EDFCC-A	22-31035 VANE DIFF	22-31 TASK 813
EDFCC-A	22-31046 ASM 1 NO DATA	22-31 TASK 821
EDFCC-A	22-31051 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31052 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31056 ASM 2 NO DATA	22-31 TASK 821
EDFCC-A	22-31057 ASM 1 NO INPUT	22-31 TASK 822
EDFCC-A	22-31058 ASM 2 NO INPUT	22-31 TASK 822
EDFCC-A	22-31059 ASM 1 DATA INALID	22-31 TASK 822
EDFCC-A	22-31060 ASM 2 DATA INALID	22-31 TASK 822
EDFCC-A	22-31061 MCP FAULT	22-31 TASK 804
EDFCC-A	22-31071 NO FMC DATA (J1A-E04,D04)	22-31 TASK 803
EDFCC-A	22-31072 A/T DISC	22-31 TASK 801
EDFCC-A	22-31074 MCP A/T ARM FAIL	22-31 TASK 804
EDFCC-A	22-31081 NO SMYDC DATA	22-31 TASK 808
EDFCC-A	22-31082 NO SMYDC DATA	22-31 TASK 808
EDFCC-A	22-31221 TOGA SW INPUT FAIL	22-13 TASK 810
EDFCC-A	22-31222 TOGA SW INPUT FAIL	22-13 TASK 811

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EDFCC-A	22-31263 A/T 28 VDC PWR INV	22-31 TASK 810
EDFCC-A	22-31273 ASM 1 RATE NOT ZERO	22-31 TASK 822
EDFCC-A	22-31274 ASM 2 RATE NOT ZERO	22-31 TASK 822
EDFCC-A	22-31281 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCC-A	22-31282 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCC-A	22-31294 ASM 1 TORQ NOT ZERO	22-31 TASK 822
EDFCC-A	22-31295 ASM 2 TORQ NOT ZERO	22-31 TASK 822
EDFCC-A	22-31296 ASM 1 NO EEC DATA	22-31 TASK 823
EDFCC-A	22-31297 ASM 2 NO EEC DATA	22-31 TASK 823
EDFCC-A	22-31303 FCC INTERNAL FAULT	22-14 TASK 801
EDFCC-A	22-31317 FCC INTERNAL FAULT	22-14 TASK 801
EDFCC-A	22-31341 PWRUP SOP PARITY	22-15 TASK 823
EDFCC-A	22-31343 PROGRAM PIN INV	22-15 TASK 823
EDFCC-A	22-31344 S/W CONFIG INV	22-31 TASK 801
EDFCC-A	22-31351 BITE ENTRY INHIBIT	22-11 TASK 826
EDFCC-A	22-31353 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCC-A	22-31354 FCC-B XCH-1 BUS	22-15 TASK 825
EDFCC-A	22-31359 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31360 NO FMC REQUEST	22-31 TASK 803
EDFCC-A	22-31361 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCC-A	22-31362 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCC-A	22-31363 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCC-A	22-31376 ADIRU(ADC)-1	22-31 TASK 807
EDFCC-A	22-31377 ADIRU(ADC) DATA INV	22-31 TASK 807
EDFCC-A	22-31378 ADIRU(IRU) DATA INVALID	22-31 TASK 807
EDFCC-A	22-31379 ADIRU(IRU) DATA INVALID	22-31 TASK 807
EDFCC-A	22-31385 RADIO ALT DATA INVALID	22-31 TASK 809
EDFCC-A	22-31388 FMC DATA INV	22-31 TASK 803
EDFCC-A	22-31397 SMYDC DATA INV	22-31 TASK 808
EDFCC-A	22-31398 SMYDC DATA INV	22-31 TASK 808
EDFCC-A	22-31399 ASM DATA INV	22-31 TASK 822
EDFCC-A	22-31400 ASM DATA INV	22-31 TASK 822
EDFCC-A	22-31401 PROG PIN ERR	22-15 TASK 823
EDFCC-A	22-31403 SMYDC FLAPS INV	22-31 TASK 808
EDFCC-A	22-31404 SMYDC FLAPS INV	22-31 TASK 808

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EDFCC-A	22-31410 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31411 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31412 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31413 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31425 RADIO ALT INV	22-31 TASK 809
EDFCC-A	22-31453 ASM 1 CONFIG INVALID	22-31 TASK 820
EDFCC-A	22-31454 ASM 2 CONFIG INVALID	22-31 TASK 820
EDFCC-A	22-31501 NO ASM DATA	22-31 TASK 822
EDFCC-A	22-31502 NO ASM DATA	22-31 TASK 822
EDFCC-A	22-31511 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31512 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31513 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31514 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31515 EEC FAULT	22-31 TASK 806
EDFCC-A	22-31516 EEC FAULT	22-31 TASK 806
EDFCC-A	22-31517 ASM 1 LOGIC PWR	22-31 TASK 826
EDFCC-A	22-31518 ASM 1 MOTOR PWR	22-31 TASK 826
EDFCC-A	22-31519 ASM 2 LOGIC PWR	22-31 TASK 826
EDFCC-A	22-31520 ASM 2 MOTOR PWR	22-31 TASK 826
EDFCC-A	22-31523 TARGET MON	22-31 TASK 818
EDFCC-A	22-31524 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31525 THROT SPLIT	22-31 TASK 812
EDFCC-A	22-31531 BITE ENTRY INHIBIT	22-11 TASK 801
EDFCC-A	22-31532 BITE ENTRY INHIBIT	22-11 TASK 801
EDFCC-A	22-31538 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31539 A/T DISENG WARN CAPT	22-32 TASK 814
EDFCC-A	22-31540 A/T DISENG WARN F/O	22-32 TASK 814
EDFCC-A	22-31541 A/T ENGAGE HOLD ON	22-32 TASK 810
EDFCC-A	22-31542 THROTTLE HOLD	22-31 TASK 802
EDFCC-A	22-31543 A/T ENG 28 VDC INV	22-31 TASK 830
EDFCC-A	22-31544 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31545 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31546 A/T WARN RESET	22-15 TASK 804
EDFCC-A	22-31547 A/T WARN RESET	22-15 TASK 804
EDFCC-A	22-31578 ASM 1 CONFIG INV 00	22-31 TASK 820

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCC-A	22-31579 ASM 2 CONFIG INV 00	22-31 TASK 820
EDFCC-A	22-31580 ASM 1 CONFIG INV 10	22-31 TASK 820
EDFCC-A	22-31581 ASM 2 CONFIG INV 01	22-31 TASK 820
EDFCC-A	22-31582 ASM 1 INTERNAL FAULT	22-31 TASK 822
EDFCC-A	22-31583 ASM 2 INTERNAL FAULT	22-31 TASK 822
EDFCC-A	22-31584 ASM 1 LOGIC VOLTAGE	22-31 TASK 826
EDFCC-A	22-31585 ASM 2 LOGIC VOLTAGE	22-31 TASK 826
EDFCC-A	22-31588 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31590 A/T -01 BUS FAIL	22-31 TASK 802
EDFCC-A	22-31610 MCP-3 DATA INV	22-31 TASK 804
EDFCC-A	22-31611 NO MCP-3 DATA	22-31 TASK 804
EDFCC-A	22-31671 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31672 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31673 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31674 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31675 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31676 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31677 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31678 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31679 REJECTED T/O	22-31 TASK 817
EDFCC-A	22-31680 T/O SET UP	22-31 TASK 817
EDFCC-A	22-31681 LATE TOGA	22-32 TASK 804
EDFCC-A	22-31682 THROTTLE MOVEMENT	22-31 TASK 802
EDFCC-A	22-31683 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31684 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31685 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31686 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31687 RATE MONITOR	22-32 TASK 819
EDFCC-A	22-31688 RATE MONITOR	22-32 TASK 819
EDFCC-A	22-31689 NO ENGINE RATINGS	22-31 TASK 806
EDFCC-A	22-31690 ENGINE FAILED	22-31 TASK 806
EDFCC-A	22-31691 NO TORQUE OR RATE TEST	22-31 TASK 825
EDFCC-A	22-31692 NO TORQUE OR RATE TEST	22-31 TASK 825
EDFCC-A	22-31696 ASM 1 MOTOR PWR INV	22-31 TASK 826
EDFCC-A	22-31728 FMC NO QCS	22-31 TASK 803

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EDFCC-A	22-31729 FCC A/T-01 BUS TO DEU	22-32 TASK 817
EDFCC-A	22-31742 DISCRETE WRAP FAIL	22-32 TASK 814
EDFCC-A	22-31745 FCC A/T-01 BUS TO DEU	22-32 TASK 817
EDFCC-A	22-31761 ASM 2 MOTOR PWR INV	22-31 TASK 826
EDFCC-A	22-31762 ASM 1 TRA RATE	22-31 TASK 822
EDFCC-A	22-31763 ASM 2 TRA RATE	22-31 TASK 822
EDFCC-A	22-31764 ASM 1 A/T DATA MISSING	22-31 TASK 821
EDFCC-A	22-31765 ASM 2 A/T DATA MISSING	22-31 TASK 821
EDFCC-A	22-31766 ASM 1 TRA POS	22-31 TASK 824
EDFCC-A	22-31767 ASM 2 TRA POS	22-31 TASK 824
EDFCC-A	22-31768 ASM 1 RATE CMD <> 0	22-31 TASK 822
EDFCC-A	22-31769 ASM 2 RATE CMD <> 0	22-31 TASK 822
EDFCC-A	22-31770 ASM 1 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31771 ASM 2 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31772 ASM 1 ACT BIT NOT SET	22-31 TASK 822
EDFCC-A	22-31773 ASM 2 ACT BIT NOT SET	22-31 TASK 822
EDFCC-A	22-31774 ASM 1 TRA POS(+)	22-31 TASK 827
EDFCC-A	22-31775 ASM 2 TRA POS(+)	22-31 TASK 827
EDFCC-A	22-31776 ASM 1 RATE FEEDBACK(+)	22-31 TASK 825
EDFCC-A	22-31777 ASM 2 RATE FEEDBACK(+)	22-31 TASK 825
EDFCC-A	22-31778 ASM 1 LIMIT/RATE/POS	22-31 TASK 824
EDFCC-A	22-31779 ASM 2 LIMIT/RATE/POS	22-31 TASK 824
EDFCC-A	22-31780 ASM 1 LIMIT FAIL	22-31 TASK 824
EDFCC-A	22-31781 ASM 2 LIMIT FAIL	22-31 TASK 824
EDFCC-A	22-31782 ASM 1 POS > EEC LIM	22-31 TASK 824
EDFCC-A	22-31783 ASM 2 POS > EEC LIM	22-31 TASK 824
EDFCC-A	22-31784 ASM 1 RATE FEEDBACK(-)	22-31 TASK 825
EDFCC-A	22-31785 ASM 2 RATE FEEDBACK(-)	22-31 TASK 825
EDFCC-A	22-31786 ASM 1 LIMIT BIT SET	22-31 TASK 822
EDFCC-A	22-31787 ASM 2 LIMIT BIT SET	22-31 TASK 822
EDFCC-A	22-31788 ASM 1 TRA POS(-)	22-31 TASK 827
EDFCC-A	22-31789 ASM 2 TRA POS(-)	22-31 TASK 827
EDFCC-A	22-31790 ASM 1 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31791 ASM 2 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31792 ASM 1 CONFIG INV 11	22-31 TASK 820

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EDFCC-A	22-31793 ASM 2 CONFIG INV 11	22-31 TASK 820
EDFCC-A	22-31794 ASM 1 10 DEG RATE	22-31 TASK 825
EDFCC-A	22-31795 ASM 2 10 DEG RATE	22-31 TASK 825
EDFCC-A	22-31803 ENGINE 1 FAILED	22-31 TASK 806
EDFCC-A	22-31804 ENGINE 2 FAILED	22-31 TASK 806
EDFCC-A	22-31805 RUD ACT TRQ LIM	22-17 TASK 804
EDFCC-A	22-31822 FMC DATA INV	22-31 TASK 803
EDFCS	22-11001 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11002 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11003 NO ADIRU(IRU) DATA	22-11 TASK 806
EDFCS	22-11004 NO ADIRU(IRU) DATA	22-11 TASK 806
EDFCS	22-11005 NO ADIRU(IRU) DATA	22-11 TASK 807
EDFCS	22-11006 NO ADIRU(IRU) DATA	22-11 TASK 807
EDFCS	22-11007 STATIC PRESS INV	22-15 TASK 811
EDFCS	22-11008 STATIC PRESS INV	22-15 TASK 811
EDFCS	22-11009 PITOT PRESS INV	22-15 TASK 810
EDFCS	22-11010 PITOT PRESS INV	22-15 TASK 810
EDFCS	22-11011 AOA VANE INV	22-11 TASK 823
EDFCS	22-11012 AOA VANE INV	22-11 TASK 824
EDFCS	22-11013 NO EFIS CP DATA	22-15 TASK 812
EDFCS	22-11014 NO EFIS CP DATA	22-15 TASK 812
EDFCS	22-11015 IRS TRANSFER FGN FAIL	22-13 TASK 801
EDFCS	22-11016 IRS TRANSFER LCL FAIL	22-13 TASK 801
EDFCS	22-11017 AOA INV	22-11 TASK 823
EDFCS	22-11018 AOA INV	22-11 TASK 824
EDFCS	22-11019 STATIC PRESS DATA INV	22-15 TASK 811
EDFCS	22-11020 STATIC PRESS DATA INV	22-15 TASK 811
EDFCS	22-11021 BARO ALT INV	22-15 TASK 811
EDFCS	22-11022 BARO ALT INV	22-15 TASK 811
EDFCS	22-11023 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11024 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11026 HDG REF SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11027 NO ISFD DATA	22-17 TASK 801
EDFCS	22-11028 HDG REF SW FAIL	22-11 TASK 801
EDFCS	22-11029 ADIRU(IRU) DATA ERR	22-11 TASK 806 or 22-11 TASK 807

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EDFCS	22-11031 NO A/T CMPTR DATA	22-11 TASK 813
EDFCS	22-11032 MACH INV/OUT OF RANGE	22-15 TASK 811
EDFCS	22-11033 MACH INV/OUT OF RANGE	22-15 TASK 811
EDFCS	22-11034 LCL IRS SW TRANSFERRED	22-13 TASK 801
EDFCS	22-11035 VANE DIFF	22-11 TASK 823 or 22-11 TASK 824
EDFCS	22-11036 TOGA AFTER WHEEL SPIN	22-11 TASK 801
EDFCS	22-11037 RADIO ALT DO NOT AGREE	22-11 TASK 805
EDFCS	22-11039 ADIRU/ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11040 ADIRU/ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11041 NO DME DATA	22-12 TASK 808
EDFCS	22-11042 NO DME DATA	22-12 TASK 808
EDFCS	22-11043 GEAR UP SW-1 FAIL	22-13 TASK 812
EDFCS	22-11044 GEAR UP SW-2 FAIL	22-13 TASK 812
EDFCS	22-11045 FMC DATA INV	22-16 TASK 833
EDFCS	22-11047 COLUMN FORCE INV	22-12 TASK 805
EDFCS	22-11048 COLUMN FORCE INV	22-12 TASK 805
EDFCS	22-11049 COLUMN FORCE INV	22-12 TASK 806
EDFCS	22-11050 COLUMN FORCE INV	22-12 TASK 806
EDFCS	22-11051 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11052 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11053 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11054 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11061 MCP FAULT	22-11 TASK 816
EDFCS	22-11062 FCC DATA INV	22-11 TASK 817
EDFCS	22-11063 NO MCP DATA	22-11 TASK 817
EDFCS	22-11064 ALT REF MON INV	22-11 TASK 816
EDFCS	22-11065 ALT REF MON INV	22-11 TASK 816
EDFCS	22-11066 MCP ALT REF MON INV	22-11 TASK 816
EDFCS	22-11067 MCP ALT REF MON INV	22-11 TASK 816
EDFCS	22-11068 F/D ON FGN FAIL	22-11 TASK 817
EDFCS	22-11069 F/D ON FGN FAIL	22-11 TASK 817
EDFCS	22-11070 G/S TUNE MISCOMPARE	22-11 TASK 857
EDFCS	22-11071 NO FMC DATA	22-11 TASK 811
EDFCS	22-11073 NO FMC DATA	22-11 TASK 812
EDFCS	22-11081 NO SMYDC DATA	22-15 TASK 826

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EDFCS	22-11082 NO SMYDC DATA (J1A-H04,G04)	22-15 TASK 826
EDFCS	22-11083 P A/P ACT MON	22-12 TASK 810
EDFCS	22-11084 P A/P ACT MON	22-12 TASK 810
EDFCS	22-11085 NAV FREQ TRANSFERRED	22-13 TASK 803
EDFCS	22-11086 NAV FREQ TRANSFERRED	22-13 TASK 803
EDFCS	22-11087 DUAL W/O FLARE H<350	22-13 TASK 807
EDFCS	22-11088 DUAL W/O FLARE H<350	22-13 TASK 806
EDFCS	22-11089 NO MMR/ILS DATA	22-11 TASK 809
EDFCS	22-11091 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11092 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11093 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11094 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11095 ILS XFR FAIL	22-13 TASK 803
EDFCS	22-11096 VOR INST XFR FAIL	22-13 TASK 803
EDFCS	22-11097 VOR XFR FAIL	22-13 TASK 803
EDFCS	22-11098 INST XFR FAIL	22-13 TASK 803
EDFCS	22-11099 NO VOR RCVR DATA	22-11 TASK 804
EDFCS	22-11100 NO VOR RCVR DATA	22-11 TASK 804
EDFCS	22-11101 LOC ANT SW FAIL	22-13 TASK 802
EDFCS	22-11102 LOC ANT SW FAIL	22-13 TASK 802
EDFCS	22-11103 NO MMR/ILS RCVR DATA	22-11 TASK 808
EDFCS	22-11104 NO MMR/ILS RCVR DATA	22-11 TASK 808
EDFCS	22-11105 NO MMR/ILS RCVR DATA	22-11 TASK 809
EDFCS	22-11106 NO MMR/ILS RCVR DATA	22-11 TASK 809
EDFCS	22-11108 ANT SW DISAGREE	22-13 TASK 802
EDFCS	22-11109 ANT SW DISAGREE	22-13 TASK 802
EDFCS	22-11110 ILS SW TRANSFERRED	22-13 TASK 803
EDFCS	22-11111 CDS/DEU-1	22-15 TASK 808
EDFCS	22-11112 NO CDS/DEU DATA	22-15 TASK 808
EDFCS	22-11113 NO CDS/DEU DATA	22-15 TASK 808
EDFCS	22-11114 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11115 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11116 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11117 ELV ENG FAIL	22-12 TASK 810
EDFCS	22-11118 ELV ENG FAIL	22-12 TASK 810

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EDFCS	22-11119 ELV SYNC INV>4 SEC	22-11 TASK 801
EDFCS	22-11120 ELV SYNC INV>4 SEC	22-11 TASK 801
EDFCS	22-11121 ELEV ACT FAIL	22-12 TASK 810
EDFCS	22-11122 ELEV ACT FAIL	22-12 TASK 810
EDFCS	22-11123 ELEV DETENT SOL FAIL	22-13 TASK 806
EDFCS	22-11124 ELEV DETENT SOL FAIL	22-13 TASK 807
EDFCS	22-11125 ELEV POS FAIL	22-12 TASK 812
EDFCS	22-11126 ELEV POS FAIL	22-12 TASK 812
EDFCS	22-11127 ELV ACT PRESS LCL INV	22-13 TASK 806
EDFCS	22-11128 ELV ACT PRESS FGN INV	22-13 TASK 806
EDFCS	22-11129 ELV ACT PRESS LCL INV	22-13 TASK 807
EDFCS	22-11130 ELV ACT PRESS FGN INV	22-13 TASK 807
EDFCS	22-11131 ELV ACT DETENT	22-14 TASK 803
EDFCS	22-11132 ELEV SERVO AMP FAIL	22-11 TASK 840
EDFCS	22-11133 ELV ACT DETENT	22-14 TASK 803
EDFCS	22-11134 ELEV SERVO AMP FAIL	22-11 TASK 840
EDFCS	22-11135 NSS POS FAIL	22-12 TASK 809
EDFCS	22-11136 NSS POS FAIL	22-12 TASK 809
EDFCS	22-11137 COLUMN FORCE APPLIED	22-12 TASK 805
EDFCS	22-11138 COLUMN FORCE APPLIED	22-12 TASK 805
EDFCS	22-11139 COLUMN FORCE APPLIED	22-12 TASK 806
EDFCS	22-11140 COLUMN FORCE APPLIED	22-12 TASK 806
EDFCS	22-11141 AIL QUAD MON	22-12 TASK 811
EDFCS	22-11142 AIL QUAD MON	22-12 TASK 811
EDFCS	22-11143 AIL ENG FAIL	22-13 TASK 804
EDFCS	22-11144 AIL ENG FAIL	22-13 TASK 805
EDFCS	22-11145 AIL POS FAIL	22-12 TASK 813
EDFCS	22-11146 AIL POS FAIL	22-12 TASK 813
EDFCS	22-11147 AIL ACT PRESS LCL INV	22-13 TASK 804
EDFCS	22-11148 AIL ACT PRESS FGN INV	22-13 TASK 804
EDFCS	22-11149 AIL ACT PRESS LCL INV	22-13 TASK 805
EDFCS	22-11150 AIL ACT PRESS FGN INV	22-13 TASK 805
EDFCS	22-11151 AIL ACT DETENT	22-14 TASK 804
EDFCS	22-11152 AIL AMP	22-14 TASK 804
EDFCS	22-11153 AIL ACT DETENT	22-14 TASK 804

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EDFCS	22-11154 AIL AMP	22-14 TASK 804
EDFCS	22-11155 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11156 WHEEL FORCE APPLIED (J1B-K06,J06)	22-12 TASK 804
EDFCS	22-11157 SPOIL-4 SIG FAIL	22-12 TASK 801
EDFCS	22-11158 SPOIL-4 SIG FAIL	22-12 TASK 801
EDFCS	22-11159 SPOIL-9 SIG FAIL	22-12 TASK 802
EDFCS	22-11160 SPOIL-9 SIG FAIL	22-12 TASK 802
EDFCS	22-11161 STAB TRIM FAIL	22-15 TASK 821
EDFCS	22-11162 COLUMN AFT FAIL	22-13 TASK 808
EDFCS	22-11163 COLUMN FWD FAIL	22-13 TASK 808
EDFCS	22-11164 NO STAB TRIM UP	22-15 TASK 819
EDFCS	22-11165 NO STAB TRIM DOWN	22-15 TASK 818
EDFCS	22-11166 TRIM UP	22-14 TASK 816
EDFCS	22-11167 STAB TRIM CLUTCH	22-14 TASK 818
EDFCS	22-11168 TRIM DOWN	22-14 TASK 817
EDFCS	22-11169 TRIM UP	22-14 TASK 816
EDFCS	22-11170 STAB TRIM CLUTCH	22-14 TASK 818
EDFCS	22-11171 TRIM DOWN	22-14 TASK 817
EDFCS	22-11172 SPEED TRIM FAIL	22-13 TASK 817
EDFCS	22-11173 STAB POS SEN INV	22-12 TASK 803
EDFCS	22-11174 STAB POS SEN INV	22-12 TASK 803
EDFCS	22-11175 STAB TRIM CUTOUT FAIL	22-13 TASK 813
EDFCS	22-11176 STAB TRIM MAIN ELECT	22-13 TASK 818
EDFCS	22-11177 STAB MOTOR	22-12 TASK 803
EDFCS	22-11178 STAB TRIM FAIL	22-12 TASK 803
EDFCS	22-11179 FLAPS DOWN	22-11 TASK 822
EDFCS	22-11180 TRIM UP FAIL	22-15 TASK 819
EDFCS	22-11181 TRIM DOWN FAIL	22-15 TASK 818
EDFCS	22-11182 AUTO STAB TRIM CUTOUT	22-13 TASK 813
EDFCS	22-11183 TRIM WARN ANN FAIL	22-13 TASK 814
EDFCS	22-11184 NEUTRAL SHIFT MON	22-12 TASK 809
EDFCS	22-11185 NEUTRAL SHIFT MON	22-12 TASK 809
EDFCS	22-11186 TRIM CMD RESPSE MON	22-11 TASK 854
EDFCS	22-11187 AIL ENG FAIL	22-11 TASK 801
EDFCS	22-11188 AIL ENG FAIL	22-11 TASK 801

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EDFCS	22-11189 AIL SYNC INV>4 SEC	22-12 TASK 813
EDFCS	22-11190 AIL SYNC INV>4 SEC	22-12 TASK 813
EDFCS	22-11191 MT CMD MON	22-14 TASK 829
EDFCS	22-11192 MT DISCRETES	22-14 TASK 821
EDFCS	22-11193 MT DISCRETES	22-14 TASK 819
EDFCS	22-11194 MT CMD MON	22-14 TASK 829
EDFCS	22-11195 MT DISCRETES	22-14 TASK 821
EDFCS	22-11196 MT DISCRETES	22-14 TASK 820
EDFCS	22-11197 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11198 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11199 MT 28 VDC INV	22-15 TASK 817
EDFCS	22-11200 MT CMD MON	22-12 TASK 815
EDFCS	22-11201 MACH TRIM WARN FAIL	22-13 TASK 816
EDFCS	22-11202 MT POS INV	22-13 TASK 815
EDFCS	22-11203 TRIM SENSORS INV	22-11 TASK 842
EDFCS	22-11204 TRIM SENSORS INV	22-11 TASK 842
EDFCS	22-11205 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11206 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11207 MT CMD MON BOTH INV	22-12 TASK 815
EDFCS	22-11208 MAIN ELECT TRIM	22-13 TASK 818
EDFCS	22-11209 FGN FAILS TO ENT TOGA	22-11 TASK 837
EDFCS	22-11210 FGN FAILS TO ENT TOGA	22-11 TASK 837
EDFCS	22-11211 FLAP POSN INV	22-12 TASK 807
EDFCS	22-11212 FLAP POSN INV	22-12 TASK 807
EDFCS	22-11213 NAV RCVR TUNE INH	22-16 TASK 830
EDFCS	22-11214 NAV RCVR TUNE INH	22-16 TASK 830
EDFCS	22-11215 MAN TRIM INH	22-17 TASK 802
EDFCS	22-11216 MAN TRIM INH	22-17 TASK 802
EDFCS	22-11217 MCP WARN TEST	22-11 TASK 817
EDFCS	22-11218 MCP WARN TEST	22-11 TASK 817
EDFCS	22-11221 TOGA SW INPUT FAIL	22-13 TASK 810
EDFCS	22-11222 TOGA SW INPUT FAIL	22-13 TASK 811
EDFCS	22-11223 GS DEV ANN	22-11 TASK 801
EDFCS	22-11227 A/P WARN LT RESET FAIL	22-15 TASK 804
EDFCS	22-11228 A/P WARN LT RESET FAIL	22-15 TASK 804

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EDFCS	22-11229 DC BUS ISOLATION	22-11 TASK 801
EDFCS	22-11230 DC BUS ISOLATION	22-11 TASK 801
EDFCS	22-11231 RUD 28 VDC PWR INV	22-17 TASK 806
EDFCS	22-11232 RUD 28 VDC PWR INV	22-17 TASK 806
EDFCS	22-11233 RUD CLUTCH	22-17 TASK 804
EDFCS	22-11234 RUD MOT	22-17 TASK 804
EDFCS	22-11235 CALIBRATION ERROR	22-14 TASK 801
EDFCS	22-11236 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11237 RUD CLUTCH	22-17 TASK 804
EDFCS	22-11238 RUD MOT	22-17 TASK 804
EDFCS	22-11239 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11240 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11241 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11242 RUD POS MON	22-17 TASK 805
EDFCS	22-11243 RUD A/P ACT MON	22-17 TASK 804
EDFCS	22-11244 RUD A/P ACT MON	22-17 TASK 804
EDFCS	22-11245 RUD SPM MON	22-17 TASK 805
EDFCS	22-11246 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11247 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11248 STBY ISOL RQST	22-11 TASK 801
EDFCS	22-11249 STBY ISOL RQST	22-11 TASK 801
EDFCS	22-11250 MT PWR INV	22-12 TASK 820
EDFCS	22-11251 AFCS ENGAGE INTLK	22-13 TASK 821
EDFCS	22-11252 AFCS ENGAGE INTLK	22-13 TASK 822
EDFCS	22-11253 CMD FGN FAIL	22-11 TASK 817
EDFCS	22-11254 MCP ELV ENG	22-11 TASK 817
EDFCS	22-11255 CWS + CMD FGN FAIL	22-11 TASK 817
EDFCS	22-11256 ENG SOL ENABLE FAIL	22-11 TASK 817
EDFCS	22-11257 CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11258 CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11259 MCP AIL ENG	22-11 TASK 817
EDFCS	22-11260 CWS + CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11261 MT PWR INV	22-12 TASK 820
EDFCS	22-11262 FMC APPR MODE RESET	22-11 TASK 811
EDFCS	22-11264 RADIO ALT DATA ERR	22-11 TASK 805

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EDFCS	22-11265 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11266 DUAL SELECT IN GP MODE	22-11 TASK 801
EDFCS	22-11270 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11271 ALT ALERT AURAL FAIL	22-15 TASK 820
EDFCS	22-11272 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11277 FMC COURSE MISCOMPARE	22-11 TASK 811
EDFCS	22-11279 G/P DEV INVALID	22-11 TASK 811
EDFCS	22-11281 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCS	22-11282 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCS	22-11283 A/P WARN HORN FAIL	22-12 TASK 817
EDFCS	22-11284 MCP A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11285 FCC A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11286 A/S WARN RESET FAIL	22-15 TASK 804
EDFCS	22-11287 A/P WARN LT RST FAIL	22-15 TASK 804
EDFCS	22-11288 A/S WARN ANNUN FAIL	22-15 TASK 804
EDFCS	22-11289 MCP A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11290 FCC A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11291 A/S WARN RESET FAIL	22-15 TASK 804
EDFCS	22-11292 A/P WARN LT RST FAIL	22-15 TASK 804
EDFCS	22-11293 A/S WARN ANNUN FAIL	22-15 TASK 804
EDFCS	22-11298 DPD INT INCOMPATIBLE	22-11 TASK 811
EDFCS	22-11299 A/P DISENG TST	22-14 TASK 801
EDFCS	22-11300 SEL ALT PWR UP RESET	22-11 TASK 801
EDFCS	22-11301 PWR HOLDUP (J1C-54,58)	22-15 TASK 802
EDFCS	22-11302 PWR 26 VAC INV	22-15 TASK 803
EDFCS	22-11303 FCC INTERNAL FAULT	22-11 TASK 841
EDFCS	22-11304 ENG SOL ENABLE LO	22-14 TASK 802
EDFCS	22-11305 ENG SOL ENABLE HI	22-14 TASK 802
EDFCS	22-11306 FLAPS DOWN	22-14 TASK 805
EDFCS	22-11307 ILS TEST INH/ANT SW	22-14 TASK 806
EDFCS	22-11308 TRIM WARN ANNUN	22-14 TASK 807
EDFCS	22-11309 SPD TRIM WARN	22-14 TASK 808
EDFCS	22-11310 R/A < 10 FEET (A)	22-14 TASK 809
EDFCS	22-11311 R/A < 10 FEET (B)	22-14 TASK 810
EDFCS	22-11312 R/A < 800 FEET	22-14 TASK 811

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EDFCS	22-11313 ALT ALERT AURAL	22-14 TASK 812
EDFCS	22-11314 A/S WARN ANN	22-14 TASK 813
EDFCS	22-11315 MTS WARN	22-14 TASK 814
EDFCS	22-11316 R/A < 200 FEET	22-14 TASK 825
EDFCS	22-11317 FCC INTERNAL FAULT	22-11 TASK 841
EDFCS	22-11318 ENG SOL ENABLE LO	22-14 TASK 802
EDFCS	22-11319 ENG SOL ENABLE HI	22-14 TASK 802
EDFCS	22-11320 FLAPS DOWN	22-14 TASK 805
EDFCS	22-11321 ILS TEST INH/ANT SW	22-14 TASK 806
EDFCS	22-11322 TRIM WARN ANNUN	22-14 TASK 807
EDFCS	22-11323 SPD TRIM WARN	22-14 TASK 808
EDFCS	22-11324 R/A < 10 FEET (A)	22-14 TASK 809
EDFCS	22-11325 R/A < 10 FEET (B)	22-14 TASK 810
EDFCS	22-11326 R/A < 800 FEET	22-14 TASK 811
EDFCS	22-11327 ALT ALERT AURAL	22-14 TASK 812
EDFCS	22-11328 A/S WARN ANN	22-14 TASK 813
EDFCS	22-11329 MTS WARN	22-14 TASK 814
EDFCS	22-11330 R/A < 200 FEET	22-14 TASK 825
EDFCS	22-11331 WHEEL SPIN INPUT FAIL	22-13 TASK 819
EDFCS	22-11332 WHEEL SPIN INPUT FAIL	22-13 TASK 820
EDFCS	22-11333 400 HZ PWR INV	22-16 TASK 834
EDFCS	22-11334 MT 115 VAC INV	22-16 TASK 835
EDFCS	22-11335 MT SENSOR EXC INV	22-12 TASK 819
EDFCS	22-11336 MT SENSOR EXC INV	22-12 TASK 819
EDFCS	22-11337 P SENSOR EXC INV	22-16 TASK 828
EDFCS	22-11338 P SENSOR EXC INV	22-16 TASK 828
EDFCS	22-11339 R SENSOR EXC INV	22-16 TASK 829
EDFCS	22-11340 R SENSOR EXC INV	22-16 TASK 829
EDFCS	22-11341 PWRUP SOP PARITY	22-15 TASK 823
EDFCS	22-11342 PWRUP SOP PARITY	22-15 TASK 823
EDFCS	22-11343 PROGRAM PIN INV	22-15 TASK 823
EDFCS	22-11344 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11345 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11346 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11347 SPD INV INCOMPTBLE A/P	22-11 TASK 811

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EDFCS	22-11348 BUS TRANSFER INV	22-15 TASK 803
EDFCS	22-11349 AIL ACT FAIL	22-12 TASK 821
EDFCS	22-11350 STANDBY ISOL INV	22-11 TASK 801
EDFCS	22-11351 BITE ENTRY INHIBIT	22-11 TASK 827
EDFCS	22-11352 BITE ENTRY INHIBIT	22-11 TASK 827
EDFCS	22-11353 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCS	22-11354 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCS	22-11355 FCC-A XCH-2 BUS	22-15 TASK 825
EDFCS	22-11356 FCC-A XCH-1 BUS	22-15 TASK 825
EDFCS	22-11358 XCH BUS INV TO FGN FCC	22-15 TASK 824
EDFCS	22-11360 NO FMC REQUEST	22-11 TASK 811
EDFCS	22-11361 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCS	22-11362 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCS	22-11363 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCS	22-11364 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCS	22-11365 SQUAT SW INPUT INV	22-15 TASK 815
EDFCS	22-11366 AIL ACT FAIL	22-12 TASK 821
EDFCS	22-11367 LOC BEAM ANOMALY DET	22-11 TASK 808
EDFCS	22-11368 G/S BEAM ANOMALY DET	22-11 TASK 808
EDFCS	22-11369 LOC BEAM ANOMALY DET	22-11 TASK 809
EDFCS	22-11370 G/S BEAM ANOMALY DET	22-11 TASK 809
EDFCS	22-11371 LOC BEAM ANOMALY DET	22-11 TASK 808
EDFCS	22-11372 LCL DEU REVERSION	22-15 TASK 808
EDFCS	22-11373 FGN DEU REVERSION	22-15 TASK 809
EDFCS	22-11374 FGN DEU REVERSION	22-15 TASK 808
EDFCS	22-11375 LCL DEU REVERSION	22-15 TASK 809
EDFCS	22-11376 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11377 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11378 ADIRU(IRU) DATA INV	22-11 TASK 806
EDFCS	22-11379 ADIRU(IRU) DATA INV	22-11 TASK 807
EDFCS	22-11381 ISFD DATA INV	22-17 TASK 801
EDFCS	22-11383 DME DATA INV	22-12 TASK 808
EDFCS	22-11384 DME DATA INV	22-12 TASK 808
EDFCS	22-11385 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11386 RADIO ALT DATA INV	22-11 TASK 805

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11387 R/A INV IN APP	22-11 TASK 801
EDFCS	22-11388 FMC DATA INV	22-11 TASK 811
EDFCS	22-11389 G/S TUNE MISCOMPARE	22-11 TASK 857
EDFCS	22-11390 MMR/ILS DATA INV	22-11 TASK 808
EDFCS	22-11391 MMR/ILS DATA INV	22-11 TASK 809
EDFCS	22-11393 CDS/DEU DATA INV	22-15 TASK 808
EDFCS	22-11394 CDS/DEU DATA INV	22-15 TASK 809
EDFCS	22-11395 VOR RCVR DATA INV	22-11 TASK 804
EDFCS	22-11396 VOR RCVR DATA INV	22-11 TASK 804
EDFCS	22-11397 SMYDC DATA INV	22-15 TASK 801
EDFCS	22-11398 SMYDC DATA INV	22-15 TASK 801
EDFCS	22-11401 PROG PIN ERR	22-15 TASK 823
EDFCS	22-11402 PROG PIN ERR	22-15 TASK 823
EDFCS	22-11403 SMYDC FLAPS INV	22-15 TASK 801
EDFCS	22-11404 SMYDC FLAPS INV	22-15 TASK 801
EDFCS	22-11405 DISK ERR	22-11 TASK 801
EDFCS	22-11406 DISK ERR	22-11 TASK 801
EDFCS	22-11407 DISK ERR	22-11 TASK 801
EDFCS	22-11408 COMM ERR	22-11 TASK 801
EDFCS	22-11409 COMM ERR	22-11 TASK 801
EDFCS	22-11414 FGN FCC DROPPED IN APP	22-14 TASK 801
EDFCS	22-11415 FGN FCC DROPPED IN APP	22-14 TASK 801
EDFCS	22-11416 MCP SEL ALT COUNTER	22-14 TASK 801
EDFCS	22-11417 MCP SEL ALT COUNTER	22-14 TASK 801
EDFCS	22-11418 SIMULTANEOUS UP/DN TRIM	22-14 TASK 801
EDFCS	22-11419 SIMULTANEOUS UP/DN TRIM	22-14 TASK 801
EDFCS	22-11420 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11421 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11422 ADIRU(IRU) DATA INV	22-11 TASK 806
EDFCS	22-11423 ADIRU(IRU) DATA INV	22-11 TASK 807
EDFCS	22-11424 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11425 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11426 R/A INV IN APP	22-11 TASK 805
EDFCS	22-11427 MMR/ILS DATA INV	22-11 TASK 808
EDFCS	22-11428 MMR/ILS DATA INV	22-11 TASK 809

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11429 CDS/DEU DATA INV	22-15 TASK 808
EDFCS	22-11430 CDS/DEU DATA INV	22-15 TASK 809
EDFCS	22-11433 ADIRU(IRU) DATA ERR	22-11 TASK 806
EDFCS	22-11434 ADIRU(IRU) DATA ERR	22-11 TASK 807
EDFCS	22-11437 ADIRU(IRU) DATA ERR	22-11 TASK 806
EDFCS	22-11438 ADIRU(IRU) DATA ERR	22-11 TASK 807
EDFCS	22-11440 ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11441 MMR LOC MISCOMPARE	22-11 TASK 808
EDFCS	22-11442 MMR LOC MISCOMPARE	22-11 TASK 809
EDFCS	22-11443 MMR LOC MISCOMPARE	22-11 TASK 809
EDFCS	22-11444 MMR GS MISCOMPARE	22-11 TASK 808
EDFCS	22-11445 MMR GS MISCOMPARE	22-11 TASK 809
EDFCS	22-11447 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11448 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11449 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11450 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11451 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11452 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11455 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11456 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11460 AIL A/P ACT MON	22-12 TASK 811
EDFCS	22-11461 AIL CMD MON	22-14 TASK 801
EDFCS	22-11462 AIL LIM MON	22-14 TASK 801
EDFCS	22-11463 ELV A/P ACT MON	22-12 TASK 810
EDFCS	22-11464 ELV ACT NOT TRIMMED	22-11 TASK 801
EDFCS	22-11466 ELV CMD WRAP TST	22-14 TASK 801
EDFCS	22-11471 R FLARE W/O AOC-GA	22-13 TASK 805
EDFCS	22-11472 P FLARE W/O AOC-GA	22-13 TASK 807
EDFCS	22-11473 P CMD MON	22-14 TASK 801
EDFCS	22-11474 P F/D COMP	22-14 TASK 801
EDFCS	22-11475 P LIMIT>0.3G	22-11 TASK 801
EDFCS	22-11476 MCP ALT INV	22-11 TASK 801
EDFCS	22-11479 P SPM MON	22-14 TASK 801
EDFCS	22-11480 MCP SEL ALT WRAP	22-11 TASK 801
EDFCS	22-11484 N1 ENG 1(2) INV	22-11 TASK 801

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EDFCS	22-11485 R CMD MON	22-14 TASK 801
EDFCS	22-11486 R F/D COMP	22-14 TASK 801
EDFCS	22-11488 R SPM FGN	22-14 TASK 801
EDFCS	22-11489 R SPM LCL	22-14 TASK 801
EDFCS	22-11490 R SPM MON	22-14 TASK 801
EDFCS	22-11491 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11492 R/A BOTH INV IN DUAL	22-11 TASK 801
EDFCS	22-11493 STAB DELAY TST	22-11 TASK 801
EDFCS	22-11494 STAB TRIM CLUTCH WRAP	22-11 TASK 801
EDFCS	22-11495 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11496 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11497 TRIM ELEV MON	22-11 TASK 801
EDFCS	22-11498 TRIM FLAP INTRLK	22-11 TASK 801
EDFCS	22-11499 A/P DISENG TST	22-14 TASK 801
EDFCS	22-11505 AIL A/P ACT MON	22-12 TASK 811
EDFCS	22-11506 AIL CMD MON	22-14 TASK 801
EDFCS	22-11507 AIL LIM MON	22-14 TASK 801
EDFCS	22-11508 ELV A/P ACT MON	22-12 TASK 810
EDFCS	22-11509 ELV ACT NOT TRIMMED	22-14 TASK 801
EDFCS	22-11510 ELV CMD MON	22-14 TASK 801
EDFCS	22-11527 ELV CMD WRAP TST	22-14 TASK 801
EDFCS	22-11534 R FLARE W/O AOC-GA	22-13 TASK 804
EDFCS	22-11535 P FLARE W/O AOC-GA	22-13 TASK 806
EDFCS	22-11536 P CMD MON	22-14 TASK 801
EDFCS	22-11537 P F/D COMP	22-14 TASK 801
EDFCS	22-11539 A/T DISENG WARN CAPT	22-32 TASK 814
EDFCS	22-11540 A/T DISENG WARN F/O	22-32 TASK 814
EDFCS	22-11548 P LIMIT>0.3G	22-11 TASK 801
EDFCS	22-11549 SEL N1 INV ENGINE 1	22-11 TASK 801
EDFCS	22-11550 P SPM FGN	22-14 TASK 801
EDFCS	22-11551 P SPM LCL	22-14 TASK 801
EDFCS	22-11552 P SPM MON	22-14 TASK 801
EDFCS	22-11553 SEL N1 INV ENGINE 2	22-11 TASK 801
EDFCS	22-11557 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11558 R CMD MON	22-14 TASK 801

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EDFCS	22-11559 R F/D COMP	22-14 TASK 801
EDFCS	22-11560 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11561 R SPM FGN	22-14 TASK 801
EDFCS	22-11562 R SPM LCL	22-14 TASK 801
EDFCS	22-11563 R SPM MON	22-14 TASK 801
EDFCS	22-11564 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11565 FCC ACTIVITY INVALID	22-11 TASK 801
EDFCS	22-11566 STAB DELAY TST	22-11 TASK 801
EDFCS	22-11567 STAB TRIM CLUTCH WRAP	22-11 TASK 801
EDFCS	22-11568 P LVDT MON	22-12 TASK 810
EDFCS	22-11569 P LVDT MON	22-12 TASK 810
EDFCS	22-11570 TRIM ELEV MON	22-11 TASK 801
EDFCS	22-11571 TRIM FLAP INTRLK	22-11 TASK 801
EDFCS	22-11572 DATA LD ATTACH	22-11 TASK 801
EDFCS	22-11573 DATA LD FUNC 1	22-11 TASK 801
EDFCS	22-11574 DATA LD FUNC 2	22-11 TASK 801
EDFCS	22-11575 DATA LD FUNC 3	22-11 TASK 801
EDFCS	22-11576 LOC TUNE MISCOMPARE	22-11 TASK 843
EDFCS	22-11577 LOC TUNE MISCOMPARE	22-11 TASK 843
EDFCS	22-11586 FCC ACTIVITY INVALID	22-11 TASK 801
EDFCS	22-11587 MCP SEL ALT WRAP	22-11 TASK 801
EDFCS	22-11591 CMD DROPPED IN APP	22-11 TASK 801
EDFCS	22-11592 A/P WARN ANN	22-15 TASK 804
EDFCS	22-11593 A/P WARN ANN	22-15 TASK 804
EDFCS	22-11594 MCP BUS SELECT	22-16 TASK 832
EDFCS	22-11595 MCP BUS SELECT	22-16 TASK 832
EDFCS	22-11606 RADIO ALT DATA INV	22-11 TASK 801
EDFCS	22-11607 MCP DATA INV	22-11 TASK 817
EDFCS	22-11608 LNAV XFR FAIL	22-11 TASK 801
EDFCS	22-11609 LNAV XFR FAIL	22-11 TASK 801
EDFCS	22-11612 FGN IRS SW TRANSFERRED	22-13 TASK 801
EDFCS	22-11613 STAB POS DISAGREE	22-12 TASK 803
EDFCS	22-11614 NSS POS DISAGREE	22-12 TASK 809
EDFCS	22-11615 TRIM OPP ELV CMD	22-14 TASK 828
EDFCS	22-11616 TRIM OPP ELV CMD	22-14 TASK 828

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11618 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11619 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11620 RUD SPIN TEST	22-17 TASK 804
EDFCS	22-11621 RUD MOTION TEST	22-17 TASK 804
EDFCS	22-11622 RUD TORQUE TEST	22-17 TASK 804
EDFCS	22-11623 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11624 RADIO ALT TEST INH	22-11 TASK 805
EDFCS	22-11625 MCP AIL ENG DISAGREE	22-11 TASK 845
EDFCS	22-11626 MCP ELV ENG DISAGREE	22-11 TASK 846
EDFCS	22-11627 MCP BUS INV TO FGN FCC	22-11 TASK 801
EDFCS	22-11628 XCH BUS INV TO FGN FCC	22-15 TASK 824
EDFCS	22-11629 RADIO ALT TEST INH	22-11 TASK 801
EDFCS	22-11632 RADIO ALT TEST INH	22-11 TASK 801
EDFCS	22-11633 ARM W/O ENG <600 FT	22-11 TASK 801
EDFCS	22-11634 ARM W/O ENG <600 FT	22-11 TASK 801
EDFCS	22-11638 G/S NCD	22-11 TASK 801
EDFCS	22-11639 G/S NCD	22-11 TASK 801
EDFCS	22-11641 LOC 2 OR MORE NCD	22-11 TASK 801
EDFCS	22-11642 G/S 2 OR MORE NCD	22-11 TASK 801
EDFCS	22-11643 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11644 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11645 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11646 PCWS SENSOR FAIL	22-12 TASK 805
EDFCS	22-11647 PCWS SENSOR FAIL (J1B-E02,E01)	22-12 TASK 805
EDFCS	22-11648 PCWS SENSOR FAIL (J1A-E02,E01)	22-12 TASK 806
EDFCS	22-11649 PCWS SENSOR FAIL	22-12 TASK 806
EDFCS	22-11650 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11651 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11652 FLAP POSN DISAGREE	22-11 TASK 801
EDFCS	22-11653 LOC DATA ERR	22-11 TASK 801
EDFCS	22-11655 LOC DATA ERR	22-11 TASK 801
EDFCS	22-11656 G/S DATA ERR	22-11 TASK 801
EDFCS	22-11658 G/S DATA ERR	22-11 TASK 801
EDFCS	22-11659 LOC NCD	22-11 TASK 801
EDFCS	22-11660 LOC NCD	22-11 TASK 801

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EDFCS	22-11663 SPOIL-4 POS DISAGREE	22-12 TASK 801
EDFCS	22-11664 SPOIL-9 POS DISAGREE	22-12 TASK 802
EDFCS	22-11665 SINGLE RUD DISENG	22-17 TASK 804
EDFCS	22-11666 SINGLE RUD DISENG	22-17 TASK 804
EDFCS	22-11667 DUAL RUD DISENG	22-17 TASK 804
EDFCS	22-11669 CRS 1/2 NOT = IN CMD	22-11 TASK 801
EDFCS	22-11670 CRS 1/2 CHG IN APP	22-11 TASK 801
EDFCS	22-11687 RATE MONITOR	22-32 TASK 819
EDFCS	22-11688 RATE MONITOR	22-32 TASK 819
EDFCS	22-11693 G/S BEAM ANOMALY DET	22-11 TASK 801
EDFCS	22-11694 RUD POS DISAGREE	22-17 TASK 805
EDFCS	22-11695 RUD CMD/POS DISAGREE	22-17 TASK 805
EDFCS	22-11697 FGN FLAP POSN FAIL	22-11 TASK 801
EDFCS	22-11698 FGN FLAP POSN FAIL	22-11 TASK 801
EDFCS	22-11699 ELEV POS DISAGREE	22-11 TASK 801
EDFCS	22-11700 COLUMN OVERRIDE	22-12 TASK 805
EDFCS	22-11701 COLUMN OVERRIDE	22-12 TASK 805
EDFCS	22-11703 RUD NOT ENG AT TD	22-11 TASK 801
EDFCS	22-11704 TOGA SW MISCOMPARE	22-13 TASK 810
EDFCS	22-11705 TOGA FAIL ACTIVE	22-13 TASK 811
EDFCS	22-11706 MCP A/P WARN PWR FAIL	22-11 TASK 801
EDFCS	22-11707 MCP WARN TST INFC	22-11 TASK 801
EDFCS	22-11708 MCP WARN TST INFC	22-11 TASK 801
EDFCS	22-11709 MCP NOT CAT 3B CFG	22-11 TASK 801
EDFCS	22-11710 ROLL / YAW ASYMMETRY	22-11 TASK 832
EDFCS	22-11712 ROLL / YAW ASYMMETRY	22-11 TASK 832
EDFCS	22-11713 MCP A/P WARN FAIL	22-11 TASK 801
EDFCS	22-11714 MCP A/P WARN FAIL	22-11 TASK 801
EDFCS	22-11715 ROLL AUTHORITY	22-11 TASK 833
EDFCS	22-11716 ROLL AUTHORITY	22-11 TASK 833
EDFCS	22-11732 ELEVATOR LIMITED IN GA	22-11 TASK 801
EDFCS	22-11733 TAS INV	22-15 TASK 811
EDFCS	22-11734 TAS INV	22-15 TASK 811
EDFCS	22-11737 TAS DIFF	22-15 TASK 811
EDFCS	22-11738 COMPUTED A/S DIFF	22-15 TASK 811

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11739 COMPUTED A/S INV	22-15 TASK 811
EDFCS	22-11740 COMPUTED A/S INV	22-15 TASK 811
EDFCS	22-11746 MMR/ILS DATA INV	22-11 TASK 801
EDFCS	22-11747 MMR/ILS DATA INV	22-11 TASK 801
EDFCS	22-11748 FREQ NOT = IN APP	22-11 TASK 801
EDFCS	22-11754 UNCOR BARO ALT INV	22-15 TASK 811
EDFCS	22-11755 UNCOR BARO ALT INV	22-15 TASK 811
EDFCS	22-11756 HDG REF MISCOMPARE	22-11 TASK 801
EDFCS	22-11757 DUAL W/O FLARE H<350	22-11 TASK 801
EDFCS	22-11758 DUAL W/O FLARE H<350	22-11 TASK 801
EDFCS	22-11759 ALPHA FLOOR PERF LIMIT	22-11 TASK 801
EDFCS	22-11796 BUS SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11797 FGN FCC DROPPED IN GA	22-14 TASK 801
EDFCS	22-11798 FGN FCC DROPPED IN GA	22-14 TASK 801
EDFCS	22-11799 FGN GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11800 LCL GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11801 FGN GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11802 LCL GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11805 RUD ACT TRQ LIM	22-17 TASK 804
EDFCS	22-11808 MCP A/P WARN FAIL	22-11 TASK 817
EDFCS	22-11810 LNAV SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11811 RUD TACH INV	22-17 TASK 804
EDFCS	22-11812 A/B INDEX CONFIG INV	22-16 TASK 827
EDFCS	22-11821 BOTH R/A > 2000 FEET	22-11 TASK 844
EDFCS	22-11822 FMC DATA INV	22-11 TASK 811
EDFCS	22-11823 CWS SELECTED IN DUAL	22-11 TASK 801
EDFCS	22-11827 SPOIL POS DISAGREE	22-12 TASK 818
EDFCS	22-11828 FCC BUS OUT	22-11 TASK 848
EDFCS	22-11829 FCC BUS OUT	22-11 TASK 848
EDFCS	22-11830 ELEV AUTH LIMITED	22-11 TASK 847
EDFCS	22-11831 FEEL/CENTERING FREEPLAY	22-11 TASK 828
EDFCS	22-11833 WHEEL OVERRIDE	22-12 TASK 823
EDFCS	22-11834 WHEEL OVERRIDE	22-12 TASK 823
EDFCS	22-11835 TOGA WITHOUT FLARE ARM	22-13 TASK 811
EDFCS	22-11846 LVCH HI SPD LIMIT	22-11 TASK 834

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EDFCS	22-11847 LCL STICK SHAKER	22-11 TASK 835
EDFCS	22-11848 FGN STICK SHAKER	22-11 TASK 835
SMYD - 1	22-21001 SMYD YD fault	22-23 TASK 801
SMYD - 1	22-21002 YD 28VAC no power	22-23 TASK 802
SMYD - 1	22-21003 YD 28VDC no power	22-23 TASK 803
SMYD - 1	22-21004 YD LVDT error	22-23 TASK 804
SMYD - 1	22-21005 flap sig disagree	22-23 TASK 806
SMYD - 1	22-21006 YD servo loop	22-23 TASK 809
SMYD - 1	22-21007 no X-CH data	22-23 TASK 807
SMYD - 1	22-21008 X-CH invalid	22-23 TASK 801
SMYD - 1	22-21009 X-CH cmd disagree	22-23 TASK 808
SMYD - 2	22-22001 SMYD YD fault	22-23 TASK 801
SMYD - 2	22-22002 YD 28VAC no power	22-23 TASK 802
SMYD - 2	22-22003 YD 28VDC no power	22-23 TASK 803
SMYD - 2	22-22004 YD LVDT error	22-23 TASK 805
SMYD - 2	22-22005 flap sig disagree	22-23 TASK 806
SMYD - 2	22-22006 YD servo loop	22-23 TASK 810
SMYD - 2	22-22007 no X-CH data	22-23 TASK 807
SMYD - 2	22-22008 X-CH invalid	22-23 TASK 801
SMYD - 2	22-22009 X-CH cmd disagree	22-23 TASK 808

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801. Digital Flight Control System (DFCS) BITE Procedure

A. General

- (1) The DFCS BITE Flowchart (Figure 201) is the guide for you to use the DFCS BITE. The DFCS BITE is based on the on-condition maintenance philosophy. The on-condition maintenance philosophy says that maintenance begins when the pilot reports a problem.
- (2) You do the DFCS BITE Tests from the Control Display Unit (CDU). You use the FAULT REVIEW item on the DFCS BITE TEST MAIN MENU in this task.
 - (a) These are the items that you can use in the FAULT REVIEW Menu:
 - 1) CURRENT STATUS
 - 2) FAULT HISTORY SORTED BY FLIGHT LEG
 - 3) FAULT HISTORY SORTED BY FLIGHT DECK EFFECT
- (3) Normal Sequence:
 - (a) From the Pilot Report (PIREP) or Flight Deck Effect (FDE), you go to the FAULT HISTORY SORTED BY FLIGHT LEG or FAULT HISTORY SORTED BY FLIGHT DECK EFFECT to look for faults.
 - 1) If there are faults in the FAULT HISTORY SORTED BY FLIGHT LEG or FAULT HISTORY SORTED BY FLIGHT DECK EFFECT, then run the applicable Line Replaceable Unit (LRU) TESTS and correct the faults.
 - 2) If there are no faults in the FAULT HISTORY SORTED BY FLIGHT LEG or FAULT HISTORY SORTED BY FLIGHT DECK EFFECT, then continue to look for faults in the CURRENT STATUS.
 - a) Do the CURRENT STATUS Quick Test and the applicable additional test(s) in the CURRENT STATUS.
- (4) The FAULT HISTORY SORTED BY FLIGHT LEG Display shows faults that occur in each Flight Leg (LEG).
 - (a) The display can show data from the last 40 Flight Legs (LEG 01 through LEG 40).
 - 1) The Flight Legs are shown with the leg that had the most recent fault at the top of the first page.
 - (b) Only the Flight Legs during which faults occurred will show.
 - 1) You can use the PREV PAGE and NEXT PAGE keys to see all the Flight Legs.

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- (c) When you push the Line Select Key (LSK) adjacent to the prompt for one of the Flight Legs, you will see details for the faults in that Flight Leg:
 - 1) Flight Leg No.
 - 2) FDE
 - 3) FCC Channel that had the fault
 - 4) Roll and Pitch Modes that were active when the fault occurred
 - 5) Fault Message (adjacent to LSK 1L, under CHAN-A (or B)
 - 6) A list of failed LRUs under SUSPECT LRU(S)
 - 7) A list of FCC Interface pins under INTERFACE PINS
 - 8) Flight Number
 - 9) Time, Date, Altitude, Airspeed and the Airplane Mode that the fault occurred

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- 10) MSG Number (adjacent to LSK 4R and 5R)
- 11) LRU TESTS prompt

NOTE: The LRU TESTS prompt will initiate the BITE Library Tests that are associated with the fault.

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- (5) FAULT HISTORY SORTED BY FLIGHT DECK EFFECT Display shows faults sorted by FDE instead of Flight Leg.

- (a) Once a FDE is selected, the fault data is the same data that shows in the FAULT HISTORY SORTED BY FLIGHT LEG Display.
 - 1) You can use the PREV PAGE and NEXT PAGE keys to see all the faults that have occurred in the Flight Legs under that FDE.
- (b) These are the FDE selections that you can make:
 - 1) A/P DISC (Autopilot Disconnect)
 - 2) ENG ATTMPT (Engage Attempt)
 - 3) F/D BOV (Flight Director Bias out of view)
 - 4) MODE REV (Mode Reversion)
 - 5) SPEED TRIM
 - 6) MACH TRIM
 - 7) STAB TRIM
 - 8) F/D FLAG (Flight Director Flag)
 - 9) MISC (Miscellaneous)
 - 10) GND FAULTS (Ground Faults)

- (6) The CURRENT STATUS Display shows faults that are currently active.

- (a) A maintenance message identifies a specific failure which is found by the DFCS BITE.
 - 1) The maintenance messages are usually abbreviations for LRUs.
- (b) The CURRENT STATUS item on the DFCS BITE TEST FAULT REVIEW Menu contains these tests:

NOTE: For detailed data about the Library Tests in the Current Status Quick Test and the additional tests, refer to Digital Flight Control System (DFCS) - Operational Test, AMM TASK 22-11-00-740-801.

- 1) Current Status Quick Test (Group 10)
- 2) Additional Tests:
 - a) AUTOPILOT (Group 11)
 - b) FLIGHT DIRECTOR (Group 12)
 - c) MACH TRIM SYSTEM (Group 13)

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- d) STAB/TRIM SYSTEM (Group 14)

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- e) ALT ALERT (Group 15)

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- (c) The CURRENT STATUS Quick Test comes before the additional tests. In each additional test, the interactive tests come before the surface tests. The sequence of the CURRENT STATUS test is as follows:
 - 1) Current Status Quick Test
 - 2) Additional Test:
 - a) Interactive Tests
 - b) Surface Tests
- (d) The Current Status Quick Test contains a number of Library Tests.
 - 1) These Library Tests are automatic and they are referred to as Autotests.
 - 2) The Current Status Quick Test quickly does a check on the DFCS Interfaces.
- (e) There are five additional tests. Each additional test contains a number of Library Tests. These Library Tests are Interactive and/or Surface Tests.
 - 1) The Interactive Tests are not automatic.
 - a) You must do the instructions that show on the CDU Display to complete the Interactive Tests.
 - b) You must do the instructions that show on the CDU Display to complete the Surface Tests.
 - 2) The Surface Tests are not automatic and Hydraulic Power is necessary for the Surface Tests.
 - a) You must do the instructions that show on the CDU Display to complete the Surface Tests.
- (f) If there are faults in the Current Status Quick Test (Group 10) or additional test (Group 11, 12, 13, 14 or 15), then correct the faults.
- (7) Some selections that you often make when you do the BITE test are the CONTINUE, PREV MENU, EXIT prompts on the CDU Display and the NEXT PAGE and PREV PAGE keys on the CDU Keyboard.
 - (a) CONTINUE
 - 1) If you push the LSK adjacent to CONTINUE, then the BITE will take you to the subsequent page of the test.
 - (b) PREV MENU
 - 1) If you push the LSK adjacent to PREV MENU, then the BITE will take you to the previous selection page.
 - (c) EXIT
 - 1) If you push the LSK adjacent to EXIT, then the BITE will take you out of BITE Test and put the airplane back to its usual condition.
 - (d) NEXT PAGE or PREV PAGE key
 - 1) If it is necessary to change page, then you push the NEXT PAGE or PREV PAGE key on the CDU Keyboard. The BITE lets you change page when there is more than one screen page.

B. BITE Procedure

NOTE: Do not move the control column during a Digital Flight Control System (DFCS) test, unless it is a part of the test procedure. Movement of the control column could cause the DFCS test to fail.

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(1) Do the BITE Procedure for the Digital Flight Control System (Figure 201 and Figure 202).

(a) If you are not at one of the DFCS BITE TEST Displays, then do these steps:

- 1) Push the INIT REF function key.
- 2) If the POS INIT Display shows, then push the LSK next to the INDEX prompt.

NOTE: This causes the INIT/REF INDEX to show.

(b) Push the LSK adjacent to each of these prompts:

- 1) MAINT
- 2) DFCS

NOTE: If the FCC-A SELFTEST FAIL, FCC-B SELFTEST FAIL or CROSS CHANNEL TEST FAIL message shows, then refer to the table at the end of this task to find the applicable Fault Isolation Manual (FIM) Tasks for the maintenance messages that show.

- 3) FAULT REVIEW
- 4) FAULT HISTORY SORTED BY FLIGHT LEG or FAULT HISTORY SORTED BY FLIGHT DECK EFFECT
- 5) Make a selection for the applicable channel:
 - a) CHANNEL A
 - b) CHANNEL B

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- 6) Push the LSK adjacent to NOLND3 LCH
- 7) If the maintenance messages below show alone or with maintenance message 22-11303 FCC-A (FCC INTERNAL FAULT), they are nuisance messages. You can reset the latched FDE to clear these messages.
 - 22-11713 MCP A/P WARN FAIL
 - 22-11714 MCP A/P WARN FAIL
 - a) Do this task Reset Latches Procedure, AMM TASK 22-11-00-700-802 and select "NOLND3 LCH" on the RESET FDE page.

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(c) Push the LSK adjacent to the FDE or Flight Leg.

(d) If SUSPECT LRU(S) shows on the CDU Display, then do these steps:

- 1) Make a record of the suspect LRUs that show on the CDU Display.

NOTE: If there is more than one page of faults, you can use the NEXT PAGE or PREV PAGE key to change page.

- 2) Push the LSK adjacent to LRU TESTS.

- 3) Do the instructions that show on the CDU Display to complete the LRU TESTS.

NOTE: The LRU TESTS can be an Autotest, Interactive Test or Surface Test.

NOTE: The TEST PASSED or TEST FAILED shows after you complete the LRU TESTS.

- 4) If TEST PASSED shows, then do these steps:

NOTE: When TEST PASSED shows, the DFCS BITE found no problem with the suspect LRUs.

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The problem could be an intermittent fault, or a fault that occurs only under flight conditions in the suspect LRUs that you recorded earlier.

- a) Go to other applicable System BITE (For example: FMCS, A/T or CDS) or use a self-test of the applicable LRUs to do a check on the SUSPECT LRUs that you recorded earlier.
- 5) If TEST FAILED shows, then push the LSK adjacent to TEST RESULTS.
 - a) Make a record of the CHAN-A (B, or A AND B), SUSPECT LRUs and the INTERFACE PINS that show on the CDU Display.

NOTE: CHAN-A is for the FCC-A and CHAN-B is for the FCC-B.

If there are no applicable FCC Interface Pins for the SUSPECT LRU(s), then no INTERFACE PINS show.

NOTE: The specific Fault Message shows to the right of (and just below) LSK 1L, followed by a list of SUSPECT LRU(s) and a MSG Number that you see on the CDU adjacent to LSK 4R and 5R.

The FIM MAINTENANCE MESSAGE consists of the MSG Number and the Fault Message Text.
 - b) If it is necessary to do the test again, then do these steps:
 - c) Push the LSK adjacent to TEST DATA.
 - d) Push the LSK adjacent to RERUN.
- 6) If TEST FAILED shows with maintenance messages number 22-11209 and 22-11210, then do these steps:
 - a) Do a check of the Time and Altitude that the Maintenance Message Number 22-11209 for Channel A and Maintenance Message Number 22-11210 for Channel B are recorded.
 - b) Do a check of the discrete input to the FCCs from the TOGA Switch (SW):
 - <1> Push, the INIT REF function key on the keyboard.
 - <a> If the POS INIT Display shows, then push the LSK next to the INDEX prompt (LSK 6L).

NOTE: This makes the INIT/REF INDEX to show.
 - <2> Push the LSK adjacent to each of these prompts:
 - <a> MAINT (LSK 6R)
 - DFCS (LSK 2L)
 - <c> EXTENDED MAINTENANCE (LSK 4L)
 - <d> SENSOR VALUES (LSK 4L)
 - <e> DISCRETE INPUTS (LSK 5L)
 - <f> J1A (LSK 1L)
 - <3> Push, the PREV PAGE key on the FMC keyboard to Screen "6/6".
 - <a> Make sure that the state of pin TOGA SW and pin F04 is OP (OPEN) on A and B sides shows on the CDU Screen.
 - <4> Push the TOGA SW on the CAPTAIN side of THRUST LEVER #1.
 - <a> Make sure that the state of pin TOGA SW and pin F04 is GD (GROUND) on A and B sides shows on the CDU Screen.
 - <5> Repeat step <4> above 10 to 15 times.

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- <6> Move THRUST LEVER #1 to a different position and repeat step <4> above 10 to 15 times.
 - <a> If the test fails, replace the TOGA SW on THRUST LEVER #1.
 - <7> Push the TOGA SW on the F/O side of THRUST LEVER #2.
 - <a> Make sure of the state of pin TOGA SW and pin F04 is GD (GROUND) on A and B sides shows on the CDU Screen.
 - <8> Repeat step <7> above 10 to 15 times.
 - <9> Move THRUST LEVER #2 to a different position and repeat step <7> above 10 to 15 times.
 - <a> If the test fails, replace the TOGA SW on THRUST LEVER #2.
 - <10> Push LSK, EXIT (LSK 6L).
 - <11> Push LSK, EXIT (LSK 6L) on TEST COMPLETE Screen.
 - <12> Push LSK, EXIT (LSK 6L) after you complete the instructions on END OF DFCS BITE Screen.
- c) Do this check of the wiring (WDM 22-11-14):
- NOTE: During the wiring check make sure that you do a:
- Check for continuity
 - Check for a short to Ground
 - Check for no short on other wires in the same wire bundle
- <1> Examine the wiring from S786 to FCC-A and FCC-B.
 - <2> Examine the wiring from S787 to FCC-A and FCC-B.
- 7) If TEST FAILED shows with the Message Text " FCC-A " or " FCC-B " with Monitor Text " FGN FAILS TO ENT TOGA " or " FGN DROPPED IN APP ", do the off-side FCC BITE TEST to find the applicable FIM Task.
- a) Refer to the table at the end of this task to find the applicable FIM Tasks for the maintenance messages that show.
- 8) If NO FAULTS shows on the CDU Display, then do these steps to do the Current Status Quick Test and the applicable additional test(s) in CURRENT STATUS:
- a) Push the LSK adjacent to PREV MENU until the DFCS BITE TEST FAULT REVIEW Menu shows.
 - b) Push the LSK adjacent to CURRENT STATUS.
- NOTE: The STATUS AUTOTEST INITIALIZATION Display shows.
- (e) AUTOTEST:
- 1) Do the instructions that show on the CDU Display.
- NOTE: If the initialization setup is correct, then the AUTOTEST IN PROGRESS shows on the CDU Display.

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- 2) If AUTOTEST PASSED shows on the CDU Display, then the test is completed with no failure.

NOTE: Some Autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The Autotest is passed if you do not see the AUTOTEST FAILED message.

NOTE: When all the Autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.

- 3) If AUTOTEST FAILED shows, then do the Library Test(s) that show on the CDU Display.

- a) Make a record of the CHAN-A (B, or A AND B), SUSPECT LRUs and the INTERFACE PINS that show on the CDU Display.

NOTE: CHAN-A is for the FCC-A and CHAN-B is for the FCC-B.

If there are no applicable FCC Interface Pins for the SUSPECT LRU(s), then no INTERFACE PINS show.

NOTE: The specific Fault Message shows to the right of (and just below) LSK 1L, followed by a list of SUSPECT LRU(s) and a MSG Number that you see on the CDU adjacent to LSK 4R and 5R.

The FIM MAINTENANCE MESSAGE consists of the MSG Number and the Fault Message Text.

- b) If it is necessary to do the test again, then do these steps:
 - c) Push the LSK adjacent to TEST DATA.
 - d) Push the LSK adjacent to RERUN.
- 4) Refer to the table at the end of this task to find the applicable FIM Tasks for the maintenance messages that show.

- (f) Additional Test:

NOTE: The additional test comes immediately after you complete the last Autotest.

- 1) Make a selection for the applicable channel:

NOTE: The Current Status Additional Test menu shows after you make the selection. This menu lets you make the selection for the Autopilot, Flight Director, Mach Trim System, Speed Trim System or Alt Alert System.

- a) CHANNEL A
- b) CHANNEL B
- c) CHANNEL A AND B

- (g) Push the LSK adjacent to the applicable additional test:

- 1) AUTOPILOT
- 2) FLIGHT DIRECTOR
- 3) MACH TRIM SYSTEM

NOTE: There is no Interactive Test for the Mach Trim System Test, thus the BITE goes directly to the Surface Test.

- 4) SPEED TRIM SYSTEM

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5) ALT ALERT

NOTE: There is no Surface Test for the ALT ALERT Test.

(h) Interactive Test:

- 1) Do the instructions that show on the CDU Display to complete all Interactive Tests.
- 2) If INTERACTIVE TEST PASSED shows on the CDU Display, then the test is completed with no failure.

NOTE: After you complete the last Interactive Test, the Summary Page shows TEST FAILED or ALL TESTS PASSED.

- 3) If INTERACTIVE TEST FAILED shows on the CDU Display, then do these steps:
 - a) Push the LSK adjacent to TEST RESULTS.
 - b) Make a record of the CHAN-A (B, or A AND B), SUSPECT LRUs and the INTERFACE PINS that show on the CDU Display.

NOTE: CHAN-A is for the FCC-A and CHAN-B is for the FCC-B.

If there are no applicable FCC Interface Pins for the SUSPECT LRU(s), then no INTERFACE PINS show.

NOTE: The specific Fault Message shows to the right of (and just below) LSK 1L, followed by a list of SUSPECT LRU(s) and a MSG Number that you see on the CDU adjacent to LSK 4R and 5R.

The FIM MAINTENANCE MESSAGE consists of the MSG Number and the Fault Message Text.

- c) If it is necessary to do the test again, then do these steps:
 - d) Push the LSK adjacent to TEST DATA.
 - e) Push the LSK adjacent to RERUN.
- 4) Refer to the table at the end of this task to find the applicable FIM Tasks for the maintenance messages that show.

(i) Surface Test:



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- 1) Do the instructions that show on the CDU display to complete all the surface tests.
- 2) If SURFACE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last surface test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If SURFACE TEST FAILED shows on the CDU Display, then do these steps:
 - a) Push the LSK adjacent to TEST RESULTS.

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- b) Make a record of the CHAN-A (B, or A AND B), SUSPECT LRUs and the INTERFACE PINS that show on the CDU Display.

NOTE: CHAN-A is for the FCC-A and CHAN-B is for the FCC-B.

If there are no applicable FCC Interface Pins for the SUSPECT LRU(s), then no INTERFACE PINS show.

NOTE: The specific Fault Message shows to the right of (and just below) LSK 1L, followed by a list of SUSPECT LRU(s) and a MSG Number that you see on the CDU adjacent to LSK 4R and 5R.

The FIM MAINTENANCE MESSAGE consists of the MSG Number and the Fault Message Text.

- c) If it is necessary to do the test again, then do these steps:
- d) Push the LSK adjacent to TEST DATA.
- e) Push the LSK adjacent to RERUN.
- 4) Refer to the table at the end of this task to find the applicable FIM Tasks for the maintenance messages that show.

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
DFCS	P CMD MON	22-14 TASK 801
DFCS	P2 A/P DISENG TST	22-14 TASK 801
DFCS	P2 AIL CMD MON	22-14 TASK 801
DFCS	P2 E AIL LIM MON FAIL	22-14 TASK 801
DFCS	P2 ELV ACT NOT TRIMMED	22-14 TASK 801
DFCS	P2 ELV CMD MON	22-14 TASK 801
DFCS	P2 ELV CMD WRAP TST	22-14 TASK 801
DFCS	P2 FGN P SPM	22-14 TASK 801
DFCS	P2 FGN R SPM	22-14 TASK 801
DFCS	P2 HB MON	22-14 TASK 801
DFCS	P2 INRACTV RDY	22-14 TASK 801
DFCS	P2 INRACTV TST CMPLT	22-14 TASK 801
DFCS	P2 LCL P SPM	22-14 TASK 801
DFCS	P2 LCL R SPM	22-14 TASK 801
DFCS	P2 LONGTERM PWRUP CMPL	22-14 TASK 801
DFCS	P2 STBTRM DELAY TST	22-14 TASK 801
DFCS	PITCH F/D COMP	22-14 TASK 801
DFCS	POWER SUPPLY	22-14 TASK 801
DFCS	PR 1 10M STACK OVFL	22-14 TASK 801
DFCS	PR 1 10M TASK TICKET	22-14 TASK 801

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DFCS	PR 2 50M STACK OVFL	22-14 TASK 801
DFCS	PR 2 50M TASK TICKET	22-14 TASK 801
DFCS	PR 3 100M STACK OVFL	22-14 TASK 801
DFCS	PR 3 100M TASK TICKET	22-14 TASK 801
DFCS	PR 4 BKGND STACK OVFL	22-14 TASK 801
DFCS	PR 4 BKGND TASK TICKET	22-14 TASK 801
DFCS	PWRUP RAM TST	22-14 TASK 801
DFCS	PWRUP ROM TST	22-14 TASK 801
DFCS	R A/P ACT MON	22-14 TASK 801
DFCS	R CMD MON	22-14 TASK 801
DFCS	R CMD MON	22-14 TASK 801
DFCS	RAM TST	22-14 TASK 801
DFCS	RESTART FAIL	22-14 TASK 801
DFCS	ROM CRC	22-14 TASK 801
DFCS	RUD ACTUATOR (J1A-F11,G11)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1A-K09,J1B-K09)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1B-H06,H07)	22-17 TASK 804
DFCS	RUD ACTUATOR (J1B-K10,J10)	22-17 TASK 804
DFCS	RUD ACTUATOR	22-17 TASK 804
DFCS	RUD POS SEN (J1A-G09,G10,H09)	22-17 TASK 805
DFCS	SERIAL WRAP	22-14 TASK 801
DFCS	STIMS NOT ZEROED	22-14 TASK 801
DFCS	XCHAN DISC WRAP FAIL	22-14 TASK 801
EDFCS	22-11001 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11002 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11003 NO ADIRU(IRU) DATA	22-11 TASK 806
EDFCS	22-11004 NO ADIRU(IRU) DATA	22-11 TASK 806
EDFCS	22-11005 NO ADIRU(IRU) DATA	22-11 TASK 807
EDFCS	22-11006 NO ADIRU(IRU) DATA	22-11 TASK 807
EDFCS	22-11007 STATIC PRESS INV	22-15 TASK 811
EDFCS	22-11008 STATIC PRESS INV	22-15 TASK 811
EDFCS	22-11009 PITOT PRESS INV	22-15 TASK 810
EDFCS	22-11010 PITOT PRESS INV	22-15 TASK 810
EDFCS	22-11011 AOA VANE INV	22-11 TASK 823
EDFCS	22-11012 AOA VANE INV	22-11 TASK 824

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EDFCS	22-11013 NO EFIS CP DATA	22-15 TASK 812
EDFCS	22-11014 NO EFIS CP DATA	22-15 TASK 812
EDFCS	22-11015 IRS TRANSFER FGN FAIL	22-13 TASK 801
EDFCS	22-11016 IRS TRANSFER LCL FAIL	22-13 TASK 801
EDFCS	22-11017 AOA INV	22-11 TASK 823
EDFCS	22-11018 AOA INV	22-11 TASK 824
EDFCS	22-11019 STATIC PRESS DATA INV	22-15 TASK 811
EDFCS	22-11020 STATIC PRESS DATA INV	22-15 TASK 811
EDFCS	22-11021 BARO ALT INV	22-15 TASK 811
EDFCS	22-11022 BARO ALT INV	22-15 TASK 811
EDFCS	22-11023 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11024 NO ADIRU(ADC) DATA	22-11 TASK 810
EDFCS	22-11026 HDG REF SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11027 NO ISFD DATA	22-17 TASK 801
EDFCS	22-11028 HDG REF SW FAIL	22-11 TASK 801
EDFCS	22-11029 ADIRU(IRU) DATA ERR	22-11 TASK 806 or 22-11 TASK 807
EDFCS	22-11031 NO A/T CMPTR DATA	22-11 TASK 813
EDFCS	22-11032 MACH INV/OUT OF RANGE	22-15 TASK 811
EDFCS	22-11033 MACH INV/OUT OF RANGE	22-15 TASK 811
EDFCS	22-11034 LCL IRS SW TRANSFERRED	22-13 TASK 801
EDFCS	22-11035 VANE DIFF	22-11 TASK 823 or 22-11 TASK 824
EDFCS	22-11036 TOGA AFTER WHEEL SPIN	22-11 TASK 801
EDFCS	22-11037 RADIO ALT DO NOT AGREE	22-11 TASK 805
EDFCS	22-11039 ADIRU/ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11040 ADIRU/ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11041 NO DME DATA	22-12 TASK 808
EDFCS	22-11042 NO DME DATA	22-12 TASK 808
EDFCS	22-11043 GEAR UP SW-1 FAIL	22-13 TASK 812
EDFCS	22-11044 GEAR UP SW-2 FAIL	22-13 TASK 812
EDFCS	22-11045 FMC DATA INV	22-16 TASK 833
EDFCS	22-11047 COLUMN FORCE INV	22-12 TASK 805
EDFCS	22-11048 COLUMN FORCE INV	22-12 TASK 805
EDFCS	22-11049 COLUMN FORCE INV	22-12 TASK 806
EDFCS	22-11050 COLUMN FORCE INV	22-12 TASK 806

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EDFCS	22-11051 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11052 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11053 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11054 NO RADIO ALT DATA	22-11 TASK 805
EDFCS	22-11061 MCP FAULT	22-11 TASK 816
EDFCS	22-11062 FCC DATA INV	22-11 TASK 817
EDFCS	22-11063 NO MCP DATA	22-11 TASK 817
EDFCS	22-11064 ALT REF MON INV	22-11 TASK 816
EDFCS	22-11065 ALT REF MON INV	22-11 TASK 816
EDFCS	22-11066 MCP ALT REF MON INV	22-11 TASK 816
EDFCS	22-11067 MCP ALT REF MON INV	22-11 TASK 816
EDFCS	22-11068 F/D ON FGN FAIL	22-11 TASK 817
EDFCS	22-11069 F/D ON FGN FAIL	22-11 TASK 817
EDFCS	22-11070 G/S TUNE MISCOMPARE	22-11 TASK 857
EDFCS	22-11071 NO FMC DATA	22-11 TASK 811
EDFCS	22-11073 NO FMC DATA	22-11 TASK 812
EDFCS	22-11081 NO SMYDC DATA	22-15 TASK 826
EDFCS	22-11082 NO SMYDC DATA (J1A-H04,G04)	22-15 TASK 826
EDFCS	22-11083 P A/P ACT MON	22-12 TASK 810
EDFCS	22-11084 P A/P ACT MON	22-12 TASK 810
EDFCS	22-11085 NAV FREQ TRANSFERRED	22-13 TASK 803
EDFCS	22-11086 NAV FREQ TRANSFERRED	22-13 TASK 803
EDFCS	22-11087 DUAL W/O FLARE H<350	22-13 TASK 807
EDFCS	22-11088 DUAL W/O FLARE H<350	22-13 TASK 806
EDFCS	22-11089 NO MMR/ILS DATA	22-11 TASK 809
EDFCS	22-11091 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11092 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11093 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11094 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11095 ILS XFR FAIL	22-13 TASK 803
EDFCS	22-11096 VOR INST XFR FAIL	22-13 TASK 803
EDFCS	22-11097 VOR XFR FAIL	22-13 TASK 803
EDFCS	22-11098 INST XFR FAIL	22-13 TASK 803
EDFCS	22-11099 NO VOR RCVR DATA	22-11 TASK 804
EDFCS	22-11100 NO VOR RCVR DATA	22-11 TASK 804

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EDFCS	22-11101 LOC ANT SW FAIL	22-13 TASK 802
EDFCS	22-11102 LOC ANT SW FAIL	22-13 TASK 802
EDFCS	22-11103 NO MMR/ILS RCVR DATA	22-11 TASK 808
EDFCS	22-11104 NO MMR/ILS RCVR DATA	22-11 TASK 808
EDFCS	22-11105 NO MMR/ILS RCVR DATA	22-11 TASK 809
EDFCS	22-11106 NO MMR/ILS RCVR DATA	22-11 TASK 809
EDFCS	22-11108 ANT SW DISAGREE	22-13 TASK 802
EDFCS	22-11109 ANT SW DISAGREE	22-13 TASK 802
EDFCS	22-11110 ILS SW TRANSFERRED	22-13 TASK 803
EDFCS	22-11111 CDS/DEU-1	22-15 TASK 808
EDFCS	22-11112 NO CDS/DEU DATA	22-15 TASK 808
EDFCS	22-11113 NO CDS/DEU DATA	22-15 TASK 808
EDFCS	22-11114 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11115 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11116 NO CDS/DEU DATA	22-15 TASK 809
EDFCS	22-11117 ELV ENG FAIL	22-12 TASK 810
EDFCS	22-11118 ELV ENG FAIL	22-12 TASK 810
EDFCS	22-11119 ELV SYNC INV>4 SEC	22-11 TASK 801
EDFCS	22-11120 ELV SYNC INV>4 SEC	22-11 TASK 801
EDFCS	22-11121 ELEV ACT FAIL	22-12 TASK 810
EDFCS	22-11122 ELEV ACT FAIL	22-12 TASK 810
EDFCS	22-11123 ELEV DETENT SOL FAIL	22-13 TASK 806
EDFCS	22-11124 ELEV DETENT SOL FAIL	22-13 TASK 807
EDFCS	22-11125 ELEV POS FAIL	22-12 TASK 812
EDFCS	22-11126 ELEV POS FAIL	22-12 TASK 812
EDFCS	22-11127 ELV ACT PRESS LCL INV	22-13 TASK 806
EDFCS	22-11128 ELV ACT PRESS FGN INV	22-13 TASK 806
EDFCS	22-11129 ELV ACT PRESS LCL INV	22-13 TASK 807
EDFCS	22-11130 ELV ACT PRESS FGN INV	22-13 TASK 807
EDFCS	22-11131 ELV ACT DETENT	22-14 TASK 803
EDFCS	22-11132 ELEV SERVO AMP FAIL	22-11 TASK 840
EDFCS	22-11133 ELV ACT DETENT	22-14 TASK 803
EDFCS	22-11134 ELEV SERVO AMP FAIL	22-11 TASK 840
EDFCS	22-11135 NSS POS FAIL	22-12 TASK 809
EDFCS	22-11136 NSS POS FAIL	22-12 TASK 809

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EDFCS	22-11137 COLUMN FORCE APPLIED	22-12 TASK 805
EDFCS	22-11138 COLUMN FORCE APPLIED	22-12 TASK 805
EDFCS	22-11139 COLUMN FORCE APPLIED	22-12 TASK 806
EDFCS	22-11140 COLUMN FORCE APPLIED	22-12 TASK 806
EDFCS	22-11141 AIL QUAD MON	22-12 TASK 811
EDFCS	22-11142 AIL QUAD MON	22-12 TASK 811
EDFCS	22-11143 AIL ENG FAIL	22-13 TASK 804
EDFCS	22-11144 AIL ENG FAIL	22-13 TASK 805
EDFCS	22-11145 AIL POS FAIL	22-12 TASK 813
EDFCS	22-11146 AIL POS FAIL	22-12 TASK 813
EDFCS	22-11147 AIL ACT PRESS LCL INV	22-13 TASK 804
EDFCS	22-11148 AIL ACT PRESS FGN INV	22-13 TASK 804
EDFCS	22-11149 AIL ACT PRESS LCL INV	22-13 TASK 805
EDFCS	22-11150 AIL ACT PRESS FGN INV	22-13 TASK 805
EDFCS	22-11151 AIL ACT DETENT	22-14 TASK 804
EDFCS	22-11152 AIL AMP	22-14 TASK 804
EDFCS	22-11153 AIL ACT DETENT	22-14 TASK 804
EDFCS	22-11154 AIL AMP	22-14 TASK 804
EDFCS	22-11155 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11156 WHEEL FORCE APPLIED (J1B-K06,J06)	22-12 TASK 804
EDFCS	22-11157 SPOIL-4 SIG FAIL	22-12 TASK 801
EDFCS	22-11158 SPOIL-4 SIG FAIL	22-12 TASK 801
EDFCS	22-11159 SPOIL-9 SIG FAIL	22-12 TASK 802
EDFCS	22-11160 SPOIL-9 SIG FAIL	22-12 TASK 802
EDFCS	22-11161 STAB TRIM FAIL	22-15 TASK 821
EDFCS	22-11162 COLUMN AFT FAIL	22-13 TASK 808
EDFCS	22-11163 COLUMN FWD FAIL	22-13 TASK 808
EDFCS	22-11164 NO STAB TRIM UP	22-15 TASK 819
EDFCS	22-11165 NO STAB TRIM DOWN	22-15 TASK 818
EDFCS	22-11166 TRIM UP	22-14 TASK 816
EDFCS	22-11167 STAB TRIM CLUTCH	22-14 TASK 818
EDFCS	22-11168 TRIM DOWN	22-14 TASK 817
EDFCS	22-11169 TRIM UP	22-14 TASK 816
EDFCS	22-11170 STAB TRIM CLUTCH	22-14 TASK 818
EDFCS	22-11171 TRIM DOWN	22-14 TASK 817

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EDFCS	22-11172 SPEED TRIM FAIL	22-13 TASK 817
EDFCS	22-11173 STAB POS SEN INV	22-12 TASK 803
EDFCS	22-11174 STAB POS SEN INV	22-12 TASK 803
EDFCS	22-11175 STAB TRIM CUTOUT FAIL	22-13 TASK 813
EDFCS	22-11176 STAB TRIM MAIN ELECT	22-13 TASK 818
EDFCS	22-11177 STAB MOTOR	22-12 TASK 803
EDFCS	22-11178 STAB TRIM FAIL	22-12 TASK 803
EDFCS	22-11179 FLAPS DOWN	22-11 TASK 822
EDFCS	22-11180 TRIM UP FAIL	22-15 TASK 819
EDFCS	22-11181 TRIM DOWN FAIL	22-15 TASK 818
EDFCS	22-11182 AUTO STAB TRIM CUTOUT	22-13 TASK 813
EDFCS	22-11183 TRIM WARN ANN FAIL	22-13 TASK 814
EDFCS	22-11184 NEUTRAL SHIFT MON	22-12 TASK 809
EDFCS	22-11185 NEUTRAL SHIFT MON	22-12 TASK 809
EDFCS	22-11186 TRIM CMD RESPSE MON	22-11 TASK 854
EDFCS	22-11187 AIL ENG FAIL	22-11 TASK 801
EDFCS	22-11188 AIL ENG FAIL	22-11 TASK 801
EDFCS	22-11189 AIL SYNC INV>4 SEC	22-12 TASK 813
EDFCS	22-11190 AIL SYNC INV>4 SEC	22-12 TASK 813
EDFCS	22-11191 MT CMD MON	22-14 TASK 829
EDFCS	22-11192 MT DISCRETES	22-14 TASK 821
EDFCS	22-11193 MT DISCRETES	22-14 TASK 819
EDFCS	22-11194 MT CMD MON	22-14 TASK 829
EDFCS	22-11195 MT DISCRETES	22-14 TASK 821
EDFCS	22-11196 MT DISCRETES	22-14 TASK 820
EDFCS	22-11197 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11198 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11199 MT 28 VDC INV	22-15 TASK 817
EDFCS	22-11200 MT CMD MON	22-12 TASK 815
EDFCS	22-11201 MACH TRIM WARN FAIL	22-13 TASK 816
EDFCS	22-11202 MT POS INV	22-13 TASK 815
EDFCS	22-11203 TRIM SENSORS INV	22-11 TASK 842
EDFCS	22-11204 TRIM SENSORS INV	22-11 TASK 842
EDFCS	22-11205 MT SELECT STATUS	22-12 TASK 816
EDFCS	22-11206 MT SELECT STATUS	22-12 TASK 816

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EDFCS	22-11207 MT CMD MON BOTH INV	22-12 TASK 815
EDFCS	22-11208 MAIN ELECT TRIM	22-13 TASK 818
EDFCS	22-11209 FGN FAILS TO ENT TOGA	22-11 TASK 837
EDFCS	22-11210 FGN FAILS TO ENT TOGA	22-11 TASK 837
EDFCS	22-11211 FLAP POSN INV	22-12 TASK 807
EDFCS	22-11212 FLAP POSN INV	22-12 TASK 807
EDFCS	22-11213 NAV RCVR TUNE INH	22-16 TASK 830
EDFCS	22-11214 NAV RCVR TUNE INH	22-16 TASK 830
EDFCS	22-11215 MAN TRIM INH	22-17 TASK 802
EDFCS	22-11216 MAN TRIM INH	22-17 TASK 802
EDFCS	22-11217 MCP WARN TEST	22-11 TASK 817
EDFCS	22-11218 MCP WARN TEST	22-11 TASK 817
EDFCS	22-11221 TOGA SW INPUT FAIL	22-13 TASK 810
EDFCS	22-11222 TOGA SW INPUT FAIL	22-13 TASK 811
EDFCS	22-11223 GS DEV ANN	22-11 TASK 801
EDFCS	22-11227 A/P WARN LT RESET FAIL	22-15 TASK 804
EDFCS	22-11228 A/P WARN LT RESET FAIL	22-15 TASK 804
EDFCS	22-11229 DC BUS ISOLATION	22-11 TASK 801
EDFCS	22-11230 DC BUS ISOLATION	22-11 TASK 801
EDFCS	22-11231 RUD 28 VDC PWR INV	22-17 TASK 806
EDFCS	22-11232 RUD 28 VDC PWR INV	22-17 TASK 806
EDFCS	22-11233 RUD CLUTCH	22-17 TASK 804
EDFCS	22-11234 RUD MOT	22-17 TASK 804
EDFCS	22-11235 CALIBRATION ERROR	22-14 TASK 801
EDFCS	22-11236 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11237 RUD CLUTCH	22-17 TASK 804
EDFCS	22-11238 RUD MOT	22-17 TASK 804
EDFCS	22-11239 LOC NOT TUNED	22-15 TASK 813
EDFCS	22-11240 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11241 LOC NOT TUNED	22-15 TASK 814
EDFCS	22-11242 RUD POS MON	22-17 TASK 805
EDFCS	22-11243 RUD A/P ACT MON	22-17 TASK 804
EDFCS	22-11244 RUD A/P ACT MON	22-17 TASK 804
EDFCS	22-11245 RUD SPM MON	22-17 TASK 805
EDFCS	22-11246 RUD TACH 1 INV	22-17 TASK 804

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EDFCS	22-11247 RUD TACH 1 INV	22-17 TASK 804
EDFCS	22-11248 STBY ISOL RQST	22-11 TASK 801
EDFCS	22-11249 STBY ISOL RQST	22-11 TASK 801
EDFCS	22-11250 MT PWR INV	22-12 TASK 820
EDFCS	22-11251 AFCS ENGAGE INTLK	22-13 TASK 821
EDFCS	22-11252 AFCS ENGAGE INTLK	22-13 TASK 822
EDFCS	22-11253 CMD FGN FAIL	22-11 TASK 817
EDFCS	22-11254 MCP ELV ENG	22-11 TASK 817
EDFCS	22-11255 CWS + CMD FGN FAIL	22-11 TASK 817
EDFCS	22-11256 ENG SOL ENABLE FAIL	22-11 TASK 817
EDFCS	22-11257 CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11258 CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11259 MCP AIL ENG	22-11 TASK 817
EDFCS	22-11260 CWS + CMD LCL FAIL	22-11 TASK 817
EDFCS	22-11261 MT PWR INV	22-12 TASK 820
EDFCS	22-11262 FMC APPR MODE RESET	22-11 TASK 811
EDFCS	22-11264 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11265 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11266 DUAL SELECT IN GP MODE	22-11 TASK 801
EDFCS	22-11270 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11271 ALT ALERT AURAL FAIL	22-15 TASK 820
EDFCS	22-11272 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11277 FMC COURSE MISCOMPARE	22-11 TASK 811
EDFCS	22-11279 G/P DEV INVALID	22-11 TASK 811
EDFCS	22-11281 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCS	22-11282 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCS	22-11283 A/P WARN HORN FAIL	22-12 TASK 817
EDFCS	22-11284 MCP A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11285 FCC A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11286 A/S WARN RESET FAIL	22-15 TASK 804
EDFCS	22-11287 A/P WARN LT RST FAIL	22-15 TASK 804
EDFCS	22-11288 A/S WARN ANNUN FAIL	22-15 TASK 804
EDFCS	22-11289 MCP A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11290 FCC A/P WARN FAIL	22-15 TASK 804
EDFCS	22-11291 A/S WARN RESET FAIL	22-15 TASK 804

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EDFCS	22-11292 A/P WARN LT RST FAIL	22-15 TASK 804
EDFCS	22-11293 A/S WARN ANNUN FAIL	22-15 TASK 804
EDFCS	22-11298 DPD INT INCOMPATIBLE	22-11 TASK 811
EDFCS	22-11299 A/P DISENG TST	22-14 TASK 801
EDFCS	22-11300 SEL ALT PWR UP RESET	22-11 TASK 801
EDFCS	22-11301 PWR HOLDUP (J1C-54,58)	22-15 TASK 802
EDFCS	22-11302 PWR 26 VAC INV	22-15 TASK 803
EDFCS	22-11303 FCC INTERNAL FAULT	22-11 TASK 841
EDFCS	22-11304 ENG SOL ENABLE LO	22-14 TASK 802
EDFCS	22-11305 ENG SOL ENABLE HI	22-14 TASK 802
EDFCS	22-11306 FLAPS DOWN	22-14 TASK 805
EDFCS	22-11307 ILS TEST INH/ANT SW	22-14 TASK 806
EDFCS	22-11308 TRIM WARN ANNUN	22-14 TASK 807
EDFCS	22-11309 SPD TRIM WARN	22-14 TASK 808
EDFCS	22-11310 R/A < 10 FEET (A)	22-14 TASK 809
EDFCS	22-11311 R/A < 10 FEET (B)	22-14 TASK 810
EDFCS	22-11312 R/A < 800 FEET	22-14 TASK 811
EDFCS	22-11313 ALT ALERT AURAL	22-14 TASK 812
EDFCS	22-11314 A/S WARN ANN	22-14 TASK 813
EDFCS	22-11315 MTS WARN	22-14 TASK 814
EDFCS	22-11316 R/A < 200 FEET	22-14 TASK 825
EDFCS	22-11317 FCC INTERNAL FAULT	22-11 TASK 841
EDFCS	22-11318 ENG SOL ENABLE LO	22-14 TASK 802
EDFCS	22-11319 ENG SOL ENABLE HI	22-14 TASK 802
EDFCS	22-11320 FLAPS DOWN	22-14 TASK 805
EDFCS	22-11321 ILS TEST INH/ANT SW	22-14 TASK 806
EDFCS	22-11322 TRIM WARN ANNUN	22-14 TASK 807
EDFCS	22-11323 SPD TRIM WARN	22-14 TASK 808
EDFCS	22-11324 R/A < 10 FEET (A)	22-14 TASK 809
EDFCS	22-11325 R/A < 10 FEET (B)	22-14 TASK 810
EDFCS	22-11326 R/A < 800 FEET	22-14 TASK 811
EDFCS	22-11327 ALT ALERT AURAL	22-14 TASK 812
EDFCS	22-11328 A/S WARN ANN	22-14 TASK 813
EDFCS	22-11329 MTS WARN	22-14 TASK 814
EDFCS	22-11330 R/A < 200 FEET	22-14 TASK 825

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EDFCS	22-11331 WHEEL SPIN INPUT FAIL	22-13 TASK 819
EDFCS	22-11332 WHEEL SPIN INPUT FAIL	22-13 TASK 820
EDFCS	22-11333 400 HZ PWR INV	22-16 TASK 834
EDFCS	22-11334 MT 115 VAC INV	22-16 TASK 835
EDFCS	22-11335 MT SENSOR EXC INV	22-12 TASK 819
EDFCS	22-11336 MT SENSOR EXC INV	22-12 TASK 819
EDFCS	22-11337 P SENSOR EXC INV	22-16 TASK 828
EDFCS	22-11338 P SENSOR EXC INV	22-16 TASK 828
EDFCS	22-11339 R SENSOR EXC INV	22-16 TASK 829
EDFCS	22-11340 R SENSOR EXC INV	22-16 TASK 829
EDFCS	22-11341 PWRUP SOP PARITY	22-15 TASK 823
EDFCS	22-11342 PWRUP SOP PARITY	22-15 TASK 823
EDFCS	22-11343 PROGRAM PIN INV	22-15 TASK 823
EDFCS	22-11344 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11345 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11346 S/W CONFIG INV	22-11 TASK 836
EDFCS	22-11347 SPD INV INCOMPTBLE A/P	22-11 TASK 811
EDFCS	22-11348 BUS TRANSFER INV	22-15 TASK 803
EDFCS	22-11349 AIL ACT FAIL	22-12 TASK 821
EDFCS	22-11350 STANDBY ISOL INV	22-11 TASK 801
EDFCS	22-11351 BITE ENTRY INHIBIT	22-11 TASK 827
EDFCS	22-11352 BITE ENTRY INHIBIT	22-11 TASK 827
EDFCS	22-11353 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCS	22-11354 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCS	22-11355 FCC-A XCH-2 BUS	22-15 TASK 825
EDFCS	22-11356 FCC-A XCH-1 BUS	22-15 TASK 825
EDFCS	22-11358 XCH BUS INV TO FGN FCC	22-15 TASK 824
EDFCS	22-11360 NO FMC REQUEST	22-11 TASK 811
EDFCS	22-11361 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCS	22-11362 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCS	22-11363 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCS	22-11364 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCS	22-11365 SQUAT SW INPUT INV	22-15 TASK 815
EDFCS	22-11366 AIL ACT FAIL	22-12 TASK 821
EDFCS	22-11367 LOC BEAM ANOMALY DET	22-11 TASK 808

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EDFCS	22-11368 G/S BEAM ANOMALY DET	22-11 TASK 808
EDFCS	22-11369 LOC BEAM ANOMALY DET	22-11 TASK 809
EDFCS	22-11370 G/S BEAM ANOMALY DET	22-11 TASK 809
EDFCS	22-11371 LOC BEAM ANOMALY DET	22-11 TASK 808
EDFCS	22-11372 LCL DEU REVERSION	22-15 TASK 808
EDFCS	22-11373 FGN DEU REVERSION	22-15 TASK 809
EDFCS	22-11374 FGN DEU REVERSION	22-15 TASK 808
EDFCS	22-11375 LCL DEU REVERSION	22-15 TASK 809
EDFCS	22-11376 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11377 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11378 ADIRU(IRU) DATA INV	22-11 TASK 806
EDFCS	22-11379 ADIRU(IRU) DATA INV	22-11 TASK 807
EDFCS	22-11381 ISFD DATA INV	22-17 TASK 801
EDFCS	22-11383 DME DATA INV	22-12 TASK 808
EDFCS	22-11384 DME DATA INV	22-12 TASK 808
EDFCS	22-11385 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11386 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11387 R/A INV IN APP	22-11 TASK 801
EDFCS	22-11388 FMC DATA INV	22-11 TASK 811
EDFCS	22-11389 G/S TUNE MISCOMPARE	22-11 TASK 857
EDFCS	22-11390 MMR/ILS DATA INV	22-11 TASK 808
EDFCS	22-11391 MMR/ILS DATA INV	22-11 TASK 809
EDFCS	22-11393 CDS/DEU DATA INV	22-15 TASK 808
EDFCS	22-11394 CDS/DEU DATA INV	22-15 TASK 809
EDFCS	22-11395 VOR RCVR DATA INV	22-11 TASK 804
EDFCS	22-11396 VOR RCVR DATA INV	22-11 TASK 804
EDFCS	22-11397 SMYDC DATA INV	22-15 TASK 801
EDFCS	22-11398 SMYDC DATA INV	22-15 TASK 801
EDFCS	22-11401 PROG PIN ERR	22-15 TASK 823
EDFCS	22-11402 PROG PIN ERR	22-15 TASK 823
EDFCS	22-11403 SMYDC FLAPS INV	22-15 TASK 801
EDFCS	22-11404 SMYDC FLAPS INV	22-15 TASK 801
EDFCS	22-11405 DISK ERR	22-11 TASK 801
EDFCS	22-11406 DISK ERR	22-11 TASK 801
EDFCS	22-11407 DISK ERR	22-11 TASK 801

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EDFCS	22-11408 COMM ERR	22-11 TASK 801
EDFCS	22-11409 COMM ERR	22-11 TASK 801
EDFCS	22-11414 FGN FCC DROPPED IN APP	22-14 TASK 801
EDFCS	22-11415 FGN FCC DROPPED IN APP	22-14 TASK 801
EDFCS	22-11416 MCP SEL ALT COUNTER	22-14 TASK 801
EDFCS	22-11417 MCP SEL ALT COUNTER	22-14 TASK 801
EDFCS	22-11418 SIMULTANEOUS UP/DN TRIM	22-14 TASK 801
EDFCS	22-11419 SIMULTANEOUS UP/DN TRIM	22-14 TASK 801
EDFCS	22-11420 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11421 ADIRU(ADC) DATA INV	22-11 TASK 810
EDFCS	22-11422 ADIRU(IRU) DATA INV	22-11 TASK 806
EDFCS	22-11423 ADIRU(IRU) DATA INV	22-11 TASK 807
EDFCS	22-11424 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11425 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11426 R/A INV IN APP	22-11 TASK 805
EDFCS	22-11427 MMR/ILS DATA INV	22-11 TASK 808
EDFCS	22-11428 MMR/ILS DATA INV	22-11 TASK 809
EDFCS	22-11429 CDS/DEU DATA INV	22-15 TASK 808
EDFCS	22-11430 CDS/DEU DATA INV	22-15 TASK 809
EDFCS	22-11433 ADIRU(IRU) DATA ERR	22-11 TASK 806
EDFCS	22-11434 ADIRU(IRU) DATA ERR	22-11 TASK 807
EDFCS	22-11437 ADIRU(IRU) DATA ERR	22-11 TASK 806
EDFCS	22-11438 ADIRU(IRU) DATA ERR	22-11 TASK 807
EDFCS	22-11440 ISFD DATA ERR	22-17 TASK 808
EDFCS	22-11441 MMR LOC MISCOMPARE	22-11 TASK 808
EDFCS	22-11442 MMR LOC MISCOMPARE	22-11 TASK 809
EDFCS	22-11443 MMR LOC MISCOMPARE	22-11 TASK 809
EDFCS	22-11444 MMR GS MISCOMPARE	22-11 TASK 808
EDFCS	22-11445 MMR GS MISCOMPARE	22-11 TASK 809
EDFCS	22-11447 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11448 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11449 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11450 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11451 RADIO ALT DATA ERR	22-11 TASK 805
EDFCS	22-11452 RADIO ALT DATA ERR	22-11 TASK 805

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11455 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11456 RADIO ALT DATA INV	22-11 TASK 805
EDFCS	22-11460 AIL A/P ACT MON	22-12 TASK 811
EDFCS	22-11461 AIL CMD MON	22-14 TASK 801
EDFCS	22-11462 AIL LIM MON	22-14 TASK 801
EDFCS	22-11463 ELV A/P ACT MON	22-12 TASK 810
EDFCS	22-11464 ELV ACT NOT TRIMMED	22-11 TASK 801
EDFCS	22-11466 ELV CMD WRAP TST	22-14 TASK 801
EDFCS	22-11471 R FLARE W/O AOC-GA	22-13 TASK 805
EDFCS	22-11472 P FLARE W/O AOC-GA	22-13 TASK 807
EDFCS	22-11473 P CMD MON	22-14 TASK 801
EDFCS	22-11474 P F/D COMP	22-14 TASK 801
EDFCS	22-11475 P LIMIT>0.3G	22-11 TASK 801
EDFCS	22-11476 MCP ALT INV	22-11 TASK 801
EDFCS	22-11479 P SPM MON	22-14 TASK 801
EDFCS	22-11480 MCP SEL ALT WRAP	22-11 TASK 801
EDFCS	22-11484 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11485 R CMD MON	22-14 TASK 801
EDFCS	22-11486 R F/D COMP	22-14 TASK 801
EDFCS	22-11488 R SPM FGN	22-14 TASK 801
EDFCS	22-11489 R SPM LCL	22-14 TASK 801
EDFCS	22-11490 R SPM MON	22-14 TASK 801
EDFCS	22-11491 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11492 R/A BOTH INV IN DUAL	22-11 TASK 801
EDFCS	22-11493 STAB DELAY TST	22-11 TASK 801
EDFCS	22-11494 STAB TRIM CLUTCH WRAP	22-11 TASK 801
EDFCS	22-11495 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11496 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11497 TRIM ELEV MON	22-11 TASK 801
EDFCS	22-11498 TRIM FLAP INTRLK	22-11 TASK 801
EDFCS	22-11499 A/P DISENG TST	22-14 TASK 801
EDFCS	22-11505 AIL A/P ACT MON	22-12 TASK 811
EDFCS	22-11506 AIL CMD MON	22-14 TASK 801
EDFCS	22-11507 AIL LIM MON	22-14 TASK 801
EDFCS	22-11508 ELV A/P ACT MON	22-12 TASK 810

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EDFCS	22-11509 ELV ACT NOT TRIMMED	22-14 TASK 801
EDFCS	22-11510 ELV CMD MON	22-14 TASK 801
EDFCS	22-11527 ELV CMD WRAP TST	22-14 TASK 801
EDFCS	22-11534 R FLARE W/O AOC-GA	22-13 TASK 804
EDFCS	22-11535 P FLARE W/O AOC-GA	22-13 TASK 806
EDFCS	22-11536 P CMD MON	22-14 TASK 801
EDFCS	22-11537 P F/D COMP	22-14 TASK 801
EDFCS	22-11539 A/T DISENG WARN CAPT	22-32 TASK 814
EDFCS	22-11540 A/T DISENG WARN F/O	22-32 TASK 814
EDFCS	22-11548 P LIMIT>0.3G	22-11 TASK 801
EDFCS	22-11549 SEL N1 INV ENGINE 1	22-11 TASK 801
EDFCS	22-11550 P SPM FGN	22-14 TASK 801
EDFCS	22-11551 P SPM LCL	22-14 TASK 801
EDFCS	22-11552 P SPM MON	22-14 TASK 801
EDFCS	22-11553 SEL N1 INV ENGINE 2	22-11 TASK 801
EDFCS	22-11557 N1 ENG 1(2) INV	22-11 TASK 801
EDFCS	22-11558 R CMD MON	22-14 TASK 801
EDFCS	22-11559 R F/D COMP	22-14 TASK 801
EDFCS	22-11560 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11561 R SPM FGN	22-14 TASK 801
EDFCS	22-11562 R SPM LCL	22-14 TASK 801
EDFCS	22-11563 R SPM MON	22-14 TASK 801
EDFCS	22-11564 LOC TUNE MISCOMP	22-11 TASK 801
EDFCS	22-11565 FCC ACTIVITY INVALID	22-11 TASK 801
EDFCS	22-11566 STAB DELAY TST	22-11 TASK 801
EDFCS	22-11567 STAB TRIM CLUTCH WRAP	22-11 TASK 801
EDFCS	22-11568 P LVDT MON	22-12 TASK 810
EDFCS	22-11569 P LVDT MON	22-12 TASK 810
EDFCS	22-11570 TRIM ELEV MON	22-11 TASK 801
EDFCS	22-11571 TRIM FLAP INTRLK	22-11 TASK 801
EDFCS	22-11572 DATA LD ATTACH	22-11 TASK 801
EDFCS	22-11573 DATA LD FUNC 1	22-11 TASK 801
EDFCS	22-11574 DATA LD FUNC 2	22-11 TASK 801
EDFCS	22-11575 DATA LD FUNC 3	22-11 TASK 801
EDFCS	22-11576 LOC TUNE MISCOMPARE	22-11 TASK 843

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EDFCS	22-11577 LOC TUNE MISCOMPARE	22-11 TASK 843
EDFCS	22-11586 FCC ACTIVITY INVALID	22-11 TASK 801
EDFCS	22-11587 MCP SEL ALT WRAP	22-11 TASK 801
EDFCS	22-11591 CMD DROPPED IN APP	22-11 TASK 801
EDFCS	22-11592 A/P WARN ANN	22-15 TASK 804
EDFCS	22-11593 A/P WARN ANN	22-15 TASK 804
EDFCS	22-11594 MCP BUS SELECT	22-16 TASK 832
EDFCS	22-11595 MCP BUS SELECT	22-16 TASK 832
EDFCS	22-11606 RADIO ALT DATA INV	22-11 TASK 801
EDFCS	22-11607 MCP DATA INV	22-11 TASK 817
EDFCS	22-11608 LNAV XFR FAIL	22-11 TASK 801
EDFCS	22-11609 LNAV XFR FAIL	22-11 TASK 801
EDFCS	22-11612 FGN IRS SW TRANSFERRED	22-13 TASK 801
EDFCS	22-11613 STAB POS DISAGREE	22-12 TASK 803
EDFCS	22-11614 NSS POS DISAGREE	22-12 TASK 809
EDFCS	22-11615 TRIM OPP ELV CMD	22-14 TASK 828
EDFCS	22-11616 TRIM OPP ELV CMD	22-14 TASK 828
EDFCS	22-11618 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11619 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11620 RUD SPIN TEST	22-17 TASK 804
EDFCS	22-11621 RUD MOTION TEST	22-17 TASK 804
EDFCS	22-11622 RUD TORQUE TEST	22-17 TASK 804
EDFCS	22-11623 RADIO ALT NCD	22-11 TASK 805
EDFCS	22-11624 RADIO ALT TEST INH	22-11 TASK 805
EDFCS	22-11625 MCP AIL ENG DISAGREE	22-11 TASK 845
EDFCS	22-11626 MCP ELV ENG DISAGREE	22-11 TASK 846
EDFCS	22-11627 MCP BUS INV TO FGN FCC	22-11 TASK 801
EDFCS	22-11628 XCH BUS INV TO FGN FCC	22-15 TASK 824
EDFCS	22-11629 RADIO ALT TEST INH	22-11 TASK 801
EDFCS	22-11632 RADIO ALT TEST INH	22-11 TASK 801
EDFCS	22-11633 ARM W/O ENG <600 FT	22-11 TASK 801
EDFCS	22-11634 ARM W/O ENG <600 FT	22-11 TASK 801
EDFCS	22-11638 G/S NCD	22-11 TASK 801
EDFCS	22-11639 G/S NCD	22-11 TASK 801
EDFCS	22-11641 LOC 2 OR MORE NCD	22-11 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11642 G/S 2 OR MORE NCD	22-11 TASK 801
EDFCS	22-11643 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11644 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11645 ILS TUNE INH FAIL	22-11 TASK 801
EDFCS	22-11646 PCWS SENSOR FAIL	22-12 TASK 805
EDFCS	22-11647 PCWS SENSOR FAIL (J1B-E02,E01)	22-12 TASK 805
EDFCS	22-11648 PCWS SENSOR FAIL (J1A-E02,E01)	22-12 TASK 806
EDFCS	22-11649 PCWS SENSOR FAIL	22-12 TASK 806
EDFCS	22-11650 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11651 WHEEL FORCE APPLIED	22-12 TASK 804
EDFCS	22-11652 FLAP POSN DISAGREE	22-11 TASK 801
EDFCS	22-11653 LOC DATA ERR	22-11 TASK 801
EDFCS	22-11655 LOC DATA ERR	22-11 TASK 801
EDFCS	22-11656 G/S DATA ERR	22-11 TASK 801
EDFCS	22-11658 G/S DATA ERR	22-11 TASK 801
EDFCS	22-11659 LOC NCD	22-11 TASK 801
EDFCS	22-11660 LOC NCD	22-11 TASK 801
EDFCS	22-11663 SPOIL-4 POS DISAGREE	22-12 TASK 801
EDFCS	22-11664 SPOIL-9 POS DISAGREE	22-12 TASK 802
EDFCS	22-11665 SINGLE RUD DISENG	22-17 TASK 804
EDFCS	22-11666 SINGLE RUD DISENG	22-17 TASK 804
EDFCS	22-11667 DUAL RUD DISENG	22-17 TASK 804
EDFCS	22-11669 CRS 1/2 NOT = IN CMD	22-11 TASK 801
EDFCS	22-11670 CRS 1/2 CHG IN APP	22-11 TASK 801
EDFCS	22-11687 RATE MONITOR	22-32 TASK 819
EDFCS	22-11688 RATE MONITOR	22-32 TASK 819
EDFCS	22-11693 G/S BEAM ANOMALY DET	22-11 TASK 801
EDFCS	22-11694 RUD POS DISAGREE	22-17 TASK 805
EDFCS	22-11695 RUD CMD/POS DISAGREE	22-17 TASK 805
EDFCS	22-11697 FGN FLAP POSN FAIL	22-11 TASK 801
EDFCS	22-11698 FGN FLAP POSN FAIL	22-11 TASK 801
EDFCS	22-11699 ELEV POS DISAGREE	22-11 TASK 801
EDFCS	22-11700 COLUMN OVERRIDE	22-12 TASK 805
EDFCS	22-11701 COLUMN OVERRIDE	22-12 TASK 805
EDFCS	22-11703 RUD NOT ENG AT TD	22-11 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11704 TOGA SW MISCOMPARE	22-13 TASK 810
EDFCS	22-11705 TOGA FAIL ACTIVE	22-13 TASK 811
EDFCS	22-11706 MCP A/P WARN PWR FAIL	22-11 TASK 801
EDFCS	22-11707 MCP WARN TST INFC	22-11 TASK 801
EDFCS	22-11708 MCP WARN TST INFC	22-11 TASK 801
EDFCS	22-11709 MCP NOT CAT 3B CFG	22-11 TASK 801
EDFCS	22-11710 ROLL / YAW ASYMMETRY	22-11 TASK 832
EDFCS	22-11712 ROLL / YAW ASYMMETRY	22-11 TASK 832
EDFCS	22-11713 MCP A/P WARN FAIL	22-11 TASK 801
EDFCS	22-11714 MCP A/P WARN FAIL	22-11 TASK 801
EDFCS	22-11715 ROLL AUTHORITY	22-11 TASK 833
EDFCS	22-11716 ROLL AUTHORITY	22-11 TASK 833
EDFCS	22-11732 ELEVATOR LIMITED IN GA	22-11 TASK 801
EDFCS	22-11733 TAS INV	22-15 TASK 811
EDFCS	22-11734 TAS INV	22-15 TASK 811
EDFCS	22-11737 TAS DIFF	22-15 TASK 811
EDFCS	22-11738 COMPUTED A/S DIFF	22-15 TASK 811
EDFCS	22-11739 COMPUTED A/S INV	22-15 TASK 811
EDFCS	22-11740 COMPUTED A/S INV	22-15 TASK 811
EDFCS	22-11746 MMR/ILS DATA INV	22-11 TASK 801
EDFCS	22-11747 MMR/ILS DATA INV	22-11 TASK 801
EDFCS	22-11748 FREQ NOT = IN APP	22-11 TASK 801
EDFCS	22-11754 UNCOR BARO ALT INV	22-15 TASK 811
EDFCS	22-11755 UNCOR BARO ALT INV	22-15 TASK 811
EDFCS	22-11756 HDG REF MISCOMPARE	22-11 TASK 801
EDFCS	22-11757 DUAL W/O FLARE H<350	22-11 TASK 801
EDFCS	22-11758 DUAL W/O FLARE H<350	22-11 TASK 801
EDFCS	22-11759 ALPHA FLOOR PERF LIMIT	22-11 TASK 801
EDFCS	22-11796 BUS SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11797 FGN FCC DROPPED IN GA	22-14 TASK 801
EDFCS	22-11798 FGN FCC DROPPED IN GA	22-14 TASK 801
EDFCS	22-11799 FGN GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11800 LCL GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11801 FGN GLS TUNED FAIL	22-11 TASK 801
EDFCS	22-11802 LCL GLS TUNED FAIL	22-11 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCS	22-11805 RUD ACT TRQ LIM	22-17 TASK 804
EDFCS	22-11808 MCP A/P WARN FAIL	22-11 TASK 817
EDFCS	22-11810 LNAV SW TRANSFERRED	22-11 TASK 801
EDFCS	22-11811 RUD TACH INV	22-17 TASK 804
EDFCS	22-11812 A/B INDEX CONFIG INV	22-16 TASK 827
EDFCS	22-11821 BOTH R/A > 2000 FEET	22-11 TASK 844
EDFCS	22-11822 FMC DATA INV	22-11 TASK 811
EDFCS	22-11823 CWS SELECTED IN DUAL	22-11 TASK 801
EDFCS	22-11827 SPOIL POS DISAGREE	22-12 TASK 818
EDFCS	22-11828 FCC BUS OUT	22-11 TASK 848
EDFCS	22-11829 FCC BUS OUT	22-11 TASK 848
EDFCS	22-11830 ELEV AUTH LIMITED	22-11 TASK 847
EDFCS	22-11831 FEEL/CENTERING FREEPLAY	22-11 TASK 828
EDFCS	22-11833 WHEEL OVERRIDE	22-12 TASK 823
EDFCS	22-11834 WHEEL OVERRIDE	22-12 TASK 823
EDFCS	22-11835 TOGA WITHOUT FLARE ARM	22-13 TASK 811
EDFCS	22-11846 LVCH HI SPD LIMIT	22-11 TASK 834
EDFCS	22-11847 LCL STICK SHAKER	22-11 TASK 835
EDFCS	22-11848 FGN STICK SHAKER	22-11 TASK 835

———— **END OF TASK** ————

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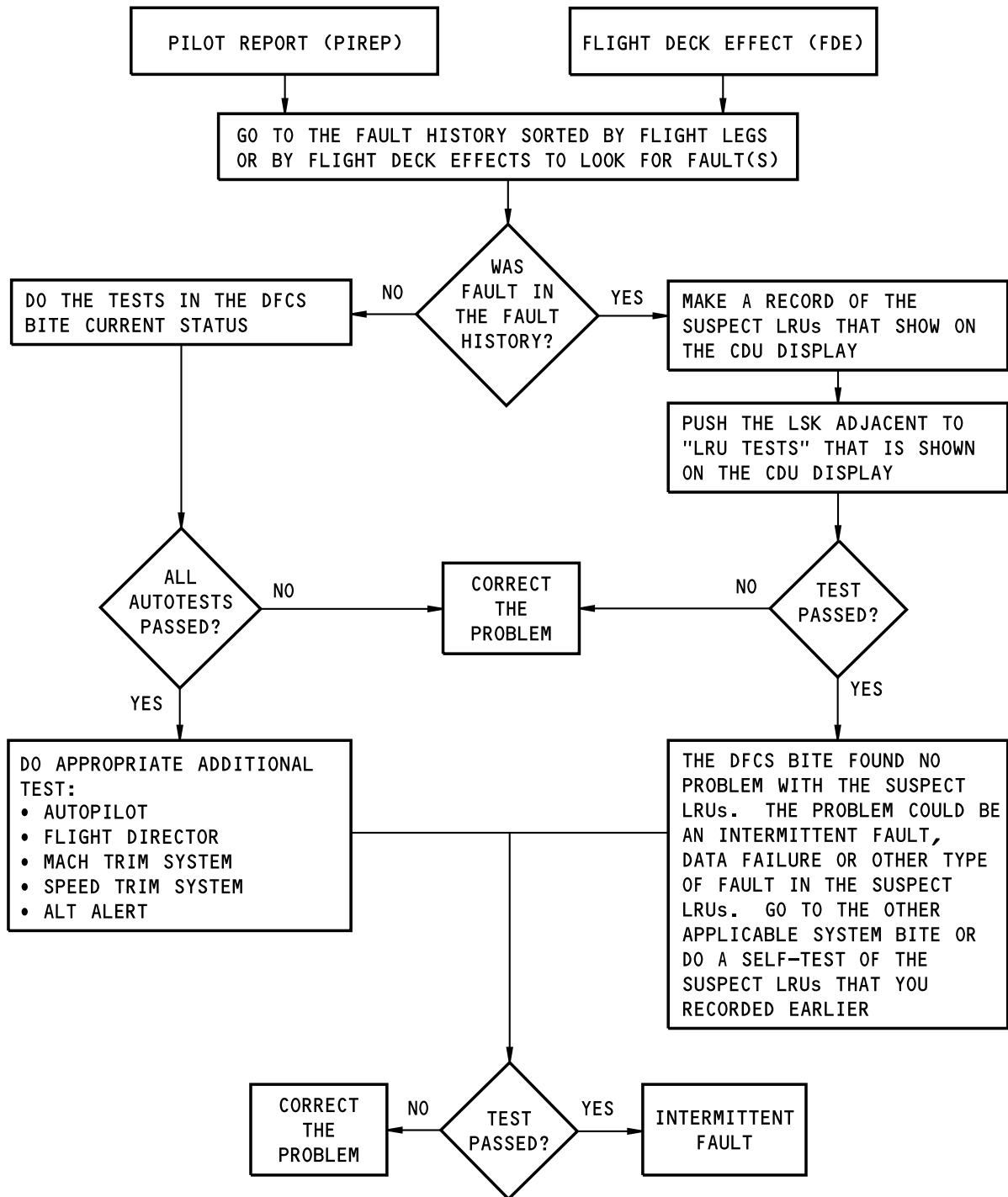
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DFCS BITE Flowchart
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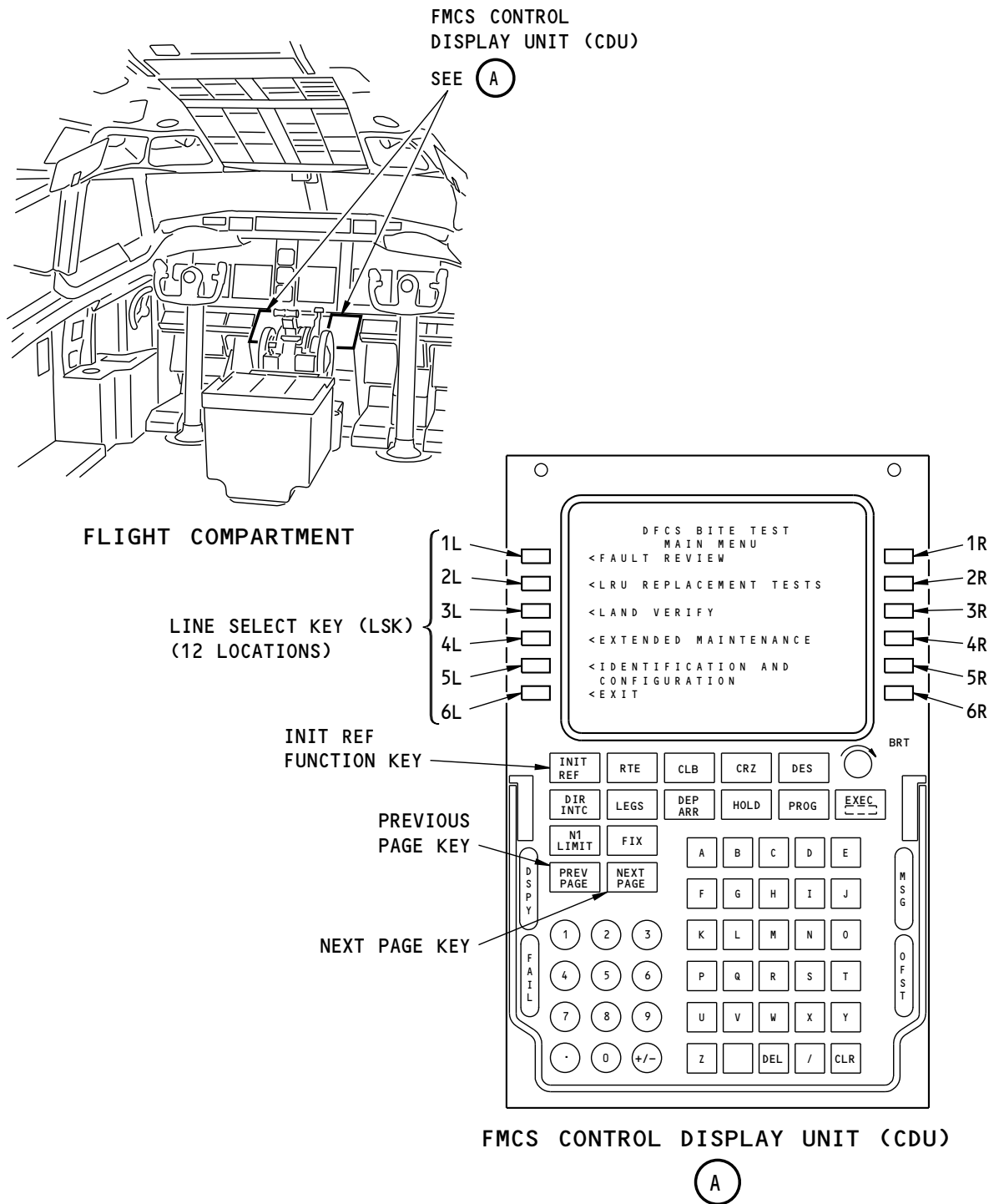
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DFCS BITE Test Main Menu
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802. LRU Replacement Test

A. Description

- (1) You do the DFCS LRU Replacement Test from the Control Display Unit (CDU). You use the LRU REPLACEMENT TEST item on the DFCS BITE TEST MAIN MENU in this task.
- (2) These are the LRU Replacement Tests in the LRU REPLACEMENT TEST Menu that you can use in this task:
 - (a) ADIRU (Air Data Inertial Reference Unit)
 - (b) A/T (Autothrottle)
 - (c) DME (Distance Measuring Equipment)
 - (d) LRRR (Low Range Radio Altimeter)
 - (e) FCC (Flight Control Computer)
 - (f) MCP (Mode Control Panel)
 - (g) FMC (Flight Management Computer)
 - (h) SMYDC (Stall Management Yaw Damper Computer)
 - (i) VOR (VHF Omnidirectional Receiver)
 - (j) MMR/ILS (Multi-Mode Receiver/Instrument Landing System)
 - (k) CDS (Common Display System)
 - (l) ISFD (Integrated Standby Flight Display)
 - (m) PITCH SENS (Pitch Position Sensors)
 - (n) ROLL SENS (Roll Position Sensors)
 - (o) STAB SENS (Stabilizer Position Sensors)
 - (p) MACH TRIM
 - (q) FLAP SENS
 - (r) YAW SENS
- (3) Each LRU replacement test contains a number of library tests. The library test can be an autotest, interactive test or surface test.
- (4) If there are autotests and interactive tests (or surface tests) in the LRU replacement test, the autotests come before the interactive tests (or surface tests).
 - (a) The autotest is automatic.
 - (b) The interactive test is not automatic. You must do the instructions that show on the CDU display to complete the interactive test.
 - (c) The surface test is not automatic and hydraulic power is necessary for the surface test. You must do the instructions that show on the CDU display to complete the surface test.
- (5) Some selections that you often make when you do the DFCS BITE test are the CONTINUE, PREV MENU, EXIT prompts on the CDU display and the NEXT PAGE and PREV PAGE keys on the CDU keyboard.
 - (a) CONTINUE
 - 1) If you push the LSK adjacent to CONTINUE, then the DFCS BITE will take you to the subsequent page of the test.
 - (b) PREV MENU



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- 1) If you push the LSK adjacent to PREV MENU, then the DFCS BITE will take you to the previous selection page.
- (c) EXIT
 - 1) If you push the LSK adjacent to EXIT, then the DFCS BITE will take you out of DFCS BITE test and put the airplane back to its usual condition.
- (d) NEXT PAGE or PREV PAGE key
 - 1) If it is necessary to change page, then you push the NEXT PAGE or PREV PAGE key on the CDU keyboard. The DFCS BITE lets you change page when there is more than one screen page.

B. LRU Replacement Test

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NOTE: If the Head-Up Display (HUD) combiner is down and deployed, the HUD is in PRI mode and one or more NAV receivers are tuned to a recognized ILS frequency, the DFCS BITE test may fail. If this occurs, it is necessary to turn OFF the HUD, move the HUD combiner to the UP and stowed position, and to repeat the DFCS BITE test.

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- (1) If you are not at one of the DFCS BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT display shows, then push the line select key (LSK) next to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX show.
- (2) Push the Line Select Key (LSK) adjacent to each of these prompts:
 - (a) MAINT
 - (b) DFCS

NOTE: If FCC-A SELFTEST FAIL, FCC-B SELFTEST FAIL or CROSS CHANNEL TEST FAIL message shows, then refer to the table at the beginning of this chapter to find the fault isolation task for the maintenance message.
 - (c) LRU REPLACEMENT TEST
 - (d) Make a selection for the applicable channel:
 - 1) CHANNEL A
 - 2) CHANNEL B
 - 3) CHANNEL A AND B
 - (e) Push the LSK adjacent to the applicable LRU test.

NOTE: Use the NEXT PAGE or PREV PAGE key to change page if it is necessary.
 - (f) Autotest:
 - 1) Do the instructions that show on the CDU display.

NOTE: If the initialization setup is correct, AUTOTEST IN PROGRESS will show on the CDU display.



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- 2) If AUTOTEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: Some autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The autotest passed if you do not see the AUTOTEST FAILED message.

NOTE: When all the autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.

- 3) If AUTOTEST FAILED shows, then do the library test(s) that shows on the CDU display.
- 4) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
- b) Push the LSK adjacent to TEST DATA.
- c) Push the LSK adjacent to RERUN.
- 5) Refer to the table at the beginning of this chapter to find the fault isolation task for the maintenance message.

(g) Interactive Test:

- 1) Do the instructions that show on the CDU display to complete all the interactive tests.
- 2) If INTERACTIVE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last interactive test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If INTERACTIVE TEST FAILED shows on the CDU display, then do these steps:
 - a) Push the LSK adjacent to TEST RESULTS.
 - b) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- c) If it is necessary to do the test again, then do these steps:
- d) Push the LSK adjacent to TEST DATA.
- e) Push the LSK adjacent to RERUN.
- 4) Refer to the table at the beginning of this chapter to find the fault isolation task for the maintenance message.

(h) Surface Test:

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FAULT ISOLATION MANUAL**



KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER, AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Do the instructions that show on the CDU display to complete all the surface tests.
- 2) If SURFACE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last surface test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If SURFACE TEST FAILED shows on the CDU display, then do these steps:
 - a) Push the LSK adjacent to TEST RESULTS.
 - b) Make a record of the channel (A, B, or A/B), suspect LRUs and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- c) If it is necessary to do the test again, then do these steps:
 - d) Push the LSK adjacent to TEST DATA.
 - e) Push the LSK adjacent to RERUN.
- 4) Refer to the table at the beginning of this chapter to find the fault isolation task for the maintenance message.

———— **END OF TASK** ————

803. Mode Control Panel Tests

A. Description

- (1) You do the DFCS mode control panel tests from the CDU. You use the Mode Control Panel (MCP) TESTS item on the DFCS Built-In-Test Equipment (BITE) EXTENDED MAINTENANCE menu in this task.
- (2) There are two types of tests in the extended maintenance MCP TESTS. The quick test (autotest) and the interactive test. When you do the MCP TESTS, the autotests come before the interactive tests.
 - (a) The autotest is automatic.
 - (b) The interactive test is not automatic. You must do the instructions that show on the CDU display to complete the interactive test.
- (3) Some selections that you often make when you do the BITE test are the CONTINUE, PREV MENU, EXIT prompts on the CDU display and the NEXT PAGE and PREV PAGE keys on the CDU keyboard.
 - (a) CONTINUE
 - 1) If you push the LSK adjacent to CONTINUE, then the BITE will take you to the subsequent page of the test.

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- (b) PREV MENU
 - 1) If you push the LSK adjacent to PREV MENU, then the BITE will take you to the previous selection page.
- (c) EXIT
 - 1) If you push the LSK adjacent to EXIT, then the BITE will take you out of BITE test and put the airplane back to its usual condition.
- (d) NEXT PAGE or PREV PAGE key
 - 1) If it is necessary to change page, then you push the NEXT PAGE or PREV PAGE key on the CDU keyboard. The BITE lets you change page when there is more than one screen page.

B. Possible Causes

- (1) Abnormal power transient problem
- (2) Power interruption

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the test.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

D. Initial Evaluation

- (1) If all of the MCP display windows are operating normally, go to the Fault Isolation Procedure below.
- (2) If any of the MCP display windows are blank, do these steps to restore the MCP display windows to normal operation.
 - (a) Open these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

- (b) Visually check all the MCP display windows.
- (c) Make sure that all the MCP display windows are blank before continuing.
- (d) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

- (e) Visually check all the MCP display windows.
- (f) If all of the MCP display windows are operating normally, then you have corrected the fault.
- (g) Continue with the Fault Isolation Procedure.

E. Fault Isolation Procedure

- (1) If you are not at one of the DFCS BITE TEST displays, then do these steps:

- (a) Push the INIT REF function key.
 - (b) If the POS INIT display shows, then push the LSK next to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX show.

- (2) Push the LSK adjacent to each of these prompts:

- (a) Maintenance (MAINT)
 - (b) DFCS

NOTE: If Flight Control Computer (FCC)-A SELFTEST FAIL, FCC-B SELFTEST FAIL or CROSS CHANNEL TEST FAIL message shows, then refer to table at the beginning of the chapter to find the fault isolation task for the applicable maintenance message.

- (c) EXTENDED MAINTENANCE
 - (d) MCP TESTS
 - (e) Make a selection for the applicable channel:

- 1) CHANNEL A
 - 2) CHANNEL B
 - 3) CHANNEL A AND B

- (f) Autotest:

- 1) Do the instructions that show on the CDU display.

NOTE: If the initialization setup is correct, AUTOTEST IN PROGRESS will show on the CDU display.

- 2) If AUTOTEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: Some autotests can be completed very fast and you cannot see the AUTOTEST PASSED message. The autotest passed if you do not see the AUTOTEST FAILED message.

NOTE: When all the autotests are completed, the summary page shows AUTOTEST PASSED or AUTOTEST FAILED.

- 3) If AUTOTEST FAILED shows, then do the library test(s) that shows on the CDU display.

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- 4) Make a record of the channel (A, B, or A/B), suspect LRUs, maintenance messages and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the CDU display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- a) If it is necessary to do the test again, then do these steps:
- b) Push the LSK adjacent to TEST DATA.
- c) Push the LSK adjacent to RERUN.

- 5) Refer to the Maintenance Message table in Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801 for the fault isolation task.

(g) Interactive Test:

- 1) Do the instructions that show on the CDU display to complete all the interactive tests.
- 2) If INTERACTIVE TEST PASSED shows on the CDU display, then the test is completed with no failure.

NOTE: After you complete the last interactive test, the summary page shows TEST FAILED or ALL TESTS PASSED.

- 3) If INTERACTIVE TEST FAILED shows on the CDU display, then do these steps:

- a) Push the LSK adjacent to TEST RESULTS.
- b) Make a record of the channel (A, B, or A/B), suspect LRUs, maintenance messages and the pin numbers that show on the CDU display.

NOTE: You can find the channel data adjacent to the INPUT/OUTPUT PINS that shows on the display. Channel A is for the FCC-A and channel B is for the FCC-B. If there is no pin number for the suspect LRU, the channel data does not show.

NOTE: Each suspect LRU is referred to as a maintenance message.

- c) If it is necessary to do the test again, then do these steps:
- d) Push the LSK adjacent to TEST DATA.
- e) Push the LSK adjacent to RERUN.
- 4) Refer to the Maintenance Message table in Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801 for the fault isolation task.

END OF TASK

804. VOR Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

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For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins: J1B-H08,G08

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NOTE: Suspect LRU: VHF Omnidirectional Range (VOR)/MKR Receiver

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- (a) 22-11099 NO VOR RCVR DATA
 - 1) FCC-A receives no data from the VOR-1 Input Bus.
- (b) 22-11100 NO VOR RCVR DATA
 - 1) FCC-B receives no data from the VOR-2 Input Bus.
- (c) 22-11395 VOR DATA INV
 - 1) FCC-A receives invalid data from the VOR-1 Input Bus.
- (d) 22-11396 VOR DATA INV
 - 1) FCC-B receives invalid data from the VOR-2 Input Bus.

SIA ALL

B. Possible Causes

- (1) VOR/MKR Receiver, M1724 (M1725)
- (2) Wiring
- (3) FCC-A, M1875
- (4) FCC-B, M1876

C. Related Data

- (1) WDM 34-51-11
- (2) WDM 34-51-21
- (3) SSM 22-11-16
- (4) SSM 34-51-11
- (5) SSM 34-51-21

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.
 - If it is necessary, you can push the LSK adjacent to RERUN to do the test again.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: VOR/Marker Beacon Receiver BITE Procedure, 34-51 TASK 801.
 - (a) If you find VOR related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find VOR related maintenance messages, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring:

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- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the VOR/MKR receiver-1, M1724. To remove it, do this task: VOR/MKR Receiver Removal, AMM TASK 34-51-01-000-801.
- (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D3623B at the E1-2 shelf (WDM 34-51-11).

D10135B	D3623B
pin H8	pin A4
pin G8	pin B4

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the VOR/MKR receiver-1, M1724. To install it, do this task: VOR/MKR Receiver Installation, AMM TASK 34-51-01-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the VOR/MKR receiver-1, M1724. To install it, do this task: VOR/MKR Receiver Installation, AMM TASK 34-51-01-400-801.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the VOR/MKR receiver-2, M1724. To remove it, do this task: VOR/MKR Receiver Removal, AMM TASK 34-51-01-000-801.
 - (c) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D3625B at the E1-4 shelf (WDM 34-51-21).

D10137B	D3625B
pin H8	pin A4
pin G8	pin B4

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the VOR/MKR receiver-2, M1725. To install it, do this task: VOR/MKR Receiver Installation, AMM TASK 34-51-01-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the VOR/MKR receiver-2, M1725. To install it, do this task: VOR/MKR Receiver Installation, AMM TASK 34-51-01-400-801.
- (4) If the maintenance message is on channel A (B) replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:

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- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the VOR TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

805. Radio Altimeter Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- J1B-B04,A04
- J1B-K11,J11

NOTE: SUSPECT LRU(S):

- RADIO ALT-1
- RADIO ALT-2

- (a) 22-11037 RADIO ALT DO NOT AGREE
 - 1) FCCs detect that the Radio Altitude Inputs do not agree.
- (b) 22-11618 RADIO ALT NCD
 - 1) FCCs detect Radio Altitude NCD during approach from RADIO ALT-1 Input Bus.
- (c) 22-11619 RADIO ALT NCD
 - 1) FCCs detect Radio Altitude NCD during approach from RADIO ALT-2 Input Bus.
- (d) 22-11623 RADIO ALT NCD
 - 1) FCCs detect Radio Altitude NCD during approach from RADIO ALT-3 Input Bus.
- (e) 22-11051 NO RADIO ALT DATA

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- 1) FCC-A receives no data from the RADIO ALT-1 Input Bus.
- (f) 22-11052 NO RADIO ALT DATA
 - 1) FCC-B receives no data from the RADIO ALT-2 Input Bus.
- (g) 22-11053 NO RADIO ALT DATA
 - 1) FCC-B receives no data from the RADIO ALT-1 Input Bus.
- (h) 22-11054 NO RADIO ALT DATA
 - 1) FCC-A receives no data from the RADIO ALT-2 Input Bus.
- (i) 22-31264 RADIO ALT DATA ERR
 - 1) FCCs detect that the Radio Altitude Inputs do not agree.
- (j) 22-31265 RADIO ALT DATA ERR
 - 1) FCCs detect that the Radio Altitude Inputs do not agree.
- (k) 22-31270 RADIO ALT DATA ERR

NOTE: SUSPECT LRU(S):

 - RADIO ALT-1
 - FCC-A
 - 1) FCC-B receives no data from RADIO ALT-1 Input Bus when [Cfg_LRRRA_3 = True] (received on Cross Channel Bus from FCC-A).
- (l) 22-31272 RADIO ALT DATA ERR

NOTE: SUSPECT LRU(S):

 - RADIO ALT-2
 - FCC-B
 - 1) FCC-A receives no data from RADIO ALT-2 Input Bus when [Cfg_LRRRA_3 = True] (received on Cross Channel Bus from FCC-B).
- (m) 22-11385 RADIO ALT DATA INV
 - 1) FCC-A receives invalid data from the RADIO ALT-1 Input Bus.
- (n) 22-31386 RADIO ALT DATA INV
 - 1) FCC-A receives invalid data from the Radio Altimeter-2 Input Bus.
- (o) 22-31424 RADIO ALT DATA INV
 - 1) FCC-B receives invalid data from the Radio Altimeter-1 Input Bus.
- (p) 22-31425 RADIO ALT DATA INV
 - 1) FCC-B receives invalid data from the Radio Altimeter-2 Input Bus.
- (q) 22-31447 RADIO ALT DATA ERR
 - 1) FCC-A votes out data from the Radio Altimeter-1.
- (r) 22-31448 RADIO ALT DATA ERR
 - 1) The FCC-A votes out data from the Radio Altimeter-2.
- (s) 22-31449 RADIO ALT DATA ERR
 - 1) The FCC-A votes out data from the Radio Altimeter-3.
- (t) 22-31450 RADIO ALT DATA ERR

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- 1) FCC-B votes out data from the Radio Altimeter-1.
- (u) 22-31451 RADIO ALT DATA ERR
 - 1) The FCC-B votes out data from the Radio Altimeter-2.
- (v) 22-31452 RADIO ALT DATA ERR
 - 1) The FCC-B votes out data from the Radio Altimeter-3.
- (w) 22-31455 RADIO ALT DATA INV
 - 1) FCC-B receives invalid data from the Radio Altimeter-1 Input (from FCC-A).
- (x) 22-31456 RADIO ALT DATA INV
 - 1) FCC-A receives invalid data from the Radio Altimeter-2 Input (from FCC-B).

SIA ALL

B. Possible Causes

- (1) Radio Altimeter (RA)-1 Coaxial Cable/Antenna Connections
- (2) RA-2 Coaxial Cable/Antenna Connections
- (3) RA Transceiver-1, M1735
- (4) RA Transceiver-2, M1736
- (5) Wiring
- (6) FCC-A, M1875
- (7) FCC-B, M1876

C. Related Data

- (1) WDM 34-33-11
- (2) WDM 34-33-21
- (3) SSM 22-11-16
- (4) SSM 34-33-11
- (5) SSM 34-33-21

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801 or DFCS BITE Test was performed.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

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- (1) Do this task: Low Range Radio Altimeter (LRRRA) BITE Procedure, 34-33 TASK 801.
 - (a) If there is a fault message, refer to the table at the end of the BITE Task to find the applicable FIM Tasks for the maintenance messages that show.
 - 1) Do the Repair Confirmation at the end of this task.

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- (b) If there is no fault message, then continue.
- (2) If the maintenance message is on RA Transceiver-1, then do these wiring checks:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Remove the RA Transceiver-1, M1735. This is the task: Low Range Radio Altimeter (LRRR) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801.
 - (d) Disconnect these Antenna Coaxial Cable connectors (Low Range Radio Altimeter (LRRR) Antenna Removal (With Gasket), AMM TASK 34-33-11-000-803):
 - D3671 from the RA Transmitter Antenna-1, M1737
 - D3675 from the RA Receiver Antenna-1, M1739
 - 1) Examine each Coaxial Connector for moisture and contamination.
 - a) If necessary, clean with cotton wiper, G00034.
 - 2) Examine the connector pins for damage (i.e. bent or pushed back pins).
 - a) Repair or replace as necessary.
 - (e) Examine the wiring between the RA Antennas and the RA Transceiver-1 at the E3-1 Shelf as follows (WDM 34-33-11):

RA XMTR ANT-1

D3671

pin =A1

RA XCVR-1

D3667B

pin 71

RA RCVR ANT-1

D3675

pin =A1

RA XCVR-1

D3667A

pin 71

- 1) If you find a problem in the wiring, repair it as necessary.
 - a) Re-connect these Antenna Coaxial Cable connectors (Low Range Radio Altimeter (LRRR) Antenna Installation (With Gasket), AMM TASK 34-33-11-400-803):
 - D3671 to the RA Transmitter Antenna-1, M1737
 - D3675 to the RA Receiver Antenna-1, M1739
- (f) Do a check of the wiring into Terminal Block TB1106, terms YA11 and YB11 at the E1-1 Shelf (WDM 34-33-11).
 - 1) Make sure that the pins are correctly crimped and terminated.
 - 2) Make sure that the wiring is correctly seated and locked into the Terminal Block.
 - 3) Repair the problems that you find.
- (g) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and RA Transceiver-1 at the E3-1 Shelf (WDM 34-33-11).

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RA TRANSCEIVER 1 WIRING

FCC-A	RA XCVR-1
D10135B	D3667B
pin B4	pin B2
pin A4	pin B3

FCC-B	RA XCVR-1
D10137B	D3667B
pin K11	pin B2
pin J11	pin B3

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install RA Transceiver-1, M1735. This is the task: Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801.
 - c) Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - e) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then continue.
- (3) If the maintenance message is on RA Transceiver-2, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Remove the RA Transceiver-2, M1736. This is the task: Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801.
 - (d) Disconnect these Antenna Coaxial Cable connectors (Low Range Radio Altimeter (LRRRA) Antenna Removal (With Gasket), AMM TASK 34-33-11-000-803):
 - D3673 from the RA Transmitter Antenna-2, M1738
 - D3677 from the RA Receiver Antenna-2, M1740
 - 1) Examine each Coaxial Connector for moisture and contamination.
 - a) If necessary, clean with cotton wiper, G00034.
 - 2) Examine the connector pins for damage (i.e. bent or pushed back pins).
 - a) Repair or replace as necessary.
 - (e) Examine the wiring between the RA Antennas and the RA Transceiver-2 at the E3-2 Shelf as follows (WDM 34-33-21):

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RA XMTR ANT-2	RA XCVR-2
D3673	D3669B
pin =A1	pin 71

RA RCVR ANT-2	RA XCVR-2
D3677	D3669A
pin =A1	pin 71

- 1) If you find a problem in the wiring, repair it as necessary.
 - a) Re-connect these Antenna Coaxial Cable connectors (Low Range Radio Altimeter (LRRRA) Antenna Installation (With Gasket), AMM TASK 34-33-11-400-803):
 - D3673 to the RA Transmitter Antenna-2, M1738
 - D3677 to the RA Receiver Antenna-2, M1740
- (f) Do a check of the wiring into Terminal Block TB3201, terms YA83 and YB83 at the E3-2 Shelf (WDM 34-33-21).
 - 1) Make sure that the pins are correctly crimped and terminated.
 - 2) Make sure that the wiring is correctly seated and locked into the Terminal Block.
 - 3) Repair the problems that you find.
- (g) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and RA Transceiver-2 at the E3-2 Shelf (WDM 34-33-21).

RA TRANSCEIVER 2 WIRING

FCC-B	RA XCVR-2
D10137B	D3669B
pin B4	pin B2
pin A4	pin B3

FCC-A	RA XCVR-2
D10135B	D3669B
pin K11	pin B2
pin J11	pin B3

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install RA Transceiver-2, M1736. This is the task: Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801.
 - c) Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - e) Do the Repair Confirmation at the end of this task.

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- 2) If you do not find a problem with the wiring, then continue.
- (4) If the maintenance message is on Channel A, then replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) If the maintenance message is on Channel B, then replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.

SIA ALL

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the LRRRA TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. Left ADIRU(IRU) Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the Flight Control Computer A (FCC-A) and Flight Control Computer B (FCC-B)

For the Flight Control Computer A (FCC-A): J1A=D10135A, J1B=D10135B and J1C=D10135C

For the Flight Control Computer B (FCC-B): J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1A-K03,K02

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- J1B-K03,K02

NOTE: Suspect LRU: ADIRU(IRU)-1

- (a) 22-11003 NO ADIRU(IRU) DATA
 - 1) The FCC-B receives no data from the ADIRU(IRU)-1 Input Bus.
- (b) 22-11004 NO ADIRU(IRU) DATA
 - 1) The FCC-A receives no data from the ADIRU(IRU)-1 Input Bus.
- (c) 22-11029 ADIRU(IRU) DATA ERR
 - 1) FCC(s) detect data comparison error between ADIRU(IRU)-1 and ADIRU(IRU)-2.
- (d) 22-11422 ADIRU(IRU) DATA ERR
 - 1) The FCC-B receives invalid data from the ADIRU(IRU)-1 Input Bus.
- (e) 22-11433 ADIRU(IRU) DATA ERR
 - 1) The FCC-A votes out data from the ADIRU(IRU)-1.
- (f) 22-11437 ADIRU(IRU) DATA ERR
 - 1) The FCC-B votes out data from the ADIRU(IRU)-1.
- (g) 22-11378 ADIRU(IRU) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(IRU)-1 Input Bus.

SIA ALL

B. Possible Causes

- (1) Left Air Data Inertial Reference Unit (ADIRU), M1749
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

C. Related Data

- (1) SSM 22-11-52
- (2) SSM 34-21-13
- (3) WDM 34-21-13

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

SIA ALL; AIRPLANES WITH HEAD UP DISPLAY (HUD)

NOTE: If the HUD combiner is down and deployed, the HUD is in PRI mode and one or more NAV receivers are tuned to a recognized ILS frequency, the DFCS BITE test may fail. If this occurs, it is necessary to turn OFF the HUD, move the HUD combiner to the UP and stowed position, and to repeat the DFCS BITE test.

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- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If you find Inertial Reference System (IRS) related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find IRS related maintenance messages, then continue.
- (2) Do this check of the wiring:
 - (a) For the CH-A (B) Fault, remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Left ADIRU at the E5-2 Shelf as follows (WDM 34-21-13):

CHANNEL A FAULT

FCC-A, M1875	L ADIRU, M1749
D10135B	D3687B
pin K3	pin E5
pin K2	pin E6

CHANNEL B FAULT

FCC-B, M1876	L ADIRU, M1749
D10137A	D3687B
pin K3	pin C10
pin K2	pin C11

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the applicable FCC-A (B), M1875 (M1876) for the channel that does not have the fault. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Install a new Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Swap FCC-A, M1875 and FCC-B, M1876, then do these steps:
 - (a) Exit DFCS BITE completely, then re-enter DFCS BITE.
 - (b) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 01 ADIRU test.

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- (c) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (d) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

807. Right ADIRU(IRU) Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1A-K03,K02
- J1B-K03,K02

NOTE: Suspect LRU: ADIRU(IRU)-2

- (a) 22-11005 NO ADIRU(IRU) DATA
 - 1) The FCC-A receives no data from the ADIRU(IRU)-2 Input Bus.
- (b) 22-11006 NO ADIRU(IRU) DATA
 - 1) The FCC-B receives no data from the ADIRU(IRU)-2 Input Bus.
- (c) 22-11029 ADIRU(IRU) DATA ERR
 - 1) FCC(s) detect data comparison error between ADIRU(IRU)-1 and ADIRU(IRU)-2.
- (d) 22-11423 ADIRU(IRU) DATA INV
 - 1) The FCC-B receives invalid data from the ADIRU(IRU)-2 Input Bus.
- (e) 22-11434 ADIRU(IRU) DATA ERR
 - 1) The FCC-A votes out data from the ADIRU(IRU)-2.

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- (f) 22-11438 ADIRU(IRU) DATA ERR
 - 1) The FCC-B votes out data from the ADIRU(IRU)-2.
- (g) 22-11379 ADIRU(IRU) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(IRU)-2 Input Bus.

SIA ALL

B. Possible Causes

- (1) Right ADIRU, M1752
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

C. Related Data

- (1) SSM 22-11-52
- (2) SSM 34-21-23
- (3) WDM 34-21-23

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.
If it is necessary, you can push the LSK adjacent to RERUN to do the test again.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If you find IRS related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find IRS related maintenance messages, then continue.
- (2) Do this check of the wiring:
 - (a) For the CH-A (B) Fault, remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Right ADIRU at the E5-2 Shelf as follows (WDM 34-21-23):

CHANNEL A FAULT

FCC-A, M1875	R ADIRU, M1752
D10135A	D3693B
pin K3	pin C10
pin K2	pin C11

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CHANNEL B FAULT

FCC-B, M1876	R ADIRU, M1752
D10137B	D3693B
pin K3	pin E5
pin K2	pin E6

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the applicable FCC-A (B), M1875 (M1876) for the channel that does not have the fault. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Install a new Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Swap FCC-A, M1875 and FCC-B, M1876, then do these steps:
 - (a) Exit DFCS BITE completely, then re-enter DFCS BITE.
 - (b) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 01 ADIRU test.
 - (c) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (d) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

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808. MMR/ILS Receiver No. 1 Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1B-H02,G02
- J1A-H02,G02

NOTE: Suspect LRU: MMR/ILS RCVR-1

- (a) 22-11089 NO MMR/ILS DATA
 - 1) FCC-A receives no data from the MMR/ILS RCVR-2 (received on Cross Channel Bus from FCC-B).
- (b) 22-11103 NO MMR/ILS RCVR DATA
 - 1) FCC-B receives no data from the MMR/ILS Receiver-1 Input Bus.
- (c) 22-11104 NO MMR/ILS RCVR DATA
 - 1) FCC-A receives no data from the MMR/ILS Receiver-1 Input Bus.
- (d) 22-11367 LOC BEAM ANOMALY DET
 - 1) FCC detects persistent Localizer Beam Anomaly (from MMR/ILS-1).
- (e) 22-11368 G/S BEAM ANOMALY DET
 - 1) FCC detects persistent Glideslope Beam Anomaly (from MMR/ILS-1).
- (f) 22-11371 LOC BEAM ANOMALY DET
 - 1) FCC detects persistent Beam Anomaly while using consolidated Glideslope Data.
- (g) 22-11390 MMR/ILS DATA INV
 - 1) FCC-A receives invalid data from the MMR/ILS Receiver-1 Input Bus.
- (h) 22-11427 MMR/ILS DATA INV
 - 1) FCC-B receives invalid data from the MMR/ILS Receiver-1 Input Bus.
- (i) 22-11441 MMR LOC MISCOMPARE
 - 1) FCCs vote out Localizer Data from MMR RCVR-1.
- (j) 22-11444 MMR GS MISCOMPARE
 - 1) FCCs vote out Glideslope Data from MMR RCVR-1.

SIA ALL

B. Possible Causes

- (1) Wiring
- (2) Multimode Receiver (MMR) (Instrument Landing System (ILS)) Receiver 1, M2104 or M1728
- (3) FCC-A (B), M1875 (M1876)

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C. Related Data

- (1) SSM 22-11-16
- (2) SSM 34-31-11
- (3) WDM 34-31-11

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A and B > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message does not show on the CDU when the test is complete, then there was an intermittent fault.
 - 2) If the maintenance message shows on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ILS or Multi-Mode Receiver BITE Procedure, 34-31 TASK 801.
 - (a) If you find MMR/ILS 1 related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find MMR/ILS 1 related maintenance messages, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MMR/ILS receiver, M2104/M1728 (No. 1). This is the task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
 - (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D10719B at the E1-2 shelf (WDM 34-31-11).

D10135B

pin H2
pin G2

D10719B

pin A1
pin B1

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
 - (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Remove the MMR/ILS receiver, M2104/M1728 (No. 1). This is the task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
- (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D10719B at the E1-2 shelf (WDM 34-31-11).

D10137A	D10719B
pin H2	pin A1
pin G2	pin B1

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- (4) Swap the MMR/ILS Receiver, M2104/M1728 (No. 1) and MMR/ILS Receiver, M2105/M1729 (No. 2). These are the tasks:
 - ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (a) Exit the DFCS BITE completely, then re-enter the DFCS BITE.
- (b) Do the Repair Confirmation at the end of this task to confirm the location of the fault.
 - 1) If the fault moves to the other MMR, then replace the MMR.
 - 2) If the fault did not move to the other MMR, then continue.
- (5) Swap the FCC-A and FCC-B. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Exit the DFCS BITE completely, then re-enter the DFCS BITE.
- (b) Do the Repair Confirmation at the end of this task to confirm the location of the fault.
 - 1) If the fault moves to the other FCC, then replace the FCC.

F. Repair Confirmation

- (1) If necessary, then re-install the FCC-A (B) and the MMR-1. These are the tasks:
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (2) Use the CDU to re-run the DFCS BITE Library Test 24 MMR/ILS.
 - (a) If the maintenance message does not show on the CDU when the test is complete, then you have corrected the fault.
 - (b) If the maintenance message shows on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

809. MMR/ILS Receiver No. 2 Output Problem - Fault Isolation

A. Description

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1B-H02,G02
- J1A-H02,G02

NOTE: Suspect LRU: MMR/ILS RCVR-2

- (a) 22-11089 NO MMR/ILS DATA
- 1) FCC-A receives no data from the MMR/ILS RCVR-2 (received on Cross Channel Bus from FCC-B).
- (b) 22-11105 NO MMR/ILS RCVR DATA
- 1) FCC-A receives no data from the MMR/ILS Receiver-2 Input Bus.
- (c) 22-11106 NO MMR/ILS RCVR DATA
- 1) FCC-B receives no data from the MMR/ILS Receiver-2 Input Bus.
- (d) 22-11369 LOC BEAM ANOMALY DET
- 1) FCC detects persistent Localizer Beam Anomaly (from MMR/ILS-2).
- (e) 22-11370 G/S BEAM ANOMALY DET
- 1) FCC detects persistent Glideslope Beam Anomaly (from MMR/ILS-2).
- (f) 22-11391 MMR/ILS DATA INV
- 1) FCC-A receives invalid data from the MMR/ILS Receiver-2 Input Bus.
- (g) 22-11428 MMR/ILS DATA INV
- 1) FCC-B receives invalid data from the MMR/ILS Receiver-2 Input Bus.
- (h) 22-11442 MMR LOC MISCOMPARE
- 1) FCCs vote out Localizer Data from MMR RCVR-2.
- (i) 22-11443 MMR LOC MISCOMPARE
- 1) FCCs vote out Localizer Data from MMR RCVR-3.
- (j) 22-11445 MMR GS MISCOMPARE
- 1) FCCs vote out Glideslope Data from MMR RCVR-2.
- (k) 22-11446 MMR GS MISCOMPARE
- 1) FCCs vote out Glideslope Data from MMR RCVR-3.

SIA ALL

B. Possible Causes

- (1) Wiring
- (2) MMR (ILS) Receiver 2, M2105 or M1729
- (3) FCC-A (B), M1875 (M1876)

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C. Related Data

- (1) WDM 34-31-21
- (2) SSM 22-11-16
- (3) SSM 34-31-21

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A and B > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message does not show on the CDU when the test is complete, then there was an intermittent fault.
 - 2) If the maintenance message shows on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ILS or Multi-Mode Receiver BITE Procedure, 34-31 TASK 801.
 - (a) If you find MMR/ILS 2 related maintenance messages, then refer to the table at the end of the ILS or Multi-Mode Receiver BITE Procedure, 34-31 TASK 801 to find the applicable FIM Tasks for the maintenance messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find MMR/ILS 2 related maintenance messages, then continue.
 - (2) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MMR/ILS receiver, M2105/M1729 (No. 2). To remove it, do this task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D10721B at the E1-4 shelf (WDM 34-31-21).

D10135A	D10721B
pin H2	pin A1
pin G2	pin B1
 - (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Remove the MMR/ILS receiver, M2105/M1729 (No. 2). To remove it, do this task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
- (c) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D10721B at the E1-4 shelf (WDM 34-31-21).

D10137B	D10721B
pin H2	pin A1
pin G2	pin B1

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- (4) Swap the MMR/ILS Receiver, M2104/M1728 (No. 1) and MMR/ILS Receiver, M2105/M1729 (No. 2). These are the tasks:
 - ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (a) Exit the DFCS BITE completely, then re-enter the DFCS BITE.
- (b) Do the Repair Confirmation at the end of this task to confirm the location of the fault.
 - 1) If the fault moves to the other MMR, then replace the MMR.
 - 2) If the fault did not move to the other MMR, then continue.
- (5) Swap the FCC-A and FCC-B. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Exit the DFCS BITE completely, then re-enter the DFCS BITE.
- (b) Do the Repair Confirmation at the end of this task to confirm the location of the fault.
 - 1) If the fault moves to the other FCC, then replace the FCC.

F. Repair Confirmation

- (1) If necessary, then re-install the FCC-A (B) and the MMR-2. These are the tasks:
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (2) Use the CDU to re-run the DFCS BITE Library Test 24 MMR/ILS.
 - (a) If the maintenance message does not show on the CDU when the test is complete, then you have corrected the fault.
 - (b) If the maintenance message shows on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

810. ADIRU(ADC) Output Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1B-E04,D04
- J1A-K04,J04

NOTE: Suspect LRUs:

- ADIRU(ADC)-1
- ADIRU(ADC)-2

- (a) 22-11001 NO ADIRU(ADC) DATA
 - 1) The FCC-A receives no data from the ADIRU(ADC)-1 Input Bus.
- (b) 22-11002 NO ADIRU(ADC) DATA
 - 1) The FCC-B receives no data from the ADIRU(ADC)-2 Input Bus.
- (c) 22-11023 NO ADIRU(ADC) DATA
 - 1) The FCC-B receives no data from the ADIRU(ADC)-1 Input Bus.
- (d) 22-11024 NO ADIRU(ADC) DATA
 - 1) The FCC-A receives no data from the ADIRU(ADC)-2 Input Bus.
- (e) 22-11376 ADIRU(ADC) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(ADC)-1 Input Bus.
- (f) 22-11377 ADIRU(ADC) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(ADC)-2 Input Bus.
- (g) 22-11420 ADIRU(ADC) DATA INV
 - 1) The FCC-B receives invalid data from the ADIRU(ADC)-1 Input Bus.
- (h) 22-11421 ADIRU(ADC) DATA INV
 - 1) The FCC-B receives invalid data from the ADIRU(ADC)-2 Input Bus.

SIA ALL

B. Possible Causes

- (1) Left (Right) ADIRU, M1749 (M1752)
- (2) Wiring
- (3) FCC-A, M1875
- (4) FCC-B, M1876

C. Related Data

- (1) WDM 34-21-14
- (2) WDM 34-21-24
- (3) SSM 22-11-52
- (4) SSM 34-21-14

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(5) SSM 34-21-24

D. Initial Evaluation

(1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, and the SUSPECT LRU is ADIRU(ADC)-1, then do the "Fault Isolation Procedure - ADIRU(ADC)-1" below.
- (c) If the maintenance message shows, and the SUSPECT LRU is ADIRU(ADC)-2, then do the "Fault Isolation Procedure - ADIRU(ADC)-2" below.

E. Fault Isolation Procedure - ADIRU(ADC)-1

(1) Do this task for the Left ADIRU: ADIRS BITE Procedure, 34-21 TASK 801.

(a) If you find Air Data Computer System (ADCS) related maintenance messages, then do to the applicable FIM Tasks for the messages that show.

1) Do the Repair Confirmation at the end of this task.

(b) If you do not find IRS related maintenance messages, then continue.

(2) Do this check of the wiring:

(a) For the CH-A (B) Fault, remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

(b) Remove the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.

(c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Left ADIRU at the E5-2 Shelf as follows (WDM 34-21-14).

CHANNEL A FAULT

FCC-A	L ADIRU
D10135B	D3687A
pin E4	pin A3
pin D4	pin B3

CHANNEL B FAULT

FCC-B	L ADIRU
D10137B	D3693A
pin E4	pin A3
pin D4	pin B3

(d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
- 3) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then do these steps and then continue:
- 1) Re-install the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the applicable FCC-A (B), M1875 (M1876) for the channel that does not have the fault. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message is on Channel A (B) replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - ADIRU(ADC)-2

- (1) Do this task for the Right ADIRU: ADIRS BITE Procedure, 34-21 TASK 801.
- (a) If you find ADCS related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
- 1) Do the Repair Confirmation at the end of this task.
- (b) If you do not find IRS related maintenance messages, then continue.
- (2) Do this check of the wiring:
- (a) For the CH-A (B) Fault, remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
- (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Right ADIRU at the E5-2 Shelf as follows (WDM 34-21-14).

CHANNEL A FAULT

FCC-A	R ADIRU
D10135A	D3693A
pin K4	pin A7
pin J4	pin B7

CHANNEL B FAULT

FCC-B	R ADIRU
D10137A	D3687A
pin K4	pin A7
pin J4	pin B7

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then do these steps and then continue:
 - 1) Re-install the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the applicable FCC-A (B), M1875 (M1876) for the channel that does not have the fault. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message is on Channel A (B) replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

811. Flight Management Computer (FMC-1) Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1A-E04,D04

- (a) 22-11071 NO FMC DATA
 - 1) The FCCs receive no data from the Flight Management Computer (FMC) Input Bus.
- (b) 22-11262 FMC APPR MODE RESET
 - 1) The FCCs unexpected FMC APPR Mode Reset.
- (c) 22-11277 FMC COURSE MISCOMPARE
 - 1) The FCCs unexpected FMC Course Miscompare.
- (d) 22-11279 G/P DEV INVALID
 - 1) The FCCs receive invalid data from FMC.
- (e) 22-11298 SPD INT INCOMPATIBLE
 - 1) The FCCs detect that the FMC Target Speed does not match the window value on MCP. FMC drops out of VNAV.

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- (f) 22-11347 SPD INV INCOMPTBLE A/P
 - 1) The FCCs detect that Speed intervention VNAV Reset occurred and Pitch F/D detects not BOV within 800 msec.
- (g) 22-11360 NO FMC REQUEST
 - 1) The FCCs do not receive FMC BITE Request.
- (h) 22-11388 FMC DATA INV
 - 1) The FCCs receive invalid data from the FMC-1 Input Bus.
- (i) 22-11822 FMC DATA INV
 - 1) The FCCs receive invalid data from the FMC Input Bus.

SIA ALL

- (2) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
 - (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) Total Air Temperature Probe, M171
- (2) Software
- (3) FMC, M1175
- (4) Wiring
- (5) FCC-A, M1875
- (6) FCC-B, M1876

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	6	C01017	FMCS CMPTR 1
A	7	C01238	FMCS MCDU 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01239	FMCS MCDU 2

D. Related Data

- (1) SSM 22-11-52
- (2) SSM 34-61-14
- (3) WDM 34-61-14

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E. Initial Evaluation

- (1) The DFCS BITE Procedure (22-11 TASK 801) or DFCS BITE Test was performed.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the ADIRU BITE Procedure and the Engine Electronic Controller (EEC) BITE Procedure to see if there are Total Air Temperature (TAT) Probe faults.
- (2) For the Left and Right ADIRUs, do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) Look for maintenance message "34-21022 TAT PROBE SIGNAL FAIL".
 - 1) If you find maintenance message 34-21022, then do the TAT Probe Signal Fail - Fault Isolation, 34-21 TASK 813 to correct the problem.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find maintenance message 34-21022, then continue.
- (3) For the Engine-1 and Engine-2, do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these maintenance messages:
 - Engine-1: 73-11691, 73-11701, 73-11711, 73-21691, 73-21701, 73-21711, 73-31691, 73-31701, 73-31711
 - Engine-2: 73-11692, 73-11702, 73-11712, 73-21692, 73-21702, 73-21712, 73-31692, 73-31702, 73-31712
 - 1) If you find one or more maintenance message(s), then refer to the table at the end of the EEC BITE Procedure, 73-00 TASK 801 to find the applicable FIM Tasks for the maintenance messages that show to correct the problem.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find the TAT maintenance messages, then continue.
- (4) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the configuration, then continue.
- (5) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Do this check on the FMC:
 - (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C01017	FMCS CMPTR 1

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C01238	FMCS MCDU 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01239	FMCS MCDU 2

- (b) Make sure that the FMC VALID Light on the FMC front panel comes ON.
- (c) If the FMC VALID Light on the FMC front panel does not come ON, then do these steps:
 - 1) Replace the FMC-1, M1175. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If the FMC VALID Light on the FMC front panel comes ON, then continue.
- (7) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (a) If you find FMC-1 related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find FMC-1 related maintenance messages, then continue.
- (8) Do this check of the wiring:
 - (a) If the maintenance message is on Channel A (B), remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the FMC-1, M1175. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (c) Make sure that the FMCS Transfer Switch on the P5 panel is in the BOTH ON L or NORM position.
 - (d) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and FMC-1 at the E5-2 Shelf as follows (WDM 34-61-14):

CHANNEL A FAULT

FCC-A	FMC-1
D10135A	D2179A
pin E4	pin G9
pin D4	pin H9

CHANNEL B FAULT

FCC-B	FMC-1
D10137A	D2179A
pin E4	pin G9
pin D4	pin H9

- 1) If you find a problem with the wiring, then do these steps:

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- a) Repair the wiring.
 - b) Re-install the FMC-1, M1175. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and then continue:
- a) Re-install the FMC-1, M1175. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
- (9) If the maintenance message is on Channel A (B), then replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the FMC TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

812. Flight Management Computer (FMC-2) Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1A-E04,D04

- (a) 22-11071 NO FMC DATA
 - 1) The FCCs receive no data from the FMC Input Bus.
- (b) 22-11073 FMC DATA INV
 - 1) The FCCs receive no data from the FMC-2 Input Bus.
- (c) 22-11360 NO FMC REQUEST
 - 1) The FCCs do not receive FMC BITE Request.

SIA ALL

- (2) The FCC-A or FCC-B receives invalid data or no data from the FMC-2 during the Ground Test.

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- (3) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
 - (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) Total Air Temperature Probe, M171
- (2) Software
- (3) FMC-2, M1632
- (4) Wiring problem
- (5) FCC-A, M1875
- (6) FCC-B, M1876

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	7	C01238	FMCS MCDU 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01239	FMCS MCDU 2
D	16	C01262	FMCS CMPTR 2

D. Related Data

- (1) SSM 22-11-52
- (2) SSM 34-61-14
- (3) WDM 34-61-14

E. Initial Evaluation

- (1) The DFCS BITE Procedure (22-11 TASK 801) or DFCS BITE Test was performed.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the ADIRU BITE Procedure and the EEC BITE Procedure to see if there are TAT Probe faults.
- (2) For the Left and Right ADIRUs, do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) Look for maintenance message "34-21022 TAT PROBE SIGNAL FAIL".
 - 1) If you find maintenance message 34-21022, then do the TAT Probe Signal Fail - Fault Isolation, 34-21 TASK 813 to correct the problem.
 - a) Do the Repair Confirmation at the end of this task.

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- 2) If you do not find maintenance message 34-21022, then continue.
- (3) For the Engine-1 and Engine-2, do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these maintenance messages:
 - Engine-1: 73-11691, 73-11701, 73-11711, 73-21691, 73-21701, 73-21711, 73-31691, 73-31701, 73-31711
 - Engine-2: 73-11692, 73-11702, 73-11712, 73-21692, 73-21702, 73-21712, 73-31692, 73-31702, 73-31712
 - 1) If you find one or more maintenance message(s), then refer to the table at the end of the EEC BITE Procedure, 73-00 TASK 801 to find the applicable FIM Tasks for the maintenance messages that show to correct the problem.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find the TAT maintenance messages, then continue.
- (4) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the configuration, then continue.
- (5) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (a) If you find FMC-2 related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find FMC-2 related maintenance messages, then continue.
- (7) Do this check of the wiring:
 - (a) If the maintenance message is on Channel A (B), remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove FMC-2, M1632. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (c) Make sure that the FMCS Transfer Switch on the P5 panel is in the BOTH ON R or NORM position.
 - (d) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and FMC-2 at the E5-2 Shelf as follows (WDM 34-61-14):

CHANNEL A FAULT

FCC-A	FMC-2
D10135A	D3261A
pin E4	pin G9
pin D4	pin H9

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CHANNEL B FAULT

FCC-B	FMC-2
D10137A	D3261A
pin E4	pin G9
pin D4	pin H9

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FMC-2, M1632. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and then continue:
 - a) Re-install the FMC-2, M1632. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
- (8) If the maintenance message is on Channel A (B), then replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the FMC TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

813. A/T Computer Output Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

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For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins: (J1A-B04,A04)

NOTE: Suspect LRUs: A/T CMPTR

(a) 22-11031 NO A/T CMPTR DATA

1) The FCC-A receives no data from the A/T Output Bus.

SIA ALL

B. Possible Causes

SIA ALL; WITH COLLINS FCCs

(1) FCC-A, M1875

SIA ALL

(2) Wiring

C. Related Data

(1) WDM 22-31-52

(2) SSM 22-31-52

D. Initial Evaluation

(1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

(a) If the maintenance message does not show, then there was an intermittent fault.

(b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

(1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.

(a) If you find A/T related maintenance messages on the CURRENT STATUS Page, then do the applicable FIM Tasks for the messages that show.

1) Do the Repair Confirmation at the end of this task.

(b) If you do not find A/T related maintenance messages on the CURRENT STATUS Page, then continue.

(2) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the Wiring Diagram Manual (WDM) to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

(a) For a Channel A Fault, remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

For a Channel B Fault, remove FCC-A, M1875 and FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

(b) Examine the wiring as follows (WDM 22-31-52).

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CHANNEL A FAULT

FCC-A	FCC-A
D10135A	D10135B
pin A4	pin F8
pin B4	pin F9

CHANNEL B FAULT

FCC-B	FCC-A
D10137A	D10135B
pin A4	pin F8
pin B4	pin F9

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the applicable FCC(s). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
- (3) For the channel that has the fault, replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

SIA ALL

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the A/T TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

816. Mode Control Panel Internal Problem - Fault Isolation

A. Description

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SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- J1B-B04,A04
- J1B-K11,J11

NOTE: SUSPECT LRU(S):

- FCC-A
- FCC-B
- MCP

- (a) 22-11064 ALT REF MON INV

- 1) FCC(s) detect that the MCP does not receive data from FCC or the MCP Altitude value from FCC-A and Altitude Input Resolver do not agree.

- (b) 22-11065 ALT REF MON INV

- 1) FCC(s) detect that the Altitude Window Data from MCP and FCC-A Altitude Window Output Data do not compare.

- (c) 22-11066 MCP ALT REF MON INV

- 1) FCC(s) detect that the Altitude Window Data from MCP and FCC-B Altitude Window Output Data do not compare.

- (d) 22-11067 MCP ALT REF MON INV

- 1) FCC(s) detect that the MCP does not receive data from FCC or the MCP Altitude value from FCC-B and Altitude Input Resolver do not agree.

SIA ALL

B. Possible Causes

- (1) MCP, M198
- (2) FCC-A, M1875
- (3) FCC-B, M1876

C. Initial Evaluation

- (1) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - Make the selection for Channel A or B.
 - Make the selection for the MCP TESTS.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the MCP, M198. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801

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- (a) Do the Repair Confirmation at the end of this task.
- (2) If the maintenance message is on Channel A, then replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message is on Channel B, then replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - Make the selection for Channel A or B.
 - Make the selection for the MCP TESTS.
- (a) If the maintenance message does not show, then you corrected the problem.
- (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

817. Mode Control Panel Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: SUSPECT LRU(S):

- FCC-A
 - FCC-B
 - MCP
 - MCP (A/P ENGAGED)
- (a) 22-11068 F/D ON FGN FAIL
 - NOTE: Associated INTERFACE PINS: J1A-F01
 - 1) FCC(s) receive incorrect data from MCP [F/D ON-FGN].
 - (b) 22-11069 F/D ON FGN FAIL
 - NOTE: Associated INTERFACE PINS: J1B-F01
 - 1) FCC(s) receive incorrect data from MCP [F/D ON-LCL].

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- (c) 22-11607 MCP DATA INV
NOTE: Associated INTERFACE PINS: J1A-K06, J06
1) FCC(s) receive invalid data from MCP [MCP Bus in].
- (d) 22-11253 CMD FGN FAIL
NOTE: Associated INTERFACE PINS: J1A-B01
1) FCC(s) receive incorrect data from MCP [A/P CMD - FGN].
- (e) 22-11255 CWS + CMD FGN FAIL
NOTE: Associated INTERFACE PINS: J1A-H01
1) FCC(s) receive incorrect data from MCP [CWS or CMD - FGN].
- (f) 22-11256 ENG SOL ENABLE FAIL
NOTE: Associated INTERFACE PINS: J1A-K14, H14 (Output)
1) FCC(s) receive incorrect data from MCP [ENG SOL ENABLE].
- (g) 22-11257 CMD LCL FAIL
NOTE: Associated INTERFACE PINS: J1B-B01
1) FCC(s) receive incorrect data from MCP [A/P CMD - LCL].
- (h) 22-11258 CWS LCL FAIL
NOTE: Associated INTERFACE PINS: J1B-D01
1) FCC(s) receive incorrect data from MCP [CWS - LCL].
- (i) 22-11259 MCP AIL ENG
NOTE: Associated INTERFACE PINS: J1B-F13
1) FCC(s) receive incorrect signal from MCP [AIL ACT ENGAGE].
- (j) 22-11260 CWS + CMD LCL FAIL
NOTE: Associated INTERFACE PINS: J1B-H01
1) FCC(s) receive incorrect data from MCP [CWS or CMD - LCL].
- (k) 22-11289 MCP A/P WARN FAIL
1) FCC(s) do not detect Autoflight Status Annunciator during BITE.
- (l) 22-11361 BITE ENTRY INHIBIT
NOTE: Associated INTERFACE PINS: J1B-H01
1) FCC(s) receiving indication that Local CMD or CWS engaged during BITE entry.
- (m) 22-11362 BITE ENTRY INHIBIT
NOTE: Associated INTERFACE PINS: J1B-H01
1) FCC(s) receiving indication that Foreign CMD or CWS engaged during BITE entry.

SIA ALL

B. Possible Causes

- (1) MCP, M198
- (2) FCC-A, M1875
- (3) FCC-B, M1876

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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(4) Wiring

C. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-11-31
- (3) WDM 22-12-31
- (4) WDM 22-12-41
- (5) WDM 22-11-51
- (6) SSM 22-11-11
- (7) SSM 22-11-31
- (8) SSM 22-12-31
- (9) SSM 22-12-41
- (10) SSM 22-11-51

D. Initial Evaluation

- (1) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - Make the selection for Channel A or B.
 - Make the selection for the MCP TESTS.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Check this circuit breaker for the applicable FCC.
 - (a) For FCC A do this step

Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- (b) For FCC B do this step

Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- (c) Do the Repair Confirmation at the end of this task.
 - (d) If the Repair Confirmation is not satisfactory, then continue.
- (2) In the list below, find the pin numbers and connectors of the FCC-A or FCC-B and the MCP for the applicable maintenance message.

NOTE: This data will be used for the wiring check in the next step.

MAINT MESSAGE

FCC

MCP

WDM REFERENCE

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MAINT MESSAGE	FCC		MCP	WDM REFERENCE
MCP (J1A-K06, J06)	FCC-A (M1875)		MCP (M198)	WDM 22-11-51
	D10135A		D299	
	pin K06	--	pin 18	
	pin J06	--	pin 17	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-51
	D10137A		D1815	
MCP (J1A-B01)	pin K06	--	pin 18	
	pin J06	--	pin 17	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135A		D1815	
	pin B1	--	pin 37	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
MCP (J1A-H01) OR	D10137A		D299	
	pin B1	--	pin 37	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135A		D1815	
	pin H1	--	pin 43	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
MCP (A/P ENGAGED) J1A-H01	D10137A		D299	
	pin H1	--	pin 43	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135B		D299	
	pin D1	--	pin 34	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
MCP (J1B-D01)	D10137B		D1815	
	pin D1	--	pin 34	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135B		D299	
	pin B1	--	pin 37	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
MCP (J1B-B01)	D10137B		D1815	
	pin B1	--	pin 37	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135B		D299	
	pin B1	--	pin 37	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11

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MAINT MESSAGE	FCC		MCP	WDM REFERENCE
MCP (J1B-H01) OR	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135B		D299	
	pin H1	--	pin 43	
MCP (A/P ENGAGED) J1B-H01	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
	D10137B		D1815	
	pin H1	--	pin 43	
MCP3 (J1B-F13)	FCC-A (M1875)		MCP (M198)	WDM 22-11-31
	D10135B		D299	
	pin F13	--	pin 4	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-31
	D10137B		D1815	
	pin F13	--	pin 4	
MCP (J1A-A06, B06)	FCC-A (M1875)		MCP (M198)	WDM 22-11-51
	D10135A		D299	
	pin A6	--	pin 32	
	pin B6	--	pin 33	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-51
	D10137A		D1815	
	pin A6	--	pin 32	
	pin B6	--	pin 33	
MCP (J1A-F13)	FCC-A (M1875) D10135A		MCP (M198) D299	WDM 22-12-31
	pin F13	--	pin 16	
	FCC-B (M1876)		MCP (M198)	WDM 22-12-41
	D10137A		D1815	
	pin F13	--	pin 16	
MCP (J1A-K14, H14)	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135A		D299	
	pin K14	--	pin 52	
	pin H14	--	pin 28	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
	D10137A		D1815	
	pin K14	--	pin 52	
	pin H14	--	pin 28	

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MAINT MESSAGE	FCC		MCP	WDM REFERENCE
MCP (J1A-F01)	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135A		D1815	
	pin F1	--	pin 23	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
MCP (J1B-F01)	D10137A		D299	
	pin F1	--	pin 23	
	FCC-A (M1875)		MCP (M198)	WDM 22-11-11
	D10135B		D299	
MCP (J1B-F01)	pin F1	--	pin 23	
	FCC-B (M1876)		MCP (M198)	WDM 22-11-11
	D10137B		D1815	
	pin F1	--	pin 23	
MCP A/P WARN FAIL	FCC-A (M1875)		MCP (M198)	WDM 22-11-51
	D10135A		D229	
	pin A6	--	pin 32	
	pin B6	--	pin 33	
TB1106 ZA13/ZB13				
	FCC-B (M1876)		MCP (M198)	WDM 22-11-51
	D10137A		D18515	
	pin A6	--	pin 32	
	pin B6	--	pin 33	
TB1401 YA13/YB13				

(3) Do this check of the wiring:

- (a) Remove the MCP, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
- (b) Remove the applicable FCC, M1875 or M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (c) Do a wiring check between the specified pins of the MCP connectors and the applicable FCC connectors.
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the MCP, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install the applicable FCC, M1875 or M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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- 5) If the Repair Confirmation is not satisfactory, then continue.
- (4) Replace the MCP, M198. These are the tasks:
- DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) If the maintenance message is on Channel A, then replace the FCC-A, M1875. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) If the maintenance message is on Channel B, then replace the FCC-B, M1876. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
- (a) Make the selection for the channels A and B.
- (b) Make the selection for the MCP TESTS.
- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

857. G/S TUNE MISCOMPARE – Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 22-11070: [DFCS] G/S TUNE MISCOMPARE: discrete inputs to FCC A, FCC detects VHF/NAV radio G/S tuned to different source.
- (b) 22-11389: [DFCS] G/S TUNE MISCOMPARE: discrete inputs to FCC B, FCC detects VHF/NAV radio G/S tuned to different source.

B. Possible Causes

- (1) Wiring
- (2) CAPT (F/O) Navigation Control Panel, P8-25 (P8-26)
- (3) FCC-A (B), M1875 (M1876)

C. Related Data

- (1) WDM 34-51-41
- (2) SSM 22-11-16

D. Initial Evaluation

- (1) This maintenance message can only show during flight, monitor for the maintenance message on subsequent flights.

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E. Fault Isolation Procedure

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - (d) If you find any related maintenance messages on the CDU, then do these steps:
 - 1) Do the fault isolation task for each related maintenance message.
 - 2) If the maintenance message does not show on the next flights, then you corrected the fault.
 - (e) If you do not find any related maintenance messages, then continue.
- (2) Examine the wiring between the FCC-A (B), M1875 (M1876) and the CAPT (FO) Navigation Control Panel, P8-25 (P8-26) (WDM 34-51-41):
 - (a) Remove the FCC-A (B), M1875 (M1876), this is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the CAPT (F/O) Navigation Control Panel, P8-25 (P8-26), this is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (c) Do a wiring check between these pins on the FCC-A connector D10135B and the CAPT Navigation Control Panel, (P8-25) connector D263 (WDM 34-51-41).

	CAPT Navigation Control Panel (P8-25) D263
FCC-A, M1875 D10135B	
Pin C02	pin 46
Pin K14	pin 38

- (d) Do a wiring check between these pins on the FCC-A connector D10135A and the F/O Navigation Control Panel, (P8-26) connector D265 (WDM 34-51-41).

	F/O Navigation Control Panel (P8-26) D265
FCC-A, M1875 D10135A	
Pin D01	pin 38
Pin C02	pin 46

- (e) Do a wiring check between these pins on the FCC-B connector D10137A and the CAPT Navigation Control Panel, (P8-25) connector D263 (WDM 34-51-41).

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	CAPT Navigation Control Panel (P8-25) D263
FCC-B, M1876 F10137A	
Pin D01	pin 38
Pin C02	pin 46

- (f) Do a wiring check between these pins on the FCC-B connector D10137B and the F/O Navigation Control Panel, (P8-26) connector D265 (WDM 34-51-41).

	F/O Navigation Control Panel (P8-26) D265
FCC-B, M1876 D10137B	
Pin K14	pin 38
Pin C02	pin 46

- (g) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A (B), M1875 (M1876), this is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the CAPT (FO) Navigation Control Panel, P8-25 (P8-26), this is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 4) If the maintenance message does not show on the next flights, then you corrected the fault.
 - 5) If the maintenance message still shows on the next flights, then continue.
- (h) If you did not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A (B), M1875 (M1876). This is the task:
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (3) Replace the CAPT (F/O) Navigation Control Panel, P8-25 (P8-26). These are the tasks:
- Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (a) If the maintenance message does not show on the next flights, then you corrected the fault.
- (b) If the maintenance message still shows on the next flights, then continue.
- (4) Replace the FCC-A (B), M1875 (M1876). These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) If the maintenance message does not show on the next flights, then you corrected the fault.

———— **END OF TASK** ————

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820. FCC Exchange Check

A. General

- (1) This task is used to exchange locations of the A and B FCCs and is intended to be used together with the fault isolation procedures.

B. Procedure

- (1) If the maintenance message is on channel A, then do this exchange check FCC-A:

- (a) Put a tag that reads "SUSPECT" on the FCC-A, M1875.
- (b) Put a tag that reads "OK" on the FCC-B, M1876.
- (c) Exchange the locations of the FCC-A, M1875 and the FCC-B, M1876. These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: Make sure that you do the installation test for each FCC.

- (d) For each FCC, do the Repair Confirmation at the end of the fault isolation task, for the applicable maintenance message.

- (e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the FCC-A, M1875 location or in the FCC tagged "SUSPECT".

- 1) If it is your airline's policy, return the FCCs to their original locations. These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: The FCC tagged "OK" goes in the FCC-B, M1876 rack location. The FCC tagged "SUSPECT" goes in the FCC-A, M1875 rack location.

- 2) Remove the tags from the FCCs.

- (f) If the Repair Confirmation is satisfactory for the FCC-A, and the Repair Confirmation is not satisfactory for the FCC-B, then do these steps:

- 1) Replace the FCC tagged "SUSPECT". These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: If it is your airline's policy, you must return the FCC tagged "OK" to its original location.

- 2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.

- 3) Remove the tags from the FCCs.

- (g) If the Repair Confirmation is not satisfactory for the FCC-A, and the Repair Confirmation is satisfactory for the FCC-B, then continue.

NOTE: The fault is not in the FCC tagged "SUSPECT".

- 1) If it is your airline's policy, return the FCCs to their original locations. These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801

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- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: The FCC tagged "OK" goes in the FCC-A, M1875 rack location. The FCC tagged "SUSPECT" goes in the FCC-B, M1876 rack location.

- 2) Remove the tags from the FCCs.
- 3) Continue with the fault isolation procedure for the applicable maintenance message.

- (2) If the maintenance message is on channel B, do this exchange check FCC-B:

- (a) Put a tag that reads "SUSPECT" on the FCC-B, M1876.
- (b) Put a tag that reads "OK" on the FCC-A, M1875.
- (c) Exchange the locations of the FCC-A, M1875 and the FCC-B, M1876. These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: Make sure that you do the installation test for each FCC.

- (d) For each FCC, do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.
- (e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the FCC-A, M1875 location or in the FCC tagged "SUSPECT".

- 1) If it is your airline's policy, return the FCCs to their original locations. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: The FCC tagged "OK" goes in the FCC-A, M1875 rack location. The FCC tagged "SUSPECT" goes in the FCC-B, M1876 rack location.

- 2) Remove the tags from the FCCs.

- (f) If the Repair Confirmation is satisfactory for the FCC-B, and the Repair Confirmation is not satisfactory for the FCC-A, then do these steps:

- 1) Replace the FCC tagged "SUSPECT". These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: If it is your airline's policy, you must return the FCC tagged "OK" to its original location.

- 2) Do the Repair Confirmation at the end of the fault isolation task.
- 3) Remove the tags from the FCCs.

- (g) If the Repair Confirmation is satisfactory for the FCC-A, and the Repair Confirmation is not satisfactory for the FCC-B, then do these steps:

NOTE: The fault is not in the FCC tagged "SUSPECT".

- 1) If it is your airline's policy, return the FCCs to their original locations. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801

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- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

NOTE: The FCC tagged "OK" goes in the FCC-A, M1875 rack location. The FCC tagged "SUSPECT" goes in the FCC-B, M1876 rack location.

- 2) Remove the tags from the FCCs.
- 3) Continue with the fault isolation procedure for the applicable maintenance message.

———— **END OF TASK** ————

822. Flaps Down Speed Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for this maintenance message:

NOTE: Suspect LRU(S):

- COL SW MODULE M1201

- (a) 22-11179 FLAPS DOWN

- 1) FCC(s) detect FLAPS DN STAB TRIM SPD Discrete Wraparound Failure during BITE.

SIA ALL

B. Possible Causes

- (1) Stabilizer Tim Motor, M1659
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

C. Related Data

- (1) WDM 22-13-11
- (2) SSM 22-13-11

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - Make the selection for the Channels A and B.
 - Make the selection for the STAB SENS TEST.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the fault is not in the FCC, and the maintenance message still shows, continue.
- (2) Do this check for power at the Stabilizer Tim Motor, M1659:
 - (a) Disconnect connector D381 from the servo motor, M1659.
 - (b) Do a check of the connector and sockets for bent or broken pins, dirt and damage.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (d) Do a check for 28 VDC between pin 14 of connector D381 and structure ground.

- (e) If you do not find 28 VDC at pin 14, do these steps:

- 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) Do a wiring check between these pins of connector D381 at servo motor and shelf and connector D2209A at the E1-1 shelf (WDM 22-13-11).

D381	D2209A
pin 14	pin 2

- 4) If you find a problem with the wiring, do these steps:

- a) Repair the wiring.
- b) Do the Repair Confirmation at the end of this task.

- 5) If you did not find a problem with the wiring, replace the IFSAU, M1474. These are the tasks:

- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
- Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801

- a) Do the Repair Confirmation at the end of this task.

- (f) If you found 28 VDC at pin 14, continue.

- (3) If the maintenance message is on channel A, then do this check of the wiring between the FCC-A and the stab trim servo motor:

- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the servo motor. To remove it, do this task: Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801.
- (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D381 at the servo motor (WDM 22-13-11):

D10135C	D381
pin A03	pin 13

- (d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.

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- 2) Re-install the servo motor. To install it, do this task: Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801.
- 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the servo motor. To install it, do this task: Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801.
 - 2) Install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (4) If the maintenance message is on channel B, then do this check of the wiring between the FCC-B and the column switching module:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the column switching module, M1201. To remove it, do this task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
 - (c) Remove the servo motor. To remove it, do this task: Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801.
 - (d) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2257 at STAB 206, WL 200, RBL 15 (WDM 22-13-11):

D10137C	D381
pin A03	pin 13

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the servo motor. To install it, do this task: Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the servo motor. To install it, do this task: Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801.
 - a) Do the Repair Confirmation at the end of this task.
- (5) Replace the Stabilizer Trim Motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - (a) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the STAB SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

823. Alpha Vane-1 Output Problems - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Suspect LRUs:

- ALPHA VANE-1
- ALPHA VANE-2
- ADIRU(ADC)-1
- ADIRU(ADC)-2

- (a) 22-11011 AOA VANE INV
 - 1) The FCC(s) receive invalid data or no data for Angle of Attack from ADIRU(ADC)-1.
- (b) 22-11017 AOA INV
 - 1) The FCC(s) detect invalid AOA Data from ADIRU(ADC)-1.

SIA ALL

B. Possible Causes

- (1) Left Angle-of-Attack Sensor (AOA), T433
- (2) Left ADIRU, M1749
- (3) FCC-A, M1875
- (4) Wiring

C. Related Data

- (1) WDM 34-21-12
- (2) WDM 34-21-14

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- (3) SSM 22-11-52
- (4) SSM 34-21-12
- (5) SSM 34-21-14

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the Left Angle-of-Attack Sensor (AOA), T433. These are the tasks:

- Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801
- Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801

- (a) Do the Repair Confirmation at the end of this task.

- (2) Do this task for the Left ADIRU: ADIRS BITE Procedure, 34-21 TASK 801.

- (a) If you find maintenance messages, then do to the applicable FIM Tasks for the messages that show.

- 1) Do the Repair Confirmation at the end of this task.

- (b) If you do not find maintenance messages, then continue.

- (3) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance message shows, then continue.

- (4) Do this check of the wiring:

- (a) Remove the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.

- (b) Disconnect connector D10015 from the Left AOA Sensor, T433.

- (c) Examine the wiring between the Left ADIRU at the E5-2 Shelf and the Left AOA Sensor, T433 as follows (WDM 34-21-12):

L ADIRU	L AOA SNSR
D3687A	D10015
pin J7	pin 3
pin H7	pin 4
pin K7	pin 5

- (d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
- 3) Re-connect the connector D10015 to the Left AOA Sensor, T433.
- 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then re-connect connector D10015 to the Left AOA Sensor and continue.
- (5) Do this check of the wiring:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Examine the wiring between the FCC-A, M1875 and the Left ADIRU, M1749 as follows (WDM 34-21-14):

FCC-A	L ADIRU
D10135B	D3687A
pin E4	pin A3
pin D4	pin B3

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the Left ADIRU, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A.
 - (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

824. Alpha Vane-2 Output Problems - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Suspect LRUs:

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- ALPHA VANE-2
- ADIRU(ADC)-2
- (a) 22-11012 AOA VANE INV
 - 1) The FCC(s) receive invalid data or no data for Angle of Attack from ADIRU(ADC)-2.
- (b) 22-11018 AOA INV
 - 1) The FCC(s) detect invalid AOA Data from ADIRU(ADC)-2.

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B. Possible Causes

- (1) Right Angle-of-Attack Sensor (AOA), T437
- (2) Right ADIRU, M1752
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 34-21-22
- (2) WDM 34-21-24
- (3) SSM 22-11-52
- (4) SSM 34-21-22
- (5) SSM 34-21-24

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.
If it is necessary, you can push the LSK adjacent to RERUN to do the test again.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the Left Angle-of-Attack Sensor (AOA), T433. These are the tasks:
 - Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801
 - Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Do this task for the Left ADIRU: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If you find maintenance messages, then do the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find maintenance messages, then continue.
- (3) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (4) Do this check of the wiring:

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- (a) Remove the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
- (b) Disconnect connector D10017 from the Right AOA Sensor, T437.
- (c) Examine the wiring between the Right ADIRU at the E5-2 Shelf and the Right AOA Sensor, T433 as follows (WDM 34-21-22):

R ADIRU	R AOA SNSR
D3693A	D10017
pin H7	pin 3
pin J7	pin 4
pin K7	pin 5

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-connect the connector D10017 to the Right AOA Sensor, T437.
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then re-connect connector D10017 to the Right AOA Sensor and continue.
- (5) Do this check of the wiring:
- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Examine the wiring between the FCC-B, M1876 and the Right ADIRU, M1752 as follows (WDM 34-21-24):

FCC-B	R ADIRU
D10137B	D3693A
pin E4	pin A3
pin D4	pin B3

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the Right ADIRU, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.

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- (a) Make the selection for the Channels B.
- (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

825. Airplane Alignment Problems During Autoland Approach - Fault Isolation

A. Description

- (1) This task is for fault code 221 960 00.
- (2) The airplane is not aligned properly with the runway during an autoland. The localizer was not biased out of view, and the autopilot did not disconnect.

B. Possible Causes

- (1) A line replaceable unit (LRU) that has an interface with the digital flight control system (DFCS).
- (2) Conditions external to the airplane.

C. Fault Isolation Procedure

- (1) Do this task: Land Verify Test, AMM TASK 22-11-00-700-801.
- (2) Do these steps:
 - (a) If a maintenance message shows, refer to the 22-Maintenance Message Index to find the applicable fault isolation task.
 - 1) Do the fault isolation task.
 - (b) If a maintenance message does not show, then there was one of these:
 - 1) An intermittent fault.
 - 2) An airplane alignment problem caused by conditions external to the airplane.

NOTE: If the problem occurs on the next flight, it may be caused by conditions external to the airplane. If you think it is necessary, download the data from the flight data recorder to examine the problem in more detail. To download the data from the flight data recorder, (AMM TASK 31-31-00-970-806 or AMM TASK 31-31-00-970-808).

D. Repair Confirmation

- (1) Do this task: Land Verify Test, AMM TASK 22-11-00-700-801.
- (2) If no maintenance messages show, then you corrected the fault.

————— **END OF TASK** —————

826. Master FCC cannot enter BITE

A. Description

- (1) The following message is displayed on the CDU whenever the FCC is unable to enter BITE:
 - (a) DFCS BITE INOP CHECK FCC OR INTERFACE

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

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B. Possible Causes

- (1) FCC-A
- (2) FCC-B
- (3) FMC
- (4) MCP
- (5) Wiring

C. Related Data

- (1) SSM 22-11-51
- (2) SSM 22-11-52
- (3) WDM 22-11-51

D. Initial Evaluation

- (1) Do the DFCS BITE test on the CDU:
 - (a) Push the INIT/REF pushbutton on the CDU.
 - (b) Push the CDU LSK 6R next to the MAINT prompt.
 - (c) Push the CDU LSK 2L from the Maint BITE Index screen. The FMC sends a request to the FCC to enter DFCS BITE mode.

- (2) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then do these steps:

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

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	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

- (a) Do the DFCS BITE test on the CDU.
- (b) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then do the Fault Isolation Procedure for FCC-A.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

- (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	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

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- (a) Do the DFCS BITE test on the CDU
- (b) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the the CDU, then do the Fault Isolation Procedure - FCC-B.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

- (5) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU and you are able to enter BITE, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Fault Isolation - FCC-A:
- (2) Do the wiring check between the FMC-1, M1175 and FCC-A, M1875:
 - (a) Remove the FCC-A, M1875. Do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - (b) Remove the FMC-1, M1175. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - (c) Do the following continuity check:

FMC-1	FCC-A
D2179A	D10135A
G9	E4
H9	D4

- (3) If you find a problem with wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-install the FCC-A, M1875. Do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (c) Re-install the FMC-1, M1175. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (d) Do the DFCS BITE test on the CDU.
 - (e) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU, then you corrected the fault.
 - (f) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then continue.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

- (4) Do the wiring check between the mode control panel (MCP), M198, and FMCs:
 - (a) Remove the MCP, M198. Do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - (b) Remove the FMC-1, M1175. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801

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- (c) Remove the FMC-2, M1632. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801
- (d) Do the following continuity check:

M198	M1175
D301	D2179A
pin 2	pin G7
pin 1	pin H7

M198	M1632
D301	D3261A
pin 2	pin G7
pin 1	pin H7

- (5) If you find a problem with wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-install the MCP, M198. Do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - (c) Re-install the FMC-1, M1175. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (d) Re-install the FMC-2, M1632. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (e) Do the DFCS BITE test on the CDU.
 - (f) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU, then you corrected the fault.
 - (g) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then continue.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

- (6) Do the wiring check between FCC-A, M1875, and MCP, M198
 - (a) Remove FCC-A, M1875. Do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - (b) Remove MCP, M198. Do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - (c) Do the following continuity check:

M1875	M198
D10135A	D299
pin B6	pin 33
pin A6	pin 32

- (7) If you find the a problem with the wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-install the FCC-A, M1875. Do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801

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- (c) Re-install the MCP, M198. Do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (d) Do the DFCS BITE test on the CDU.
- (e) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU, then you corrected the fault.
- (f) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then continue.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

- (8) Do the following task: FCC, Squat Switch Problem - Fault Isolation, 22-15 TASK 815
 - (a) Do the DFCS BITE test on the CDU.
 - (b) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU and you are able to enter BITE, then you corrected the fault.
- (9) Fault Isolation - FCC-B:
- (10) Do the wiring check between the FMC-1, M1175 and FCC-B, M1876:
 - (a) Remove the FCC-B, M1876. Do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - (b) Remove the FMC-1, M1175. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - (c) Do the following continuity check:

M1175	M1876
D2179A	D10137A
pin G9	pin E4
pin H9	pin D4

- (11) If you find a problem with wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-install the FCC-B, M1876. Do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (c) Re-install the FMC-1, M1175. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (d) Do the DFCS BITE test on the CDU.
 - (e) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU, then you corrected the fault.
 - (f) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then continue.

NOTE: The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.

- (12) Do the wiring check between the mode control panel (MCP), M198, and FMCs:
 - (a) Remove the MCP, M198. Do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - (b) Remove the FMC-1, M1175. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801

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- (c) Remove the FMC-2, M1632. Do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801
- (d) Do the following continuity check:

M198	M1175
D301	D2179A
pin 2	pin G7
pin 1	pin H7

M198	M1632
D301(J102)	D3261A
pin 2	pin G7
pin 1	pin H7

- (13) If you find a problem with wiring, then do these steps:
- (a) Repair the wiring.
 - (b) Re-install the MCP, M198. Do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - (c) Re-install the FMC-1, M1175. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (d) Re-install the FMC-2, M1632. Do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (e) Do the DFCS BITE test on the CDU.
 - (f) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU, then you corrected the fault.
 - (g) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message shows on the CDU, then continue.
- NOTE:** The DFCS BITE INOP - CHECK FCC OR INTERFACE message may only appear momentarily.
- (14) Do the following task: FCC, Squat Switch Problem - Fault Isolation, 22-15 TASK 815
- (a) Do the DFCS BITE test on the CDU.
 - (b) If the DFCS BITE INOP - CHECK FCC OR INTERFACE message does not show on the CDU and you are able to enter BITE, then you corrected the fault.

———— **END OF TASK** ————

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827. ADIRU Data Invalid - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ADC CAS>60 OR CAS INV
- IRU-1 GS>40 OR GS INV
- IRU-2 GS>40 OR GS INV

- (a) 22-11351 BITE ENTRY INHIBIT

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- 1) FCC-A is receiving Local CAS > 60 Knots or it is invalid.
- 2) FCC-A is receiving Local Ground Speed > 40 knots or it is invalid.
- 3) FCC-A is receiving Foreign Ground Speed > 40 knots or it is invalid.
- (b) 22-11352 BITE ENTRY INHIBIT
 - 1) FCC-B is receiving Local CAS > 60 Knots or it is invalid.
 - 2) FCC-B is receiving Local Ground Speed > 40 knots or it is invalid.
 - 3) FCC-B is receiving Foreign Ground Speed > 40 knots or it is invalid.

B. Possible Causes

- (1) ADIRU-1
- (2) ADIRU-2
- (3) Wiring

C. Related Data

- (1) WDM 34-21-13
- (2) WDM 34-21-14
- (3) WDM 34-21-23
- (4) WDM 34-21-24
- (5) SSM 22-11-52

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: If CONDITIONS INHIBITING BITE ENTRY FOR FCC CHANNEL shows, pull the circuit breakers for the failed channel to determine the BITE Status for the opposite channel.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If you find maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find maintenance messages, then continue.
- (2) Do this task: ADIRU(ADC) Output Problem - Fault Isolation, 22-11 TASK 810
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this task: Left ADIRU(IRU) Output Problem - Fault Isolation, 22-11 TASK 806
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do this task: Right ADIRU(IRU) Output Problem - Fault Isolation, 22-11 TASK 807
 - (a) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If BITE Entry conditions are satisfied, then the DFCS BITE TEST MAIN MENU will show.

———— **END OF TASK** ————

828. Neutral Shift Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
22-11831 FEEL AND CENTERING FRPLY
 - (a) FEEL AND CENTERING FRPLY: Excessive freeplay in Neutral Shift Sensor installation.

B. Possible Causes

- (1) Torque Tube
- (2) Aileron Feel and Centering Unit

C. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test or Land Verify test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do this task: Elevator Centering Unit Test, AMM TASK 22-11-00-820-812.
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message does show, then continue.
 - (b) If RERUN does not show on the CDU display, then do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) DUAL STAB 'CHANNEL' 35>
 - d) EXECUTE
 - 2) If the maintenance message does not show, then you corrected the fault.
 - 3) If the maintenance message does show, then continue.
- (2) Do these steps:
 - (a) Make these selections on the CDU:
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B

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- b) <RUN SELECT LIBRARY TESTS
 - c) DUAL STAB 'CHANNEL' 35>
 - d) EXECUTE
- (b) Make sure the Neutral Shift Position for the FCC-A and FCC-B shown on the CDU are between the limits listed on the table below:

TEST CONDITION CODE	FCC CHANNEL	NEUTRAL SHIFT POSITION
S157	FCC-A	NSS DIFF * -0.25/ +0.25
S160	FCC-B	NSS DIFF * -0.25/ +0.25
s163	FCC-A	NSS DIFF * -0.50/ +0.50
S167	FCC-B	NSS DIFF * -0.50/ +0.50
S201	FCC-A	NSS DIFF * -0.25/ +0.25
S204	FCC-B	NSS DIFF * -0.25/ +0.25
S207	FCC-A	NSS DIFF * -0.50/ +0.50
S211	FCC-B	NSS DIFF * -0.50/ +0.50

- (c) If the value is not in the limit, do these steps.
 - 1) Replace the elevator neutral shift sensor. Do these tasks:
 - Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801
 - Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801.
- (d) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
- (e) If the maintenance message does show, then continue.
- (f) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) DUAL STAB 'CHANNEL' 35>
 - d) EXECUTE
 - e) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message does show, then continue.
- (3) Do the check of the elevator centering unit test. Do this task:
 - Elevator Centering Unit Test, AMM TASK 22-11-00-820-812
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:

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- a) <CHANNEL A and B
 - b) <RUN SELECT LIBRARY TESTS
 - c) DUAL STAB 'CHANNEL' 35>
 - d) EXECUTE
 - e) If the maintenance message does not show, then you corrected the fault.
- (4) Replace the elevator feel and centering unit. Do these tasks:
- Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
- Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
- 1) If the maintenance message does not show, then you corrected the fault.
- (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
- 1) Make these selections on the CDU:
 - a) <CHANNEL A and B
 - b) <RUN SELECT LIBRARY TESTS
 - c) DUAL STAB 'CHANNEL' 35>
 - d) EXECUTE
 - e) If the maintenance message does not show, then you corrected the fault.

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————— **END OF TASK** —————

829. Flight Director Biased Out of View - Fault Isolation

A. Description

- (1) This task is for this Observed Fault:
 - (a) Flight Director (FD) Bars are biased out of view when the CAPT (F/O) TOGA Button is pushed.

B. Possible Causes

- (1) TAT Probe, M171
- (2) Wiring

C. Fault Isolation Procedure

- (1) Do this task: TAT Probe Signal Fail - Fault Isolation, 34-21 TASK 813.
 - (a) If the FD Bars are not biased out of view, you corrected the problem.

————— **END OF TASK** —————

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830. Pilot Report Unable to ARM LNAV on the ground prior to Takeoff - Fault Isolation

A. Description

- (1) For Arming Lateral Navigation (LNAV) it is possible that the flight plan or Airplane configuration could impact LNAV arming on the ground.
- (2) The criteria for arming LNAV requires a departure runway in the flight plan, with the first course within 5 degrees of the runway heading.

B. Possible Causes

- (1) Verify the Airplane Configuration includes:
 - (a) Collins P4 FCC or later, or Honeywell 710 FCC or later, CDS BPO6 or later software and FMC U10.8A or later software.
 - (b) If the airplane configuration includes the aforementioned equipment. Verify the flight plan included:
 - Origin runway in flight plan
 - Active route entered in FMC
 - Track of first leg within 5 degrees of runway heading and there is no route discontinuity on the GOTO waypoint
 - Air Data Input is valid

C. Fault Isolation Procedure

- (1) If the condition occurred with the aforementioned configuration and information available to the FMC Flight plan, then do these task:
 - FMC Hardware/Software Faults - Fault Isolation, 34-61 TASK 807
 - ADIRS Input Problem - Fault Isolation, 34-61 TASK 824
- (2) If the FMC is displayed on the CDU IDENT menu during 34-61 TASK 807 and the ADIRU input is valid per ADIRS Input Problem - Fault Isolation, 34-61 TASK 824, the condition was intermittent and no further action is required.

————— **END OF TASK** —————

831. Pilot Report Unable to ARM VNAV on the ground prior to Takeoff - Fault Isolation

A. Description

- (1) For aiming VNAV it is possible that the flight plan or airplane configuration could impact VNAV arming on the ground.

B. Possible Causes

- (1) Verify the airplane configuration includes:
 - (a) Collins P4 FCC or later, or Honeywell 710 FCC or later, or CDS BPO6 or later software, or FMC U10.8A or later software.
 - (b) If the airplane configuration includes the aforementioned equipment, verify the flight plan included:
 - If VNAV is armed before takeoff, the existing VNAV engagement rules are maintained
 - Origin runway in flight plan
 - Active route entered in FMC
 - Performance data entered into the FMC
 - AIR DATA input is valid, FUEL INPUT is valid

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C. Fault Isolation Procedure

- (1) If the condition occurred with the aforementioned configuration and information available to the FMC flight plan, the do these task:
 - FMC Hardware/Software Faults - Fault Isolation, 34-61 TASK 807
 - ADIRS Input Problem - Fault Isolation, 34-61 TASK 824
 - FQIS Input Problem - Fault Isolation, 34-61 TASK 826
- (2) If the FMC is displayed on the CDU IDENT menu during task 807, the ADIRU input is valid per task 824, and the fuel input is valid per task 826, the condition was intermittent and no further action is required.

————— **END OF TASK** —————

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832. Roll/Yaw Asymmetry Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11710 ROLL/YAW ASYMMETRY
 - 1) FCC-A senses a sustained Lateral Out-of-Trim Condition.
 - (b) 22-11712 ROLL/YAW ASYMMETRY
 - 1) FCC-B senses a sustained Lateral Out-of-Trim Condition.
- (2) This maintenance message can only occur during flight. When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.

B. Possible Causes

- (1) Lateral Mistrim
- (2) Yaw Mistrim
- (3) External Upset

C. Fault Isolation Procedure

- (1) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find Stall Management Yaw Damper (SMYD) maintenance messages in EXISTING FAULTS, do the applicable FIM Tasks for the messages that show.
 - 1) If the maintenance message 22-11710 (22-11710) ROLL/YAW ASYMMETRY or 22-11712 (22-11712) ROLL/YAW ASYMMETRY does not show on the next flights, then you corrected the fault.
 - (b) If you do not find SMYD maintenance messages, then continue.
- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) If you find DFCS maintenance messages, do the applicable FIM Tasks for the messages that show.
 - 1) If the maintenance message 22-11710 (22-11710) ROLL/YAW ASYMMETRY or 22-11712 (22-11712) ROLL/YAW ASYMMETRY does not show on the next flights, then you corrected the problem.

————— **END OF TASK** —————

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833. Roll Authority Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11715 ROLL AUTHORITY
 - 1) FCC-A senses insufficient Lateral Control Authority.
 - (b) 22-11716 ROLL AUTHORITY
 - 1) FCC-B senses insufficient Lateral Control Authority.
- (2) This maintenance message can only occur during flight. When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.

B. Possible Causes

- (1) Lateral Mistrim
- (2) Yaw Mistrim
- (3) External Upset

C. Fault Isolation Procedure

- (1) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find SMYD maintenance messages in EXISTING FAULTS, do the applicable FIM Tasks for the messages that show.
 - 1) If the maintenance message 22-11715 (22-11715) ROLL AUTHORITY or 22-11716 (22-11716) ROLL AUTHORITY does not show on the next flights, then you corrected the problem.
 - (b) If you do not find SMYD maintenance messages, then continue.
- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) If you find DFCS maintenance messages, do the applicable FIM Tasks for the messages that show.
 - 1) If the maintenance message 22-11715 (22-11715) ROLL AUTHORITY or 22-11716 (22-11716) ROLL AUTHORITY does not show on the next flights, then you corrected the problem.

———— **END OF TASK** ————

834. LVCH HI SPD LIMIT - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11846 LVCH HI SPD LIMIT
- (2) Minimum Descent Rate is not maintained during Level Change.
- (3) This maintenance message can only occur during flight.
 - (a) When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.
- (4) The Autopilot disconnects and the Pitch Flight Director Bar is biased out-of-view, when these conditions are true:

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- (a) The Fight Control System is engaged in Level Change Mode and controlling to VMO/MMO.
- (b) The MCP selected Altitude is below the airplane.
- (c) A minimum Descent Rate can not be maintained during deceleration or controlling to VMO/MMO.

B. Possible Causes

- (1) Crew Operation
- (2) ADIRU System Problem(s)
- (3) Elevator System out of Adjustment
- (4) FCC-A, M1875
- (5) FCC-B, M1876

C. Fault Isolation Procedure

- (1) Use the CDU to do the DFCS BITE Library Test as follows:
NOTE: You can find more details of DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 01 ADIRU > EXECUTE.
 - 1) If related maintenance messages show, then refer to the 22-MAINT MSG INDEX to find the applicable FIM Tasks for the messages that show.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If no maintenance messages show, then continue.
- (2) Do this task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.
- (3) Do this task: Copy of the Data from the SSFDR with the use of a Hand Held Multi-Purpose Portable Interface (HHMPI) or Portable Interface, AMM TASK 31-31-00-970-806 or Copy the Data from the Solid State Flight Data Recorder (SSFDR) with the Hand Held Multi Purpose Interface (HHMPI), AMM TASK 31-31-00-970-808.
 - (a) Send the data to Boeing for evaluation.

D. Repair Confirmation

- (1) If the maintenance message 22-11846 LVCH HI SPD LIMIT does not show on the subsequent flights, then you corrected the problem.

————— **END OF TASK** —————

835. LCL (FGN) STICK SHAKER - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11847 LCL STICK SHAKER
 - 1) The FCC-A (B) detects Stick Shaker activation from the Local SMYD Computer for > 300 seconds.
 - (b) 22-11848 FGN STICK SHAKER

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- 1) FCC detects Stick Shaker activation from Foreign SMYD Computer for > 300 seconds.
- (2) This maintenance message can only occur during flight.
 - (a) When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.
- (3) Make sure that the circuit breakers C1392 and C1393 are closed before you do this task.

B. Possible Causes

- (1) Angle of Attack Sensor(s)
- (2) SMYD System Problem(s)
- (3) SMYD Computer-1, M1747
- (4) SMYD Computer-1, M1748

C. Fault Isolation Procedure

- (1) Do an Angle of Attack Sensor System Test. This is the task: Angle of Attack System Test, AMM TASK 34-21-05-730-801.
 - (a) If the left or right angle of attack sensor does not operate as specified in the AMM task, then do these steps:
 - 1) Replace the left or right angle of attack sensor you found a problem.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the left and right angle of attack sensors operate as specified in the AMM task, then continue.
- (2) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If related maintenance messages show, then refer to the table at the end of the SMYD BITE Procedure to find the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If no related maintenance messages show, then continue.
- (3) For SMYD Computer-1 and SMYD Computer-2, do the SMYD Installation Test. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (a) If you find 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.
 - (b) If no related maintenance messages show, then continue.
- (4) Do this task: Copy of the Data from the SSFDR with the use of a Hand Held Multi-Purpose Portable Interface (HHMPI) or Portable Interface, AMM TASK 31-31-00-970-806 or Copy the Data from the Solid State Flight Data Recorder (SSFDR) with the Hand Held Multi Purpose Interface (HHMPI), AMM TASK 31-31-00-970-808.
 - (a) The data can be analyzed at a different location by the applicable airline personnel or this service can be ordered through Flight Recorder Data Services found on MyBoeingFleet.

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D. Repair Confirmation

- (1) If the maintenance message 22-11847 (22-11848) LCL (FGN) STICK SHAKER does not show on the subsequent flights, then you corrected the problem.
- (2) If the maintenance message still shows on the subsequent flight(s), then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

836. S/W CONFIG INV - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11344 S/W CONFIG INV
 - 1) FCC-A Software Configuration is invalid or incompatible.
 - (b) 22-11345 S/W CONFIG INV
 - 1) FCC-B Software Configuration is invalid or incompatible.
 - (c) 22-11346 S/W CONFIG INV
 - 1) FCC(s) detect that Software Configurations do not agree.

B. Possible Causes

- (1) Incorrect FCC-A S/W Configuration
- (2) Incorrect FCC-B S/W Configuration
- (3) FCC-A
- (4) FCC-B

C. Initial Evaluation

- (1) On the CDU, select INIT REF > INDEX > MAINT > DFCS.
 - (a) If DFCS BITE TEST MAIN MENU shows on the CDU and the maintenance message(s) does not show, then there was an intermittent fault.
 - (b) If DFCS BITE TEST MAIN MENU does not show on the CDU and the maintenance message(s) shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do these steps to make sure that the correct software is installed on the FCC-A (B), M1875 (M1876).

NOTE: Make sure that you know the correct software part numbers for the FCCs. Make sure that both FCCs have the same software part numbers installed.

- (a) Push and release the CONTINUE key until you get back to the DFCS BITE TEST MAIN MENU.
- (b) Push the line select key next to the IDENTIFICATION AND CONFIGURATION prompt.
- (c) Push the line select key next to the CHANNEL A prompt.

- 1) Make sure that the software part number for FCC A is correct.

NOTE: The software part number shows below FCC OPS.

- 2) If the part number is not correct, do one of these tasks:

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- a) Load the correct software FCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader, AMM TASK 22-11-33-470-801 or FCC Software Installation from the Flight Compartment with a Portable Data Loader, AMM TASK 22-11-33-470-803 or FCC Software Installation using the Cross-load Function, AMM TASK 22-11-33-470-804.
NOTE: If the correct software part number is installed on FCC A, it may be cross-loaded to FCC B.
- b) Replace the Flight Control Computer E/E Box Removal, AMM TASK 20-10-07-000-801.
- c) Do the Repair Confirmation at the end of this task.
- 3) If the part number is correct, then continue.
- (d) Push the line select key next to the PREV MENU prompt.
- (e) Push the line select key next to the CHANNEL B prompt.
 - 1) Make sure that the software part number for FCC B is correct.
NOTE: The software part number shows below FCC OPS.
 - 2) If the part number is not correct, do one of these tasks:
 - a) Load the correct software FCC Software Installation from the Electrical and Electronics Compartment with a Portable Data Loader, AMM TASK 22-11-33-470-801 or FCC Software Installation from the Flight Compartment with a Portable Data Loader, AMM TASK 22-11-33-470-803 or FCC Software Installation using the Cross-load Function, AMM TASK 22-11-33-470-804.
NOTE: If the correct software part number is installed on FCC A, it may be cross-loaded to FCC B.
 - b) Replace the Flight Control Computer E/E Box Removal, AMM TASK 20-10-07-000-801.
 - c) Do the Repair Confirmation at the end of this task.
 - 3) If the part number is correct, then continue.
- (2) Do the LRU Replacement Test for the FCC-A and FCC-B. Full details of the test are in this task: Digital Flight Control System LRU Replacement Tests, AMM TASK 22-11-00-740-815.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - 1) If other maintenance messages show, then do the Fault Isolation procedure for the related maintenance messages that shows.

E. Repair Confirmation

- (1) On the CDU, select INIT REF > INDEX > MAINT > DFCS.
 - (a) If DFCS BITE TEST MAIN MENU shows on the CDU and the maintenance message(s) does not show, then you corrected the problem.
 - (b) If DFCS BITE TEST MAIN MENU does not show on the CDU and the maintenance message(s) shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

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837. Foreign FCC Fails to Enter TOGA - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11209 FGN FAILS TO ENT TOGA: The FCC-B detects that FCC-A was unable to enter TOGA Mode.
 - (b) 22-11210 FGN FAILS TO ENT TOGA: The FCC-A detects that FCC-B was unable to enter TOGA Mode.
- (2) These faults can cause the Flight Director and Takeoff Mode annunciations shown on the PFD to disappear after the TOGA button has been pushed during takeoff.
- (3) When the DFCS BITE fault history shows a FGN FAILS TO ENT TOGA maintenance message, make a note of the FCC channel that is the SUSPECT LRU, then review the other FCC channel BITE Fault History to help determine what troubleshooting should be accomplished.

B. Possible Causes

- (1) TAT Sensor, M171
- (2) Thrust Lever 1(2) Take-Off/Go Around Switch, S786 (S787)
- (3) Wiring Problem
- (4) FCC-A (B), M1875 (M1876)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C00412	INSTR XFR

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-11-12
- (3) WDM 22-11-14
- (4) WDM 34-21-12
- (5) WDM 34-21-22

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E. Initial Evaluation

- (1) This maintenance message can only occur during flight.
 - (a) When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.

F. Fault Isolation Procedure

- (1) Do these steps to review the Fault History of the FCC-A (B) and check the Total Air Temperature Sensor:
 - (a) Use the CDU to enter the DFCS BITE. Select INDEX > MAINT > DFCS > FAULT REVIEW > FAULT HISTORY SORTED BY FLIGHT LEG > CHANNEL A (B).
 - (b) Select the applicable flight leg that contains the fault.
 - (c) Record all DFCS BITE maintenance messages shown on the CDU for this flight leg.

NOTE: There may be multiple CDU pages of fault history data for the applicable flight leg (LEG nn). Make sure to push the NEXT PAGE button and record all maintenance messages shown.

 - 1) If no other maintenance messages show for this flight leg, then continue at the next step to check the TOGA Switches.
 - 2) If other maintenance messages show for this flight leg, then do the applicable FIM tasks to clear the faults.
 - 3) If maintenance message 22-11733 TAS INV or 22-11734 TAS INV is shown in the DFCS BITE Fault History, then do these steps to do the ADIRS BITE:
 - a) Exit the DFCS BITE, then select INDEX > MAINT > ADIRS > ADIRS L(R) > INFLIGHT FAULTS.
 - b) Select the same flight leg that was used previously with the DFCS BITE and review all ADIRS Inflight Fault shown on the CDU.
 - <1> If maintenance message 34-31022 TAT PROBE SIGNAL FAIL or any other TAT Fault is shown, then replace the TAT Probe, M171. These are the tasks:
 - Total Air Temperature Probe - Removal, AMM TASK 34-21-06-000-801
 - Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801
 - <a> Do the Repair Confirmation at the end of this task.
 - <2> If maintenance message 34-21022 TAT PROBE SIGNAL FAIL or other TAT Faults do not show, then continue.
- (2) Do these steps on the CDU to check the Thrust Lever TOGA Switches and its wiring:
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > SENSOR VALUES > DISCRETE INPUTS > J1A. Go to screen "6/6".
 - (b) Do these steps to check the Thrust Lever 1 TOGA Switch:
 - 1) Make sure that the state of "TOGA SW" pin "F04" is "OP" (OPEN) on A and B side.
 - 2) Push the Captain's TOGA SW on the Thrust Lever 1.
 - 3) Make sure that the state of "TOGA SW" pin "F04" is "GD" (GROUND) on A and B side.

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- a) If the TOGA SW pin F04 does not change to "GD" (GROUND), then replace the TOGA Switch. These are the tasks:
 - Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801

<1> Do the Repair Confirmation at the end of this task.
- 4) Continue to push and hold that Captain's TOGA Switch, move the Thrust Lever 1 forward and aft several times.
- 5) Make sure that the state of "TOGA SW" pin "F04" continues to show "GD" (GROUND) on A and B side.
 - a) If the TOGA SW pin F04 changes to "OP" (OPEN) while the TOGA Switch remains pressed while the Thrust Lever is moving, then there is a problem with the wiring. Do this check of the wiring (WDM 22-11-14):

CAPT TOGA Sw,

S786

D8313P

1	.....	F4
2	.....	GD1106-DC

FCC-A, M1875

D10135A

CAPT TOGA Sw,

S786

D8315P

1	.....	F4
2	.....	GD1401-DC

FCC-B, M1876

D10137A

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Do the Repair confirmation at the end of this task.
- <2> If you did not find a problem with the wiring, then continue.
- (c) Do these steps to check the Thrust Lever 2 TOGA Switch:
- 1) Make sure that the state of "TOGA SW" pin "F04" is "OP" (OPEN) on A and B side.
 - 2) Push the First Officer's TOGA SW on the Thrust Lever 2.
 - 3) Make sure that the state of "TOGA SW" pin "F04" is "GD" (GROUND) on A and B side.
 - a) If the TOGA SW pin F04 does not change to "GD" (GROUND), then replace the TOGA Switch. These are the tasks:
 - Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801

<1> Do the Repair Confirmation at the end of this task.
 - 4) Continue to push and hold that First Officer's TOGA Switch, move the Thrust Lever 2 forward and aft several times.
 - 5) Make sure that the state of "TOGA SW" pin "F04" continues to show "GD" (GROUND) on A and B side.

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- a) If the TOGA SW pin F04 changes to "OP" (OPEN) while the TOGA Switch remains pressed while the Thrust Lever is moving, then there is a problem with the wiring. Do this check of the wiring (WDM 22-11-14):

FO TOGA Sw,	
S787	FCC-A, M1875
D8313P	D10135A
11	F4
12	GD1106-DC

FO TOGA Sw,	
S787	FCC-B, M1876
D8315P	D10137A
11	F4
12	GD1401-DC

<1> If you find a problem with the wiring, then do these steps:

<a> Repair the wiring.

 Do the Repair confirmation at the end of this task.

<2> If you did not find a problem with the wiring, then continue.

- (d) If you did not find a problem with the TOGA Switch DISCRETE INPUTS test, then exit the DFCS BITE and continue the Fault Isolation Procedure.

(3) Do a check of the TAT Sensor wiring:

- (a) Disconnect the connector from the TAT Sensor, M171.
- (b) Remove the Left (Right) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
- (c) Do a check of the wiring between the TAT Sensor and the ADIRU (WDM 34-21-12, WDM 34-21-22):

TAT Probe,	Left ADIRU,
M171	M1749
D277	D3687A
pin 3	pin H8
pin 4	pin J8

TAT Probe,	Right ADIRU,
M171	M1752
D277	D3693A
pin 5	pin H8
pin 2	pin J8

- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Do the Repair confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue.

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- (4) Replace the FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair confirmation at the end of this task.

G. Repair Confirmation

- (1) Monitor the airplane during the next flight(s).
 - (a) If the maintenance message does not show on the subsequent flight(s), then you corrected the problem.
 - (b) If the maintenance message still shows on the next flight(s), then continue the applicable Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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838. NO AUTOLAND FDE Message - Fault Isolation

A. Description

- (1) The NO AUTOLAND Message shows on the Primary Flight Display (PFD) and ENG 1 (ENG 2) Page when there is degradation of the Autopilot Autoland function.

B. Fault Isolation Procedure

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801/FAULT REVIEW Procedure.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (b) Select CHANNEL A or CHANNEL B as applicable.
 - (c) Select NO AUTOLAND or NOALND LCH and review all fault data that shows on the CDU.
 - (d) Record all the 22-11XXX maintenance messages that you find.
 - (e) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (f) Do the Land Verify Test, AMM TASK 22-11-00-700-801 and make sure that the test is satisfactory.
 - (g) Do the Reset Latches Procedure, AMM TASK 22-11-00-700-802 and erase all NO AUTOLAND and/or the NOALND LCH messages.

———— **END OF TASK** ————

839. Stabilizer Runaway While The Autopilot Is Engaged - Fault Isolation

A. Description

- (1) Stabilizer runaway.
- (2) This observed fault can only occur during flight. When the airplane is on the ground, it is not possible to simulate the conditions which cause this message.

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B. Related Data

- (1) SSM 34-21-22

C. Fault Isolation Procedure

- (1) Look for Existing Faults, 27 Flight Controls Stall Management Yaw Damper System for maintenance messages related to Left (Right) Angle of Attack Sensor, T433 (T437).
 - (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.
 - (b) If you do not find related maintenance messages, then continue.
- (2) Look for Existing Faults, 34 Flight Management Computer System for maintenance messages related to Left (Right) Angle of Attack Sensor, T433 (T437).
 - (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.
 - (b) If you do not find related maintenance messages, then continue.
- (3) Do the Stabilizer Electric Trim System Test, AMM TASK 27-41-00-700-803.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do the Stabilizer Manual Trim and Trim Indicator - Test, AMM TASK 27-41-00-700-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.
 - (b) Select CHANNEL A.
 - (c) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (d) Record all the 22-11XXX maintenance messages that you find.
 - (e) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (f) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.
 - (g) Select CHANNEL B.
 - (h) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (i) Record all the 22-11XXX maintenance messages that you find.
 - (j) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (k) Do the Repair Confirmation at the end of this task.
- (6) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS.

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- (b) Select CHANNEL A AND B.
- (c) Select CONTINUE.
- (d) Make sure that the AUTOTEST PASSED is shown.
 - 1) If the AUTOTEST FAILED is shown, then do these steps:
 - a) Record all the 22-11XXX maintenance messages that you find.
 - b) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - c) Do the indicated corrective actions to troubleshoot the problem.
 - d) Do the Repair Confirmation at the end of this task.
- (7) From the LIBRARY TESTS menu on the CDU, select 32 SPD/STB TRIM > EXECUTE.
 - (a) Look for related maintenance messages.
 - (b) 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.
 - (c) If you do not find related maintenance messages, then continue.
- (8) Do the Angle of Attack System Test, AMM TASK 34-21-05-730-801.
 - (a) Do the Repair Confirmation at the end of this task.

D. Repair Confirmation

- (1) Monitor the airplane during the next flight(s).
 - (a) If the observed fault symptom does not occur on the subsequent flight(s), then you corrected the problem.
 - (b) If the observed fault symptom occurs again on the next flight(s), then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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840. FCC Elevator Actuator Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11132 ELEV SERVO AMP (FCC-A).
 - FCC-A monitors the servo amplifier control path by sending an EHSV command voltage output to the M1020 elevator autopilot actuator and does a check of the wrap-around. If a problem is detected maintenance message 22-11132 will be shown.
 - (b) 22-11134 ELEV SERVO AMP (FCC-B).
 - FCC-B monitors the servo amplifier control path by sending an EHSV command voltage output to the M1022 elevator autopilot actuator and does a check of the wrap-around. If a problem is detected maintenance message 22-11134 will be shown.
- (2) FCC-A (-B) monitors the servo amplifier control path by sending an EHSV command voltage output to the Elevator Autopilot Actuator, M1020 (M1022) and does a check of the wrap-around. If a problem is detected maintenance message 22-11132 (FCC-A) or 22-11134 (FCC-B) will be shown.

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B. Possible Causes

- (1) Wiring
- (2) Elevator Actuator-A (B), M1020 (M1022)
- (3) FCC-A (B), M1875 (M1876)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1
E	4	C01629	AFCS SYS A RUDDER DC

- (2) These are the primary circuit breakers related to the fault for FCC-B:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC

D. Related Data

- (1) WDM 22-12-31
- (2) WDM 22-12-41
- (3) SSM 22-12-31
- (4) SSM 22-12-41

E. Initial Evaluation

- (1) Do a test of the Autopilot Elevator Actuator. This is the task: Autopilot Elevator Actuator Test, AMM TASK 22-11-26-710-801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Examine the wiring between the FCC and the Autopilot Elevator Actuator (WDM 22-12-31, WDM 22-12-41):
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 1) Do a resistance check between these pins at the FCC.

FCC-A, M1875	FCC-A, M1875	
D10135A	D10135A	
E15	D15	2000 +/- 200 Ohms

FCC-B, M1876	FCC-B, M1876	
D10137A	D10137A	
E15	D15	2000 +/- 200 Ohms

- 2) Make sure that pin E15 and pin D15 are not shorted to ground.
- (b) Do a wiring check between the FCC-A (B) and the Elevator Actuator-A (B) as follows:

FCC-A	Actuator-A
D10135A	D1681
pin E15	pin 8
pin D15	pin 5

FCC-B	Actuator-B
D10137A	D1687
pin E15	pin 8
pin D15	pin 5

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect the connector D1681 (D1687), to the Autopilot Elevator Actuator-A (B), M1020 (M1022).
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then replace the Autopilot Elevator Actuator-A (B), M1020 (M1022). These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
 - a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this task: Autopilot Elevator Actuator Test, AMM TASK 22-11-26-710-801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

841. FCC Internal Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages
 - (a) 22-11303 - FCC INTERNAL FAULT (FCC-A)
 - (b) 22-11317 - FCC INTERNAL FAULT (FCC-B)
- (2) During a power-up of the FCC, or during DFCS BITE maintenance mode entry, or during specific DFCS BITE ground tests, the FCC performs internal monitoring and will report to the CDU if an internal fault has been detected. Internal faults are reported if any of these conditions are detected by the FCC:
 - (a) The FCC is unable to read/write from/to internal memory.
 - (b) The FCC detects a cross-channel communication problem with the other FCC during a software crossload activity.
 - (c) The FCC detects an internal wrap-around problem at any of these interfaces:
 - 1) ILS Test Inhibit command to IFSAU
 - 2) Altitude Alert activation command to REU
 - 3) Autopilot position command to Elevator Actuator
 - 4) Autopilot position command to Aileron Actuator

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- 5) Autopilot position command to Rudder Actuator

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B. Possible Causes

- (1) Wiring Problem
- (2) Elevator Actuator A (B), M1020 (M1022)
- (3) Aileron Actuator A (B) M943 (M1024)

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- (4) Rudder Actuator, (M2446)

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- (5) Integrated Flight System Accessory Unit (IFSAU), (M1876)
- (6) Remote Electronics Unit (REU), (M1353)
- (7) FCC-A (-B), M1875 (M1876)

C. Circuit Breakers

- (1) For FCC-A:

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These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
C	4	C00456	AFCS SYS A MACH TRIM AC
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	4	C00457	AFCS SYS A MACH TRIM DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1
E	4	C01629	AFCS SYS A RUDDER DC

(2) For FCC-B:

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	3	C01631	AFCS INTLK 2
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	2	C01064	AFCS SYS B MACH TRIM DC
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
C	1	C01037	AFCS SYS B MACH TRIM AC
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2
D	3	C01630	AFCS SYS B RUDDER DC

D. Related Data

- (1) WDM 22-11-18
- (2) WDM 22-11-31
- (3) WDM 22-11-81
- (4) WDM 22-12-31
- (5) WDM 22-11-41
- (6) WDM 22-14-11
- (7) SSM 22-11-18
- (8) SSM 22-11-31
- (9) SSM 22-11-81
- (10) SSM 22-12-31
- (11) SSM 22-12-41
- (12) SSM 22-14-11

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E. Initial Evaluation

- (1) Do the following tests in the DFCS BITE Current Status Quick Test (Group 10) and DFCS BITE Autopilot (Group 11) tests for CHANNEL A and B. Refer to Digital Flight Control System (DFCS) - Operational Test, AMM TASK 22-11-00-740-801 for accepted procedures:
 - Group 10 Autotests
 - Group 11, Test 24 - MMR/ILS INTERACTIVE TEST
 - Group 11, Test 61 - ALT ALERT INTERACTIVE TEST
 - Group 11, Test 30 - ELEVATOR SURFACE TEST
 - Group 11, Test 31 - AILERON SURFACE TEST
 - Group 11, Test 36 - RUDDER SURFACE TEST
- (a) If the tests pass and no maintenance message(s) shows, then there was an intermittent fault.
- (b) If the tests do not pass and maintenance message(s) shows, then do the Fault Isolation Procedure below.

NOTE: Make a note of which DFCS Library Test failed (10.XX or 11.XX) and the related maintenance messages. Save this information for use with the Fault Isolation Procedures.

F. Fault Isolation Procedure

- (1) Do the FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) If the DFCS Library test 11.30 Elevator Surface Test failed, then do this check of the wiring (WDM 22-12-31, WDM 22-12-41):
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the connector D1681 (D1687) from the Elevator Actuator-A (B), M1020 (M1022).
 - (c) Do a wiring between the FCC-A (B) and the Elevator Actuator-A (B) as follow:

FCC-A, M1875	Elevator
D10137A	Actuator-A
pin E15	D1681
pin D15	pin 8
	pin 5

FCC-B, M1876	Elevator
D1037A	Actuator-B
pin E15	D1687
pin D15	pin 8
	pin 5

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- c) Re-install the connector D1681 (D1687) to the Elevator Actuator.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then replace the Autopilot Elevator Actuator-A (B), M1020 (M1022). These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
- a) Do the Repair Confirmation at the end of this task.
- (3) If the DFCS Library test 11.31 Aileron Surface Test failed, then do this check of the wiring (WDM 22-12-31):
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the connector D1827 (D1691) from the Aileron Actuator-A (B), M943 (M1024).
 - (c) Do a wiring check between the FCC-A (B) and the Aileron Actuator-A (B) as follows:

FCC-A, M1875	Aileron actuator-A
D10135B	D1827
pin E15	pin 5
pin D15	pin 8

FCC-B, M1876	Aileron actuator-B
D10137B	D1691
pin E15	pin 5
pin D15	pin 8

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - c) Re-install the connector D1827 (D1691) to the Aileron Actuator-A (B).
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then replace the Autopilot Aileron Actuator-A (B), M943 (M1024). These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
- a) Do the Repair Confirmation at the end of this task.

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- (4) If the DFCS Library test 11.36 Rudder Surface Test failed, then do this check of the wiring (WDM 22-11-81):
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Remove the connector D11617 (D11619) at the Rudder Actuator, M2446.
(c) Do a check of the wiring between the FCC-A (B) and the Rudder Actuator as follows:

FCC-A, M1875	Rudder actuator
D10135A	D11617
pin K9	pin 18

D10135B	D11617
pin K9	pin 13
pin K10	pin 15
pin J10	pin 21

FCC-B, M1876	Rudder actuator
D10137A	D11619
pin K9	pin 18

D10137B	D11619
pin K9	pin 13
pin K10	pin 15
pin J10	pin 21

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - c) Re-install the connector D11617 (D11619) at the Rudder Actuator
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then replace the Autopilot Rudder Actuator, M2446. These are the tasks:
 - Rudder Rollout Guidance Actuator - Removal, AMM TASK 22-11-22-000-801
 - Rudder Rollout Guidance Actuator - Installation, AMM TASK 22-11-22-400-801
 - a) Do the Repair Confirmation at the end of this task.

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- (5) If the DFCS Library test 10.24 MMR/ILS Quick Test, or 11.24 MMR/ILS Interactive Test failed, then do this check of the wiring (WDM 22-11-18):
- (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Do a check of the wiring between the FCC-A (B) and the IFSAU as follows:

FCC-A, M1875	IFSAU
D10135B	D235A
pin E07	pin 79

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FCC-B, M1876	IFSAU
D10137B	D235B
pin E07	pin 79

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then replace the IFSAU, M1474. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - a) Do the Repair Confirmation at the end of this task.
- (6) If the DFCS Library test 11.61 ALT ALERT Interactive Test failed, then do this check of the wiring (WDM 22-14-11):
- (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the REU, M1353. This is the task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.
 - (c) Do a wiring check between the FCC-A (B) and the REU as follows:

FCC-A, M1875	REU, M1353
D10135C	D2501A
pin K02	pin F10

FCC-B, M1876	REU, M1876
D10137C	D2501A
pin K2	pin F10

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the REU. This is the task: Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then replace the REU, M1353. These are the tasks:
 - Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801

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- Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802
- a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Re-run the DFCS BITE Library Test that failed. Refer to Digital Flight Control System (DFCS) - Operational Test, AMM TASK 22-11-00-740-801 for accepted procedures.
 - (a) If the maintenance message does not show, then you have corrected the fault.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

842. Mach Trim Sensors Invalid Data - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11203 TRIM SENSORS INVALID: FCC-A receives invalid data from Mach Trim Sensors.
 - (b) 22-11204 TRIM SENSORS INVALID: FCC-B receives invalid data from Mach Trim Sensors.

B. Possible Causes

- (1) Mach Trim Actuator, M414
- (2) IFSAU, M1474
- (3) Neutral Shift Sensor, M958
- (4) Stabilizer Position Sensor, M1192
- (5) Wiring
- (6) FCC-A (B), M1875 (M1876)

C. Related Data

- (1) SSM 22-18-11
- (2) WDM 22-18-11

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECT LIBRARY TESTS > 32 SPD/STB TRIM > EXECUTE.
 - 1) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 2) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.
 - 3) If the maintenance message does not show on the CDU, then continue to do the BITE Library Test 33.

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- (2) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECT LIBRARY TESTS > 33 MACH TRIM > EXECUTE.
 - 1) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 2) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.
 - 3) If the maintenance message does not show on the CDU, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do the ADIRU Operational Test. This is the task: Air Data Inertial Reference System - Operational Test, AMM TASK 34-21-00-710-801.
 - (a) If you find any problems with the ADIRU, then do the applicable Fault Isolation Procedure to correct the problem.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you did not find a problem with the ADIRU, then continue.
- (2) Do the Elevator Rigging Test. This is the task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.
 - (a) If the test is not satisfactory, then adjust the Elevator rigging to correct the problem
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the test is satisfactory, then continue.
- (3) Do the Mach Trim Rigging Test. This is the task: Mach Trim Rigging Test, AMM TASK 22-11-00-820-808.
 - (a) If the test is not satisfactory, then adjust the Mach Trim rigging to correct the problem
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the test is satisfactory, then continue.
- (4) Do a wiring check between the Mach Trim Actuator, M414 and the FCC-A (B), M1875 (M1876).
 - (a) Disconnect connector D545 from the Mach Trim Actuator. This is the task: Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801.
 - (b) Remove the FCC-A (B). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a check of the wiring between these pins WDM 22-18-11:

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FCC-A

Mach Trim	
Actuator, M414	FCC-A, M1875
D545	D10135C
pin 25	pin D4
pin 26	pin E4

FCC-B

Mach Trim	
Actuator, M414	FCC-B, M1876
D545	D10137C
pin 25	pin D4
pin 26	pin E4

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D545 at the Mach Trim Actuator. This is the task: Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801.
 - c) Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
- (5) Do a wiring check between the Mach Trim Actuator, M414 and the IFSAU, M1474.
- (a) Remove the IFSAU. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Do a check of the wiring between these pins WDM 22-18-11:

Mach Trim	
Actuator, M414	IFSAU, M1474
D545	D2209A
pin 24	pin 61
pin 2	pin 56
pin 6	pin 58
pin 3	pin 59
pin 13	pin 62
pin 23	Ground
pin 1	Ground
pin 11	Ground
pin 14	Ground

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D545 at the Mach Trim Actuator. This is the task: Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801.

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- c) Re-install the IFSAU. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
- (6) Do a wiring check between the IFSAU, M1474 and the FCC-A (B), M1875 (M1876).
 - (a) Do a check of the wiring between these pins WDM 22-18-11:

FCC-A

Mach Trim

Actuator, M414

D2209A

pin 40	.....	pin K1
pin 41	.....	pin C3
pin 42	.....	pin B1
pin 43	.....	pin A1
pin 45	.....	pin D1
pin 46	.....	pin F3
pin 57	.....	Ground

FCC-A, M1875

D10135C

FCC-B

Mach Trim

Actuator, M414

D2209B

pin 40	.....	pin K1
pin 41	.....	pin C3
pin 42	.....	pin B1
pin 43	.....	pin A1
pin 45	.....	pin D1
pin 46	.....	pin F3
pin 55	.....	pin G3

FCC-B, M1876

D10137C

- d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
 - (7) Replace the Mach Trim Actuator, M414. These are the tasks:
 - Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
 - Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (8) Replace the IFSAU, M1474. These are the tasks:

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- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
- Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Use the CDU to re-run the DFCS Library Test 32 and Library Test 33. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the maintenance message does not show on the CDU, then you have corrected the fault.
 - (b) If the maintenance message shows on the CDU, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

843. LOC TUNE MISCOMPARE - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11576: LOC TUNE MISCOMPARE: FCC A detects VHF/NAV radio LOC tuned to different source; suspect control panel 1.
 - (b) 22-11577: LOC TUNE MISCOMPARE: FCC B detects VHF/NAV radio LOC tuned to different source; suspect control panel 2.

B. Possible Causes

- (1) Wiring
- (2) CAPT (FO) NAV Control Panel, P8-25 (P8-26)
- (3) MMR-1 (2), M2104 (M2105)
- (4) FCC-A (B), M1875 (M1876)

C. Related Data

- (1) SSM 34-51-41
- (2) SSM 22-11-18
- (3) WDM 34-51-41
- (4) WDM 22-11-18

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message does not show on the CDU when the test is complete, then there was an intermittent fault.

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- 2) If the maintenance message shows on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the wiring between the CAPT (FO) NAV Control Panel, P8-25 (P8-26) and the FCC-A (B), M1875 (M1876).
 - (a) Disconnect connector D263 (D265) from the CAPT (FO) NAV Control Panel, P8-25 (P8-26). This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (b) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a check of the wiring between these pins of connector D263 (D265) at the NAV Control Panel and connector D10135B (D10137B) at the E1-1 Rack (WDM 34-51-41):

FCC-A

**CAPT NAV
Control Panel,
P8-25
D263
pin 38**

**FCC-A, M1875
D10135B
pin K14**

FCC-B

**FO NAV Control
Panel, P8-26
D265
pin 38**

**FCC-B, M1876
D10137B
pin K14**

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
- (2) Do a check of the wiring between the CAPT (FO) NAV Control Panel, P8-25 (P8-26) and the MMR-1 (2), M2104 (M2105).
 - (a) Remove the MMR-1 (2), M2104 (M2105). This is the task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
 - (b) Do a check of the wiring between these pins of connector D303 (D305) at the NAV Control Panel and connector D10719B (D10121B) at the MMR-1 (2) (WDM 22-11-18):

FCC-A

**CAPT NAV
Control Panel,
P8-25
D303
pin 45**

**MMR-1, M2104
D10719B
pin F15**

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FCC-B

FO NAV Control

Panel, P8-26

D305

pin 45 pin F15

MMR-2, M2105

D10721B

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue.
 - a) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Do a check of the wiring between the FCC-A (B), M1875 (M1876) and the MMR-1 (2), M2104 (M2105).
 - (a) Do a check of the wiring between these pins of connector D10135B (D10137B) at the FCC-A (B) and connector D10719B (D10121B) at the MMR-1 (2) (WDM 22-11-18):

FCC-A

FCC-A, M1875

D10135B

pin G7 pin F15

MMR-1, M2104

D10719B

FCC-B

FCC-B, M1876

D10137B

pin G7 pin F15

MMR-2, M2105

D10721B

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue.
- (4) Replace the CAPT (FO) NAV Control Panel. These are the tasks:
 - Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the MMR-1 (2). These are the tasks:
 - ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
 - (a) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) If necessary, then re-install the FCC-A (B), MMR-1 (2), and CAPT (FO) NAV Control Panel. These are the tasks:
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (2) Use the CDU to re-run the DFCS BITE Library Test 24 MMR/ILS.
 - (a) If the maintenance message does not show on the CDU when the test is complete, then you have corrected the fault.
 - (b) If the maintenance message shows on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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844. Both R/A Indicate Greater than 2000 ft - Fault Isolation

A. Description

- (1) This task is for this maintenance message 22-11821:
 - (a) 22-11821: BOTH R/A > 2000 FEET
- (2) Either crew operation or both radio altimeters erroneously indicate greater than 2000 ft.

B. Possible Causes

- (1) Crew operation during flight
- (2) Low Range Radio Altimeter (LRRRA) Receiver/Transmitter, M1735 (M1736)
- (3) Takeoff/Go-Around (TO/GA) Switch-1 (2), S786 (S787)
- (4) FCC-A (B), M1875 (M1876)
- (5) Wiring

C. Related Data

- (1) SSM 22-11-14
- (2) WDM 22-11-14

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 07 LRRRA > EXECUTE.
 - (c) Follow the instructions on the CDU to find related maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
- (2) If you find any related maintenance messages on the CDU, then do these steps:
 - (a) Do the Fault Isolation Task for each related maintenance message.

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(b) If maintenance message 22-11821 shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the LRRA Receiver/Transmitter, M1735 (M1736). These are the tasks:
 - Low Range Radio Altimeter (LRRA) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801
 - Low Range Radio Altimeter (LRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (2) Do this check of the TO/GA Switch-1 (2):
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Push and hold the TO/GA Switch on Thrust Lever 1 (2).
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from NOT PRESSED to PRESSED.
 - (h) Release the TO/GA Switch on Thrust Lever 1 (2).
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from PRESSED to NOT PRESSED.
 - (i) If the TO/GA Switch is satisfactory, then do the Repair Confirmation at the end of this task.
 - (j) If the TO/GA Switch is not satisfactory, then continue.
- (3) If there is a problem with TO/GA Switch-1, S786 then do this wiring check:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the Captain's TO/GA Switch, S786 connector D8313P (D8315P) from D8313J (D8315J), at the connection point.
 - (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Captain's TO/GA Switch at the Control Stand as follows (WDM 22-11-14):

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CHANNEL A FAULT

FCC-A	CAPT TO/GA
D10135A	SW
	D8313P
pin F4	pin 1
Ground	pin 2

CHANNEL B FAULT

FCC-B	CAPT TO/GA
D10137A	SW
	D8315P
pin F4	pin 1
Ground	pin 2

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P (D8315P).
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Replace the TO/GA Switch-1, S786. These are the tasks:
 - Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801
 - c) Do the Repair Confirmation at the end of this task.
- (4) If there is a problem with TO/GA Switch-2, S787 then do this wiring check:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the First Officer (F/O) TO/GA Switch, S787 connector D8313P (D8315P) from D8313J (D8315J), at the connection point.
 - (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the F/O TO/GA Switch at the Control Stand as follows (WDM 22-11-14):

CHANNEL A FAULT

FCC-A	F/O TO/GA SW
D10135A	D8313P
pin F4	pin 11
Ground	pin 12

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CHANNEL B FAULT

FCC-B	F/O TO/GA SW
D10137A	D8315P
pin F4	pin 11
Ground	pin 12

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P (D8315P).
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Replace the TO/GA Switch-2, S787. These are the tasks:
 - Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801
 - c) Do the Repair Confirmation at the end of this task.
- (5) From the LIBRARY TESTS menu on the CDU, select 10 FCC > EXECUTE.
 - (a) Look for the related maintenance messages.
 - (b) If you find any of the related maintenance messages, then do these steps:
 - 1) Do the Fault Isolation Task for each related maintenance message.
 - 2) If maintenance message 22-11821 does not show on the next flights, then you corrected the problem.

F. Repair Confirmation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 07LRAA > EXECUTE.
 - (c) If you find any related maintenance messages on the CDU, then do these steps:
 - 1) Do the Fault Isolation Task for each related maintenance message.
 - 2) If maintenance message does not show on the next flights, then you corrected the problem.
 - 3) If maintenance message shows on the next flights, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

845. MCP AIL ENG DISAGREE - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11625: MCP AIL ENG DISAGREE

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- (2) FCC(s) detect disagreement between aileron actuator engage and push-button engage discretes.

B. Possible Causes

- (1) Aileron Actuator A (B), M943 (M1024)
- (2) DFCS MCP, M198
- (3) FCC-A (B), M1875 (M1876)
- (4) Wiring

C. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-11-31

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 58 CMD/CWS INTLKS > EXECUTE.
 - (c) Follow the instructions on the CDU to find related maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
- (2) If you find any related maintenance messages on the CDU, then do these steps:
 - (a) Do the fault isolation task for each related maintenance message.
 - (b) If maintenance message 22-11625 shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do these wiring checks (WDM 22-11-11 and WDM 22-11-31):
 - (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D299 and D1815 from the DFCS MCP, M198.
 - (c) Disconnect connector D1827 (D1691) from the Aileron Actuator A (B), M943 (M1024).
 - (d) Examine the wiring between the DFCS MCP, M198 and the FCC-A (B), M1875 (M1876) at the E1-1 Rack as follows:

FCC-A	
MCP, M198	FCC-A, M1875
D299	D10135A
pin 28	pin H14
pin 52	pin K14
	D10135B
pin 37	pin B1
pin 4	pin F13

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FCC-B

MCP, M198

D1815

pin 28 pin H14

pin 52 pin K14

FCC-B, M1876

D10137A

pin H14

pin K14

D10137B

pin 4 pin F13

pin 37 pin B1

- (e) Examine the wiring between the DFCS MCP, M198 and the Aileron Actuator A (B), M943 (M1024):

FCC-A

MCP, M198

D299

pin 4 pin 1

Aileron Actuator

A, M943

D1827

pin 1

FCC-B

MCP, M198

D1815

pin 4 pin 1

Aileron Actuator

B, M1024

D1691

pin 1

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D299 and D1815 to the DFCS MCP, M198.
 - 3) Re-connect connector D1827 (D1691) to the Aileron Actuator A (B), M943 (M1024).
 - 4) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (2) Replace the Aileron Actuator A (B), M943 (M1024). These are the tasks:
- Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the DFCS MCP, M198. These are the tasks:
- DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) From the LIBRARY TESTS menu on the CDU, select 10 FCC > EXECUTE.
- (a) Look for the related maintenance messages.
- (b) If you find any of the related maintenance messages, then do these steps:
- 1) Do the Fault Isolation procedure for the related maintenance messages that shows.

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- 2) Do the Repair Confirmation at the end of this task

F. Repair Confirmation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 58 CMD/CWS INTLKS > EXECUTE.
 - (c) If you find any related maintenance messages on the CDU, then do these steps:
 - 1) Do the Fault Isolation procedure for the related maintenance messages that shows.
 - 2) If maintenance message 22-11625 does not show on the next flights, then you corrected the problem.

END OF TASK

846. MCP ELV ENG DISAGREE - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11626: MCP ELV ENG DISAGREE
- (2) FCC(s) detect disagreement between elevator actuator engage and push-button engage discretes.

B. Possible Causes

- (1) Elevator Autopilot Actuator-A (B), M1020 (M1022)
- (2) DFCS MCP, M198
- (3) FCC-A (B), M1875 (M1876)
- (4) Wiring

C. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-12-31
- (3) WDM 22-12-41

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 58 CMD/CWS INTLKS > EXECUTE.
 - (c) Follow the instructions on the CDU to find related maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
- (2) If you find any related maintenance messages on the CDU, then do these steps:
 - (a) Do the fault isolation task for each related maintenance message.
 - (b) If maintenance message 22-11626 shows, then do the Fault Isolation Procedure below..

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E. Fault Isolation Procedure

- (1) Do these wiring checks (WDM 22-11-11 and WDM 22-12-31):
- (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D299 and D1815 from the DFCS MCP, M198.
 - (c) Disconnect connector D1681 (D1687) from the Elevator Autopilot Actuator-A (B), M1020 (M1022).
 - (d) Examine the wiring between the DFCS MCP, M198 and the FCC-A (B), M1875 (M1876) at the E1-1 Rack as follows:

FCC-A

MCP, M198	FCC-A, M1875
D299	D10135A
pin 28	pin H14
pin 52	pin K14
pin 16	pin F13
	D10135B
pin 37	pin B1

FCC-B

MCP, M198	FCC-B, M1876
D1815	D10137A
pin 28	pin H14
pin 52	pin K14
pin 16	pin F13
	D10137B
pin 37	pin B1

- (e) Examine the wiring between the DFCS MCP, M198 and the Elevator Autopilot Actuator-A (B), M1020 (M1022):

FCC-A

MCP, M198	Elevator Actuator-A, M1020
D299	D1681
pin 16	pin 1

FCC-B

MCP, M198	Elevator Actuator-B, M1022
D1815	D1687
pin 16	pin 1

- (f) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-connect connector D299 and D1815 to the DFCS MCP, M198.
- 3) Re-connect connector D1681 (D1687) to the Elevator Autopilot Actuator-A (B), M1020 (M1022).
- 4) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 5) Do the Repair Confirmation at the end of this task.
- (g) If you did not find a problem with the wiring, then continue
- (2) Replace the Elevator Autopilot Actuator-A (B), M1020 (M1022). These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the DFCS MCP, M198. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) From the LIBRARY TESTS menu on the CDU, select 10 FCC > EXECUTE.
 - (a) Look for the related maintenance messages.
 - (b) If you find any of the related maintenance messages, then do these steps:
 - 1) Do the Fault Isolation procedure for the related maintenance messages that shows.
 - 2) Do the Repair Confirmation at the end of this task

F. Repair Confirmation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 58 CMD/CWS INTLKS > EXECUTE.
 - (c) If you find any related maintenance messages on the CDU, then do these steps:
 - 1) Do the Fault Isolation procedure for the related maintenance messages that shows.
 - 2) If maintenance message 22-11626 does not show on the next flights, then you corrected the problem.

————— **END OF TASK** —————

847. Autopilot Mistrimmed or Pitch Authority Detected by FCC - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11830 ELEV AUTHORITY LIMITED.
- (2) This maintenance message monitor detects these problems:
 - (a) Rigging problem
 - (b) Elevator Surface Position Sensor problem
 - (c) Autopilot Elevator Linear Variable Differential Transformer (LVDT) problem

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- (d) Neutral Shift Sensor problem
- (e) Elevator Feel and Centering problem
- (f) First Officer Column Switching Module problem
- (g) Stab Trim Cutout Relay, R384 problem
- (h) Stab Trim Limit Switches, S144/S145 problem
- (i) Primary Electrical Actuator - Stabilizer Trim, M1659 problem
- (j) Wiring Problem

NOTE: The autopilot has to be engaged during flight for this problem to be monitored and detected. If a problem is detected, the STAB OUT OF TRIM and/or the A/P P/RST Lights can illuminate. If the airplane is CAT-IIIb and a problem was detected during flight, a NO AUTOLAND recall message can show on the upper engine DU page.

B. Possible Causes

- (1) Rigging
- (2) Elevator Surface Position Sensor, M929
- (3) Elevator Autopilot Actuator-A (B), M1020 (M1022)
- (4) Neutral Shift Sensor, M958
- (5) Elevator Feel and Centering Unit
- (6) First Officer Column Switching Module, M1201
- (7) Stabilizer Nose Up Limit Switch, S144
- (8) Stabilizer Nose Down Limit Switch, S145
- (9) Primary Electrical Actuator - Stabilizer Trim, M1659
- (10) FCC-A (B), M1875 (M1876)
- (11) Wiring

C. Related Data

- (1) SSM 22-12-31
- (2) SSM 22-12-41
- (3) SSM 22-13-11
- (4) WDM 22-12-31
- (5) WDM 22-12-41
- (6) WDM 22-13-11

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select, INIT REF
 - (b) Select, INDEX
 - (c) Select, MAINT
 - (d) Select, DFCS
 - (e) Select, EXTENDED MAINTENANCE
 - (f) Select, BITE LIBRARY TESTS

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- (g) Select, CHANNEL A AND B
- (h) Select, RUN SELECT LIBRARY TESTS
- (i) Select, 32 SPD/STAB TRM
- (j) Select, EXECUTE
 - 1) If DFCS BITE maintenance messages (22-11nnn) does not show on the CDU when the test is complete and TEST PASSED is shown, then there was an intermittent fault.
 - 2) If the test fails and DFCS BITE maintenance messages (22-11nnn) shows on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do the Elevator Rigging Test. This is the task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.
 - (a) If the test is not satisfactory, then adjust the Elevator rigging to correct the problem.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the test is satisfactory, then continue.
- (2) Replace the Elevator Surface Position Sensor, M929. These are the tasks:
 - Elevator Position Sensor Removal, AMM TASK 22-11-30-000-801
 - Elevator Position Sensor Installation, AMM TASK 22-11-30-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message 22-11830 was found in CHANNEL A (B) (FCC-A (FCC-B)), then replace the Elevator A/P Actuator-A (B), M1020 (M1022). These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the Elevator Neutral Shift Sensor, M958. These are the tasks:
 - Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801
 - Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the Elevator Feel and Centering Unit. Do these tasks:
 - Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the Column Switching Module, M1201. These are the tasks:
 - Column Cutout Switch Removal, AMM TASK 27-41-51-000-801
 - Column Cutout Switch Installation, AMM TASK 27-41-51-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the Stab Nose Up Limit Switch, S144. These are the tasks:
 - Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
 - (a) Do the Repair Confirmation at the end of this task.

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- (8) Replace the Stab Nose Down Limit Switch, S145. These are the tasks:
- Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (9) Replace the Primary Electrical Actuator - Stabilizer Trim, M1659. These are the tasks:
- Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (10) If the maintenance message 22-11830 was found in CHANNEL A (B) (FCC-A (B)), then do this check of the wiring interfaces:
- (a) Check the FCC-A (B), M1875 (M1876) to the Elevator Surface Position Sensor, M929 interface wiring (WDM 22-12-31, WDM 22-12-41):
- 1) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D1711 (D1679) from the Elevator Surface Position Sensor, M929.
- NOTE:** The Elevator Surface Position Sensor, M929 is on the Aft Bulkhead Station 1156. You can get access to the position sensor through the Tailcone Access Door, 318BR. There are two connectors for the Elevator Surface Position Sensor, M929:
- The connector for the FCC-A, M1875 is D1711.
 - The connector for the FCC-B, M1876 is D1679.
- 3) Do a wiring check as follows:

CHANNEL A

FCC-A, M1875 D10135A	ELEV SURF POSN SNSR, M929 D1711
pin K13	pin 4
pin J13	pin 5
pin H13	pin 3
pin B15	pin 2
pin A15	pin 1

CHANNEL B

FCC-B, M1876 D10137C	ELEV SURF POSN SNSR, M929 D1679
pin K13	pin 4
pin J13	pin 5
pin H13	pin 3
pin B15	pin 2
pin A15	pin 1

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- a) If you find a problem with the wiring, then do these steps:
- <1> Repair the wiring.
 - <2> Re-connect connector D1711 (D1679) to the Elevator Surface Position Sensor, M929.
 - <3> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem with the wiring, then do this step and continue:
- <1> Re-connect connector D1711 (D1679) to the Elevator Surface Position Sensor, M929.
- (b) Check the FCC-A (B), M1875 (M1876) to the Elevator Autopilot Actuator-A (B), M1020 (M1022) interface wiring (WDM 22-12-31, WDM 22-12-41):
- 1) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D1681 (D1687) from the Elevator Autopilot Actuator-A (B), M1020 (M1022).
- NOTE:** You can find the Elevator Autopilot Actuator-A (B), M1020 (M1022) on the Aft Bulkhead Station 1156. You can get access to the Elevator Autopilot Actuator-A (B), M1020 (M1022) through the Tailcone Access Door, 318BR.
- 3) Do a wiring check as follows:

CHANNEL A

FCC-A, M1875 D10135A	ELEV A/P ACTR-A, M1020 D1681
pin E15	pin 8
pin D15	pin 5
pin B15	pin 10
pin A15	pin 9
pin J15	pin 11
pin H15	pin 13
pin G15	pin 12

CHANNEL B

FCC-B, M1876 D10137A	ELEV A/P ACTR-B, M1022 D1687
pin E15	pin 8
pin D15	pin 5
pin B15	pin 10
pin A15	pin 9
pin J15	pin 11
pin H15	pin 13
pin G15	pin 12

- a) If you find a problem with the wiring, then do these steps:

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- <1> Repair the wiring.
- <2> Re-connect connector D1681 (D1687) to the Elevator Autopilot Actuator-A (B), M1020 (M1022).
- <3> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- <4> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem with the wiring, then do this step and continue:
 - <1> Re-connect connector D1681 (D1687) to the Elevator Autopilot Actuator-A (B), M1020 (M1022).
- (c) Check the FCC-A (B), M1875 (M1876) to the Neutral Shift Sensor, M958 interface wiring (WDM 22-12-31, WDM 22-12-41):
 - 1) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D1829 (D1677) from the Neutral Shift Sensor, M958.

NOTE: You can find the Neutral Shift Sensor, M958 on the forward right side of the Feel and Centering Unit. The Feel and Centering Unit is on the Aft Bulkhead Station 1156. There are two connectors for the Neutral Shift Sensor, M958:

 - The connector D1829 is for the FCC-A, M1875.
 - The connector D1677 is for the FCC-B, M1876.
 - 3) Do a wiring check as follows:

CHANNEL A

**FCC-A, M1875
D10135A**

pin D12	.....	pin 5
pin C12	.....	pin 4
pin B15	.....	pin 2
pin A15	.....	pin 1

**NEUTRAL
SHIFT SNSR,
M958
D1829**

CHANNEL B

**FCC-B, M1876
D10137A**

pin D12	.....	pin 5
pin C12	.....	pin 4
pin B15	.....	pin 2
pin A15	.....	pin 1

**NEUTRAL
SHIFT SNSR,
M958
D1677**

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D1829 (D1677) to the Neutral Shift Sensor, M958.

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- <3> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- <4> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem with the wiring, then do this step and continue:
 - <1> Re-connect connector D1829 (D1677) to the Neutral Shift Sensor, M958.
- (d) Check the FCC-A (B), M1875 (M1876) to the Primary Electrical Actuator - Stabilizer Trim, M1659 interface wiring (WDM 22-13-11):
 - 1) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D381 from the Primary Electrical Actuator - Stabilizer Trim, M1659.

NOTE: You can get access to the Primary Electrical Actuator - Stabilizer Trim, M1659 through the Access Door to the Aft Unpressurized Compartment, 311AL.

- 3) Do a wiring check as follows:

CHANNEL A

	PRIMARY ELEC ACTR - STAB TRIM, M1659
FCC-A, M1875	D381
D10135C	
pin K3	pin 6
pin G2	pin 5

CHANNEL B

	PRIMARY ELEC ACTR - STAB TRIM, M1659
FCC-B, M1876	D381
D10137C	
pin K3	pin 6
pin G2	pin 5

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D381 to the Primary Electrical Actuator - Stabilizer Trim, M1659.
 - <3> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem with the wiring, then do this step and continue:
 - <1> Re-connect connector D381 to the Primary Electrical Actuator - Stabilizer Trim, M1659.
- (e) Check the FCC-A (B), M1875 (M1876) to the Column Switching Module, M1201 interface wiring (WDM 22-13-11):

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- 1) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Remove the Column Switching Module, M1201. This is the task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
- 3) Do a wiring check as follows:

CHANNEL A

	COLUMN SWITCHING MODULE, M1201 D2257
FCC-A, M1875 D10135C	
pin H3	pin 19

CHANNEL B

	COLUMN SWITCHING MODULE, M1201 D2257
FCC-B, M1876 D10137C	
pin H3	pin 19

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-install the Column Switching Module, M1201. This is the task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - <3> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem with the wiring, then do this step and continue:
 - <1> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (f) Check the Column Switching Module, M1201 to the Primary Electrical Actuator - Stabilizer Trim, M1659 interface wiring (WDM 22-13-11):
 - 1) Remove the Column Switching Module, M1201. This is the task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
 - 2) Disconnect connector D381 from the Primary Electrical Actuator - Stabilizer Trim, M1659.

NOTE: You can get access to the Primary Electrical Actuator - Stabilizer Trim, M1659 through the Access Door to Aft Unpressurized Compartment, 311AL.
 - 3) Do a wiring check as follows:

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COLUMN SWITCHING MODULE, M1201 D2257 pin 23	PRIMARY ELEC ACTR - STAB TRIM, M1659 D381 pin 4

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D381 to the Primary Electrical Actuator - Stabilizer Trim, M1659.
 - <3> Re-install the Column Switching Module, M1201. This is the task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
 - b) If you do not find a problem with the wiring, then do these steps and continue:
 - <1> Re-connect connector D381 to the Primary Electrical Actuator - Stabilizer Trim, M1659.
 - <2> Re-install the Column Switching Module, M1201. This is the task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
- (11) If the maintenance message is on CHANNEL A (CHANNEL B), then replace the FCC-A (B), M1875 (M1876). These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select, INIT REF
 - (b) Select, INDEX
 - (c) Select, MAINT
 - (d) Select, DFCS
 - (e) Select, EXTENDED MAINTENANCE
 - (f) Select, BITE LIBRARY TESTS
 - (g) Select, CHANNEL A AND B
 - (h) Select, RUN SELECT LIBRARY TESTS
 - (i) Select, 32 SPD/STAB TRM
 - (j) Select, EXECUTE
 - 1) If the test passes and no maintenance messages show, and the fault does not occur again in future flights, then you corrected the problem.
 - 2) If the test does not pass or the fault occurs again on a later flight, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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848. FCC A(B) Output Bus Failure - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11828 [DFCS] FCC BUS OUT: FCC A output bus failure
 - (b) 22-11829 [DFCS] FCC BUS OUT: FCC B output bus failure

B. Possible Causes

- (1) FCC-A (B), M1875 (M 1876)
- (2) Wiring

C. Related Data

- (1) SSM 22-11-51
- (2) WDM 22-11-51

D. Initial Evaluation

- (1) Use the CDU to find DFCS maintenance messages. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show on the CDU, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this check of the wiring (WDM 22-11-51):
 - (a) For the FCC-A, M1875, and the FCC-B, M1876, do the Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

FCC-A		FCC-B
D10135A		D10137B
pin A10		pin A10
pin B10		pin B10
pin D10		pin D10
pin E10		pin E10

FCC-A		FCC-B
D10135B		D10137A
pin A10		pin A10
pin B10		pin B10
pin D10		pin D10
pin E10		pin E10

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) For the FCC A, M1875, and the FCC B, M1876, do the Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Use the CDU to find DFCS maintenance messages. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.

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- 4) If the maintenance message does not show on the CDU, then you corrected the fault.
- 5) If the maintenance message shows on the CDU, then continue.
- (d) If you do not find a problem with the wiring, then continue.
- (2) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A AND B > RUN SELECT LIBRARY TESTS > 10 FCC > EXECUTE.
 - (c) Follow the instructions on the CDU to find related maintenance messages.
 - (d) If you find any related maintenance messages on the CDU, then do these steps:
 - 1) Do the fault isolation task for each related maintenance message.
 - 2) Use the CDU to find DFCS maintenance messages. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 3) If the maintenance message does not show on the CDU, then you corrected the fault.
 - 4) If the maintenance message shows on the CDU, then continue.
 - (e) If you do not find any related maintenance messages, then continue.
- (3) Replace the FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Use the CDU to find DFCS maintenance messages. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (b) If the maintenance message does not show on the CDU, then you corrected the fault.

————— **END OF TASK** —————

849. SPEED TRIM FAIL Light is ON - Fault Isolation

A. Description

- (1) The SPEED TRIM FAIL Light is on the Flight Control Panel.
- (2) The Flight Control Panel receives a speed trim warning signal from each FCC. Both FCCs must send a fail signal to turn on the speed trim fail annunciator.
- (3) If the function fails in only one FCC, the light does not come on. However, if you push either Master Caution Recall Switch when there is one failure, the speed trim fail light comes on. If you push the Master Caution Reset Switch, the light goes off.

B. Fault Isolation Procedure

- (1) If the SPEED TRIM FAIL Light comes ON during flight:
 - (a) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - 1) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - 2) Select CHANNEL A.
 - 3) Select SPEED TRIM and review all fault data that shows on the CDU.
 - a) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - 4) Record all the 22-11XXX maintenance messages that you find.

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- 5) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - a) Do the indicated corrective actions to troubleshoot the problem.
 - 6) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - 7) Select CHANNEL B.
 - 8) Select SPEED TRIM and review all fault data that shows on the CDU.
 - a) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - 9) Record all the 22-11XXX maintenance messages that you find.
 - 10) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - a) Do the indicated corrective actions to troubleshoot the problem.
 - 11) Do the Repair Confirmation at the end of this task.
- (2) If the SPEED TRIM FAIL Light comes ON during ground operations:
- (a) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - 1) Select CURRENT STATUS.
 - 2) Select CHANNEL A AND B.
 - 3) Select CONTINUE.
 - 4) Make sure that the AUTOTEST PASSED is shown.
 - a) If the AUTOTEST FAILED is shown, then do these steps:
 - <1> Record all the 22-11XXX maintenance messages that you find.
 - <2> Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - <3> Do the indicated corrective actions to troubleshoot the problem.
 - <4> Do the Repair Confirmation at the end of this task.

C. Repair Confirmation

- (1) Do the group number 60.32 Speed/Stab Trim surface test and make sure that the test is satisfactory. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the observed fault symptom gone, then you corrected the problem.

————— **END OF TASK** —————

850. SPEED TRIM FAIL Light is ON when MASTER CAUTION Switch is Pushed - Fault Isolation

A. Description

- (1) The SPEED TRIM FAIL Light is on the Flight Control Panel.
- (2) The Flight Control Panel receives a speed trim warning signal from each FCC. Both FCCs must send a fail signal to turn on the speed trim fail annunciator.
- (3) If the function fails in only one FCC, the light does not come on. However, if you push either Master Caution Recall Switch when there is one failure, the speed trim fail light comes on. If you push the Master Caution Reset Switch, the light goes off.

B. Fault Isolation Procedure

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.

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- (b) Select CHANNEL A.
- (c) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
- (d) Record all the 22-11XXX maintenance messages that you find.
- (e) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
- (f) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.
- (g) Select CHANNEL B.
- (h) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
- (i) Record all the 22-11XXX maintenance messages that you find.
- (j) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
- (k) Do the Repair Confirmation at the end of this task.
- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS.
 - (b) Select CHANNEL A AND B.
 - (c) Select CONTINUE.
 - (d) Make sure that the AUTOTEST PASSED is shown.
 - 1) If the AUTOTEST FAILED is shown, then do these steps:
 - a) Record all the 22-11XXX maintenance messages that you find.
 - b) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - c) Do the Repair Confirmation at the end of this task.

C. Repair Confirmation

- (1) Do the group number 60.32 Speed/Stab Trim surface test and make sure that the test is satisfactory. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the observed fault symptom gone, then you corrected the problem.
 - (b) If the observed fault symptom stays, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

851. STAB OUT OF TRIM Light is ON - Fault Isolation

A. Description

- (1) The STAB OUT OF TRIM Light is on the P1-3 Panel.
- (2) The STAB OUT OF TRIM Light is illuminated whenever the autopilot is engaged and the autopilot is unable to command the Stab Trim Motor.

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B. Fault Isolation Procedure

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (b) Select CHANNEL A.
 - (c) Select STAB TRIM and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (d) Record all the 22-11XXX maintenance messages that you find.
 - (e) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (f) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (g) Select CHANNEL B.
 - (h) Select STAB TRIM and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (i) Record all the 22-11XXX maintenance messages that you find.
 - (j) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (k) Do the group number 60.32 Speed/Stab Trim surface test and make sure that the test is satisfactory. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) If the observed fault symptom gone, then you corrected the problem.

————— **END OF TASK** —————

853. Mode Control Panel Altitude Window Stays at 50000 - Fault Isolation

A. Description

- (1) This task is for this observed fault:
 - (a) Mode Control Panel altitude window stays at 50000

B. Possible Causes

- (1) MCP, M198
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 22-11-51

D. Fault Isolation Procedure

- (1) Replace the MCP, M198. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace FCC-A, M1875. These are the tasks:

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- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do a check of the wiring:
 - (a) Remove FCC-A, M1875 and FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MCP, M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Do a wiring check at E1-1 shelf between these pins (WDM 22-11-51).

D10135A	D299
pin J6	pin 17
pin K6	pin 18
 - (d) Do a wiring check at E1-4 shelf between these pins (WDM 22-11-51).

D10137A	D1815
pin J6	pin 17
pin K6	pin 18
 - (e) If you find a problem, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install FCC-A, M1875 and FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (5) Perform DFCS BITE Interactive Library Test 60.55 (MCP Altitude Select/Knob) for both channels A and B. Refer to BITE Library Test, AMM TASK 22-11-00-740-806 for accepted procedures.
 - (a) If you find a related maintenance message, then do the applicable FIM task.
 - (b) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) If the observed fault does not show, then you corrected the fault.
- (2) If the observed fault still shows, then continue at the subsequent step.

————— **END OF TASK** —————

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854. Stabilizer Trim Servo Command/Response Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11186 TRIM CMD RESPSE MON:
 - 1) The FCCs A and B detect stabilizer trim servo command/response problem.

B. Possible Causes

- (1) Rigging problem
- (2) Column Switching Module, M1201
- (3) Stabilizer Trim Motor, M1659

C. Initial Evaluation

- (1) Do the BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the 32 SPD/STB TRIM test.

NOTE: If the BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the Fault Isolation Procedure below.
 - (c) If the maintenance message does not show, then there was an intermittent fault.
 - (d) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.
 - (b) Select CHANNEL A.
 - (c) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (d) Record all the 22-11XXX maintenance messages that you find.
 - (e) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
 - (f) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT LEG.
 - (g) Select CHANNEL B.
 - (h) Select the LSK adjacent to the event Flight Leg and review all fault data that shows on the CDU.
 - 1) Use the NEXT PAGE Function Key if multiple pages of faults are available.
 - (i) Record all the 22-11XXX maintenance messages that you find.
 - (j) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - 1) Do the indicated corrective actions to troubleshoot the problem.

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- (k) Do the Repair Confirmation at the end of this task.
- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS.
 - (b) Select CHANNEL A AND B.
 - (c) Select CONTINUE.
 - (d) Make sure that the AUTOTEST PASSED is shown.
 - 1) If the AUTOTEST FAILED is shown, then do these steps:
 - a) Record all the 22-11XXX maintenance messages that you find.
 - b) Refer to the table at the end of the DFCS BITE Task to find the applicable FIM Tasks for the messages that show.
 - c) Do the indicated corrective actions to troubleshoot the problem.
 - d) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do these steps:
 - (a) If the RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If the RERUN does not show on the CDU Display, then do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 32 SPD/STB TRIM test.
 - 3) If the maintenance message does not show, then you corrected the problem.
 - 4) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

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855. NO LAND 3 FDE Message - Fault Isolation

A. Description

- (1) The NO LAND 3 Message shows on the PFD and ENG 1 (ENG 2) Page when there is degradation of the Autopilot Autoland function.

B. Fault Isolation Procedure

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (b) Select CHANNEL A.
 - (c) Select NO LAND 3 and NOLND3 LCH and review all fault data that shows on the CDU.
 - (d) Record all the 22-11XXX maintenance messages that you find for CHANNEL A (FCC-A) on the CDU.
 - (e) Select CURRENT STATUS/FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (f) Select CHANNEL B.

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- (g) Select NO LAND 3 and NOLND3 LCH and review all fault data that shows on the CDU.
- (h) Record all the 22-11XXX maintenance messages that you find for CHANNEL B (FCC-B) on the CDU.
- (i) Refer to the table at the end of DFCS BITE Task to find the applicable FIM Tasks for the all maintenance messages that were found for CHANNEL A and CHANNEL B.
 - 1) Do the indicated corrective actions to troubleshoot the problem.
- (j) Do the Land Verify Test, AMM TASK 22-11-00-700-801 and make sure that the test is satisfactory.
- (k) Do the Reset Latches Procedure, AMM TASK 22-11-00-700-802 and erase the latched NOLND3 LCH flight deck effect (FDE).
- (l) Exit out of the DFCS BITE maintenance mode completely.
- (m) Make sure that NO LAND 3 does not show on the upper engine page.
- (n) Push the Multi-Function Display (MFD) Cancel/Recall (C/R) switch once and check the upper engine page again.
- (o) Make sure that NO LAND 3 does not show on the upper engine page.

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———— **END OF TASK** ————

856. Autopilot does not Engage - Fault Isolation

A. Description

- (1) This task is for this observed fault:
 - (a) Autopilot: does not engage when CMD switch is pushed during flight.

B. Fault Isolation Procedure

- (1) Use the CDU to find ENG ATTMPT related DFCS maintenance messages.
 - (a) Select INIT REF > MAINT > DFCS > FAULT REVIEW > FAULT HISTORY SORTED BY FLIGHT DECK EFFECT.
 - (b) Select CHANNEL A.
 - (c) Select ENG ATTMPT.
 - (d) Make a note of any related maintenance messages that you find.
 - (e) Select CHANNEL B.
 - (f) Select ENG ATTMPT.
 - (g) Make a note of any related maintenance messages that you find.
 - (h) Select EXIT.
 - (i) If you find related maintenance messages, then do these steps:
 - 1) Do the fault isolation task for each maintenance message.
 - 2) Do the Interactive Test "MCP CMD/CWS Interlock" Test No. 60.58. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 3) If the CDU display shows PASSED, then you corrected the fault.

———— **END OF TASK** ————

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858. FMC Annunciator Light Stays On - Fault Isolation

A. Description

- (1) This task is for this observed fault:
 - (a) FMC Annunciator Light Stays On.

B. Possible Causes

- (1) Wiring
- (2) CAPT (F/O) FMCS Transfer Relay, R475 (R476).
- (3) CAPT (F/O) Autoflight Status Annunciator (ASA), M170 (M171)

C. Related Data

- (1) WDM 34-61-16
- (2) WDM 34-61-11

D. Initial Evaluation

- (1) Do the Annunciator Test part of this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - (a) If the observed fault symptom is gone, then there was an intermittent fault.
 - (b) If the observed fault symptom stays, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Examine the wiring between the CAP AUTO FLT STATUS ANNUNCIATOR and the FMCS TRANSFER RELAY NO. 1:
 - (a) Disconnect connector D2437 from the CAPT AUTO FLT STATUS ANNUNCIATOR, M170.
 - (b) Disconnect connector D3263 from the FMCS TRANSFER RELAY NO. 1, R475.
 - (c) Do a wiring check between these (WDM 34-61-16):

D2437	D3263
pin 14	pin X
pin 9	pin Y
pin 3	Ground

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
- (2) Examine the wiring between the CAPT AUTO FLT STATUS ANNUNCIATOR and the FMCS TRANSFER RELAY NO. 2:
 - (a) Disconnect connector D3423 from the FMCS TRANSFER RELAY NO. 2, R476.
 - (b) Do a wiring check between these pins (WDM 34-61-16):

D2437	D3423
pin 8	pin F

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.

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- (d) If you do not find a problem with the wiring, then continue.
- (3) Examine the wiring between the F/O AUTO FLT STATUS ANNUNCIATOR and the FMCS TRANSFER RELAY NO. 1:
- (a) Disconnect connector D2441 from the F/O AUTO FLT STATUS ANNUNCIATOR, M171.
- (b) Do a wiring check between these pins (WDM 34-61-16):

D2441	D3263
pin 14	pin X
pin 9	pin Y
pin 3	Ground

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
- (4) Examine the wiring between the F/O AUTO FLT STATUS ANNUNCIATOR and the FMCS TRANSFER RELAY NO. 2:
- (a) Do a wiring check between these pins of connector D2441 and the connector D3263 (WDM 34-61-16):

D2441	D3423
pin 8	pin F

- (b) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (c) If you do not find a problem with the wiring, then continue.
- (5) Examine the wiring between the CAPT AUTO FLT STATUS ANNUNCIATOR and the F/O AUTO FLT STATUS ANNUNCIATOR:
- (a) Do a wiring check between these pins (WDM 34-61-16):

D2437	D2441
pin 5	pin 5

- (b) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (c) If you do not find a problem with the wiring, then continue.
- (6) Examine the wiring between the FMCS TRANSFER RELAY NO. 1 and the FMC NO. 1:
- (a) Disconnect the connector D3267 from the FMCS TRANSFER RELAY NO. 1, R475.
- (b) Remove the FMC NO. 1, M1175. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
- (c) Do a wiring check between these pins (WDM 34-61-16):

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D3267

pin X pin K13

D2179A

pin K13

D3267

pin Y pin K7

D2179B

pin K7

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
- (7) Examine the wiring between the FMCS TRANSFER RELAY NO. 2 and the FMC NO. 1:
- (a) Disconnect the connector D3425 from the FMCS TRANSFER RELAY NO. 2, R476.
 - (b) Do a wiring check between these pins (WDM 34-61-16):

D3425

pin F pin K7

D2179B

pin K7

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue.
- (8) Examine the wiring between the FMCS TRANSFER RELAY NO. 1 and the FMC NO. 2:
- (a) Disconnect the connector D3265 from the FMCS TRANSFER RELAY NO. 1, R475.
 - (b) Remove the FMC NO. 2, M1632. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (c) Do a wiring check between these pins (WDM 34-61-16):

D3265

pin X pin K13

D3261A

pin K13

D3265

pin Y pin K7

D3261B

pin K7

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
- (9) Examine the wiring between the FMCS TRANSFER RELAY NO. 2 and the FMC NO. 2:
 - (a) Disconnect the connector D3427 from the FMCS TRANSFER RELAY NO. 2, R476.
 - (b) Do a wiring check between these pins (WDM 34-61-16):

D3427

pin F pin K7

D3261B

pin K7

- (c) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
- (10) Replace the CAPT (F/O) ASA, N170 (N171). These are the tasks:
 - Annunciator - Removal, AMM TASK 22-11-32-000-801,
 - Annunciator - Installation, AMM TASK 22-11-32-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (11) Replace the FMCS TRANSFER RELAY NO. 1 (2), R475 (R476). These are the tasks: .
 - FMCS Transfer Relay Removal, AMM TASK 34-61-04-000-801
 - FMCS Transfer Relay Installation, AMM TASK 34-61-04-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Re-connect all applicable connectors.
- (2) If necessary, re-install the FMC NO. 1 (2), M1175 (M1632). This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
- (3) Do the Annunciator Test part of this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - (a) If the observed fault symptom is gone, then there was an intermittent fault.
 - (b) If the observed fault symptom stays, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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801. Spoiler 4 Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) SPOIL-4 POS SEN-1 (J1B-B12, A12)
(b) SPOIL-4 POS SEN-2 (J1B-B12, A12)
- (2) SPOIL-4 POS SEN-1 (J1B-B12, A12): The flight control computer A (FCC-A) receives incorrect data from the spoiler No. 4 position sensor during the ground test.
- (3) SPOIL-4 POS SEN-2 (J1B-B12, A12): The flight control computer B (FCC-B) receives incorrect data from the spoiler No. 4 position sensor during the ground test.

B. Possible Causes

- (1) Spoiler No. 4 position sensor, M931
(2) Flight control computer A (FCC-A), M1875
(3) Flight control computer B (FCC-B), M1876
(4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) (SSM 22-11-31)
(2) (WDM 22-11-31)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
(b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
(a) If the maintenance messages shows, then continue.

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- (2) Do the SPOILER rigging test. To do it, do this task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.

NOTE: To do the SPOILER rigging test only, make the selection for the SPOILER on the AILERON RIGGING menu.

- (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).

- (3) Do the adjustment for the spoiler No. 4 position sensor, M931. To do it, do this task: Spoiler Position Sensor Adjustment, AMM TASK 22-11-27-820-801.

- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.

- (4) If the maintenance message is on channel A, then do these steps:

- (a) Disconnect the spoiler No. 4 position sensor connector, D1695.

NOTE: You can find the spoiler No. 4 position sensor (M931) on the left wing spoiler No. 4. There are two connectors for the spoiler No. 4 position sensor. The connector D1695 is for the FCC-A.

- (b) Do a resistance check between pins 1 and 2 of the spoiler No. 4 position sensor, M931.
- (c) If the resistance is not 18.9-23.1 ohms, do these steps:

- 1) Replace the spoiler No. 4 position sensor, M931.

These are the tasks:

Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,

Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (d) If the resistance is 18.9-23.1 ohms, then continue.

- (e) Do a resistance check between pins 4 and 5 of the spoiler No. 4 position sensor, M931.

- (f) If the resistance is not 6.75-8.25 ohms, do these steps:

- 1) Replace the spoiler No. 4 position sensor, M931.

These are the tasks:

Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,

Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.

- (h) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1695.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

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- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1695, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1695 at STA W355, WL P5, LBL LRS (WDM 22-11-31).

D10135B	D1695
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1695.
 - c) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (k) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1695, then continue.
 - 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (l) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1695 at STA W355, WL P5, LBL LRS (WDM 22-11-31).

D10135B	D1695
pin B12	pin 4
pin A12	pin 5

- (m) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector, D1695.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (n) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message is on channel B, then do these steps:
 - (a) Disconnect the spoiler No. 4 position sensor connector, D1699.

NOTE: You can find the spoiler No. 4 position sensor (M931) on the left wing spoiler No. 4. There are two connectors for the spoiler No. 4 position sensor. The connector D1699 is for the FCC-B.
 - (b) Do a resistance check between pins 1 and 2 of the spoiler No. 4 position sensor, M931.
 - (c) If the resistance is not 18.9-23.1 ohms, do these steps:
 - 1) Replace the spoiler No. 4 position sensor, M931.

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These are the tasks:

Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

2) Do the Repair Confirmation at the end of this task.

- (d) If the resistance is 18.9-23.1 ohms, then continue.
- (e) Do a resistance check between pins 4 and 5 of the spoiler No. 4 position sensor, M931.
- (f) If the resistance is not 6.75-8.25 ohms, do these steps:
 - 1) Replace the spoiler No. 4 position sensor, M931.

These are the tasks:

Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

2) Do the Repair Confirmation at the end of this task.

- (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.
- (h) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1699.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1699, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1699 at STA W355, WL P5, LBL LRS (WDM 22-11-31).

D10137B	D1699
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1699.
 - c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (k) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1699, then continue.
 - 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (l) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1699 at STA W355, WL P5, LBL LRS (WDM 22-11-31).

D10137B	D1699
pin B12	pin 4
pin A12	pin 5

- (m) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1699.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (n) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Replace the spoiler No. 4 position sensor, M931.
- These are the tasks:
- Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the ROLL SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

802. Spoiler 9 Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
- (a) SPOIL-9 POS SEN-1 (J1B-E12, D12)
 - (b) SPOIL-9 POS SEN-2 (J1B-E12, D12)
- (2) SPOIL-9 POS SEN-1 (J1B-E12, D12): The flight control computer A (FCC-A) receives incorrect data from the spoiler No. 9 position sensor during the ground test.

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- (3) SPOIL-9 POS SEN-2 (J1B-E12, D12): The flight control computer B (FCC-B) receives incorrect data from the spoiler No. 9 position sensor during the ground test.

B. Possible Causes

- (1) Spoiler No. 9 position sensor, M930
- (2) Flight control computer A (FCC-A), M1875
- (3) Flight control computer B (FCC-B), M1876
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) (SSM 22-11-31)
- (2) (WDM 22-11-31)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance messages shows, then continue.

- (2) Do the SPOILER rigging test. To do it, do this task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.

NOTE: To do the SPOILER rigging test only, make the selection for the SPOILER on the AILERON RIGGING menu.

- (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).

- (3) Do the adjustment for the spoiler No. 9 position sensor, M930. To do it, do this task: Spoiler Position Sensor Adjustment, AMM TASK 22-11-27-820-801.

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- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) If the maintenance message is on channel A, then do these steps:
 - (a) Disconnect the spoiler No. 9 position sensor connector, D1697.
NOTE: You can find the spoiler No. 9 position sensor (M930) on the right wing spoiler No. 9. There are two connectors for the spoiler No. 9 position sensor. The connector D1697 is for the FCC-A.
 - (b) Do a resistance check between pins 1 and 2 of the spoiler No. 9 position sensor, M930.
 - (c) If the resistance is not 18.9-23.1 ohms, do these steps:
 - 1) Replace the spoiler No. 9 position sensor, M930.
These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the resistance is 18.9-23.1 ohms, then continue.
 - (e) Do a resistance check between pins 4 and 5 of the spoiler No. 9 position sensor, M930.
 - (f) If the resistance is not 6.75-8.25 ohms, do these steps:
 - 1) Replace the spoiler No. 9 position sensor, M930.
These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.
 - (h) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1697.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1697, then do these steps:
NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
 - 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1697 at STA W355, WL P5, RBL RRS (WDM 22-11-31).

D10135B	D1697
pin B15	pin 1
pin A15	pin 2

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- 3) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-connect the connector, D1697.
 - Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Do the Repair Confirmation at the end of this task.
- (k) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1697, then continue.
- Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (l) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1697 at STA W355, WL P5, RBL RRS (WDM 22-11-31).
- | D10135B | D1697 |
|-------------------|--------------|
| pin E12 | pin 4 |
| pin D12 | pin 5 |
- (m) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-connect the connector, D1697.
 - Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Do the Repair Confirmation at the end of this task.
- (n) If you do not find a problem with the wiring, then continue.
- Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message is on channel B, then do these steps:
- (a) Disconnect the spoiler No. 9 position sensor connector, D1701.
- NOTE: You can find the spoiler No. 9 position sensor (M930) on the right wing spoiler No. 9. There are two connectors for the spoiler No. 9 position sensor. The connector D1701 is for the FCC-B.
- (b) Do a resistance check between pins 1 and 2 of the spoiler No. 9 position sensor, M930.
- (c) If the resistance is not 18.9-23.1 ohms, do these steps:
- Replace the spoiler No. 9 position sensor, M930.
- These are the tasks:
- Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
- 2) Do the Repair Confirmation at the end of this task.
- (d) If the resistance is 18.9-23.1 ohms, then continue.
- (e) Do a resistance check between pins 4 and 5 of the spoiler No. 9 position sensor, M930.
- (f) If the resistance is not 6.75-8.25 ohms, do these steps:
- Replace the spoiler No. 9 position sensor, M930.
- These are the tasks:

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Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

- 2) Do the Repair Confirmation at the end of this task.
- (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.
- (h) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1701.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1701, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1701 at STA W355, WL P5, RBL RRS (WDM 22-11-31).

D10137B	D1701
pin B15	pin 1
pin A15	pin 2

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1701.
 - c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (k) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1701, then continue.
 - 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (l) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1701 at STA W355, WL P5, RBL RRS (WDM 22-11-31).

D10137B	D1701
pin E12	pin 4
pin D12	pin 5

- (m) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector, D1701.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- 4) Do the Repair Confirmation at the end of this task.
- (n) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Replace the spoiler No. 9 position sensor, M930.

These are the tasks:

Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the ROLL SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

803. Stabilizer Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the Flight Control Computer (FCC)-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) STAB POS SEN-1 (J1A-A13, A12)
 - (b) STAB POS SEN-2 (J1A-A13, A12)
 - (c) STAB TRIM SERVO (J1A-A12, A13)
- (2) STAB POS SEN-1 (J1A-A13, A12): The Flight Control Computer A (FCC-A) receives incorrect data from the Stabilizer Position Sensor A during the ground test.
- (3) STAB TRIM SERVO (J1A-A12, A13): The FCC detects a problem in the stab trim servo loop.
- (4) STAB POS SEN-2 (J1A-A13, A12): The Fight Control Computer B (FCC-B) receives incorrect data from the Stabilizer Position Sensor B during the ground test.

B. Possible Causes

- (1) FCC-A (B), M1875 (M1876)
- (2) Stabilizer Position Sensor A (B), M1192 (M1193)
- (3) Stab Trim Motor, M1659
- (4) Stab Nose Up Limit Switch, S144
- (5) Stab Limit Switch, S145

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(6) Wiring

C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) SSM 22-12-31
- (2) SSM 22-12-41
- (3) WDM 22-12-31
- (4) WDM 22-12-41
- (5) SSM 27-31-11
- (6) WDM 27-31-11

E. Initial Evaluation

(1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.

- (a) Make the selection for the channels A and B.
- (b) Make the selection for the 32 SPD/STB TRIM test.

NOTE: If the EDFCS-BITE library test 32 fails, the operator should select the Line Select Key (LSK) associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the Fault Isolation Procedure below.

- (c) If the maintenance message does not show, then there was an intermittent fault.
- (d) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance message does not show then you corrected the problem.
- (b) If the maintenance messages shows, then continue.

(2) Do this task: Stabilizer Rigging Test, AMM TASK 22-11-00-820-805.

- (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).

(3) Do the adjustment for the Stabilizer Position Sensor A (B), M1192 (M1193). This is the task: Stabilizer Position Sensor Adjustment and Test, AMM TASK 22-11-31-820-801.

- (a) Do the Repair Confirmation at the end of this task.

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- (4) For the maintenance message on channel A (B), do this resistance check (WDM 22-12-31, WDM 22-12-41):

- (a) Disconnect connector D2205 (D2207) from the Stabilizer Position Sensor A (B), M1192 (M1193).

NOTE: You can find the Stabilizer Position Sensor A, M1192 on the Aft Bulkhead Station, 1156. The Stabilizer Position Sensor A is a dual synchro position sensor and it has two connectors (D2205 and D1249). Connector D2205 is for the FCC-A and connector D1249 is for the Digital Flight Data Acquisition Unit (DFDAU).

NOTE: You can find the Stabilizer Position Sensor B, M1193 on the Aft Bulkhead Station, 1156. The Stabilizer Position Sensor B is a single synchro position sensor and it has only one connector for the FCC-B.

- (b) Measure the resistance between these pins of the Stabilizer Position Sensor A (B), M1192 (M1193) connector as follows:

CHANNEL A

STAB POSN SNSR -A CONNECTOR	STAB POSN SNSR -A CONNECTOR	
pin 1	pin 2	18.9 - 23.1 Ω
pin 4	pin 5	6.75 - 8.25 Ω

CHANNEL B

STAB POSN SNSR -B CONNECTOR	STAB POSN SNSR -B CONNECTOR	
pin 1	pin 2	18.9 - 23.1 Ω
pin 4	pin 5	6.75 - 8.25 Ω

- 1) If the resistance is not in the specified range for each pair of pins, then do these steps:
- a) Replace the Stabilizer Position Sensor A (B), M1192 (M1193). These are the tasks:
- Stabilizer Position Sensor Removal, AMM TASK 22-11-31-000-801
 - Stabilizer Position Sensor Installation, AMM TASK 22-11-31-400-801
- b) 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 continue.

- (5) For the maintenance message on channel A (B), do this voltage check (WDM 22-12-31, WDM 22-12-41):

- (a) Make sure that this circuit breaker for channel A is closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

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- (b) Make sure that this circuit breaker for channel B is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (c) Do a check for Alternating Current Volts (VAC) as follows:

NOTE: The 14 $\pm$ 2 VAC comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

CHANNEL A

STAB POSN	STAB POSN
SNSR -A	SNSR -A
D2205	D2205
pin 1	pin 2 14 $\pm$ 2 VAC

CHANNEL B

STAB POSN	STAB POSN
SNSR -B	SNSR -B
D2207	D2207
pin 1	pin 2 14 $\pm$ 2 VAC

- 1) If there is not 14 $\pm$ 2 VAC between pins 2 and 1 of connector D2205 (D2207), then do these steps:

NOTE: You only see 7 $\pm$ 2 VAC if you measure from pin 2 or pin 1 to structure ground.

- Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- Do a wiring check between these pins of connector D10135A (D10137A) at the E1-1 Shelf (E1-4 Shelf) and connector D2205 (D2207) at the STA 1164, WL 268, RBL 8 as follows:

CHANNEL A

FLIGHT	STAB POSN
CONTROL	SNSR -A
COMPUTER -A	D2205
D10135A	
pin B15	pin 2
pin A15	pin 1

CHANNEL B

FLIGHT	STAB POSN
CONTROL	SNSR -B
COMPUTER -B	D2207
D10137A	
pin B15	pin 2
pin A15	pin 1

<1> If you find a problem with the wiring, then do these steps:

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- <a> Repair the wiring.
 - Re-connect connector D2205 (D2207).
 - <c> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <d> Do the Repair Confirmation at the end of this task.
- 2) If there is 14 $\pm$ 2 VAC between pins 2 and 1 of connector D2205 (D2207), then do these steps:
- a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - b) Do a wiring check between these pins of connector D10135A (D10137A) at the E1-1 Shelf (E1-4 Shelf) and connector D2205 (D2207) at the STA 1164, WL 268, RBL 8 as follows:

CHANNEL A

FLIGHT CONTROL COMPUTER -A D10135A	STAB POSN SNSR -A D2205
pin A13	pin 5
pin A12	pin 4

CHANNEL B

FLIGHT CONTROL COMPUTER -B D10137A	STAB POSN SNSR -B D2207
pin A13	pin 4
pin A12	pin 5

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-connect connector D2205 (D2207).
 - <c> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then do this step and continue:
- <a> Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) For the maintenance message on channel A (B), replace the Stabilizer Position Sensor A (B), M1192 (M1193). These are the tasks:
- Stabilizer Position Sensor Removal, AMM TASK 22-11-31-000-801
 - Stabilizer Position Sensor Installation, AMM TASK 22-11-31-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the Stab Trim Motor, M1659. These are the tasks:

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- Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (8) Do this check of the Stab Trim Cutout Relay, R384 and Stab Trim Limit Switch, S145 (WDM 22-13-11):
- (a) Make sure that the Stab Trim Cutout Switch on the Panel, P8 is in the NORMAL position.
- (b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for an open circuit between pins 5 and 7 of connector D381.
- 1) If there is continuity between pins 5 and 7, then do these steps:
- a) Replace the Stab Trim Cutout Relay, R384.
 - b) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - c) Do the Repair Confirmation at the end of this task.
- 2) If there is an open circuit between pins 5 and 7, then continue.
- (d) Put the Stab Trim Cutout Switch on the Panel, P8 in the CUTOUT position.
- (e) Do a check for an open circuit between pins 5 and 7 of connector D381.
- 1) If there is an open circuit between pins 5 and 7, then do these steps:
- a) Remove the Right Lower Side Panel on the Control Stand, P8.
 - b) Disconnect connector D2485.
 - c) Do a continuity check between the Stab Trim Servo Motor, M1659 connector and the Stab Trim Cutout Relay, R384 connector as follows:

SERVO MOTOR

D381

pin 5

CUTOUT RLY

D2485

pin D2

- <1> If there is continuity, then do these steps:
- <a> Replace the Stab Trim Cutout Relay, R384.
 - Re-connect connector D381 to the Servo Motor, M1659.
 - <c> Re-connect connector D2485.
 - <d> Re-install the Right Lower Side Panel on the Control Stand, P8
 - <e> Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then continue.
- d) Re-connect connector D2485.
- e) Re-install the Right Lower Side Panel on the Control Stand, P8
- f) Disconnect connector D4083P from the E1-1 Shelf.

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- g) Examine the wiring between the Stab Trim Servo Motor, M1659 connector and the E1-1 Shelf as follows:

SERVO MOTOR	E1-1 SHELF
D381	D4083P
pin 5	pin A5

<1> If there is continuity, then do these steps:

- <a> Repair the wiring between the E1-1 Shelf and the Stab Trim Cutout Relay, R384.
- Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
- <c> Do the Repair Confirmation at the end of this task.

<2> If there is no continuity, then do these steps:

- <a> Replace the Stab Nose Up Limit Switch, S144. These are the tasks:
 - Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
- Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
- <c> Do the Repair Confirmation at the end of this task.
 - I. If the maintenance message still shows, repair the wiring problem at wire W3381-0005-20 or W3381-0010-20.

2) If there is continuity between pins 5 and 7, then continue:

- (9) Do this check of the Stab Trim Cutout Relay, R384 and Trim Limit Switch, S145 (WDM 22-13-11):
- (a) Make sure that the Stab Trim Cutout Switch on the Panel, P8 is in the NORMAL position.
 - (b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for an open circuit between pins 6 and 7 of connector D381.
 - 1) If there is continuity between pins 6 and 7, then do these steps:
 - a) Replace the Stab Trim Cutout Relay, R384.
 - b) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If there is an open circuit between pins 6 and 7, then continue.

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- (d) Put the Stab Trim Cutout Switch on the Panel, P8 in the CUTOUT position.
- (e) Do a check for an open circuit between pins 6 and 7 of connector D381.
- 1) If there is an open circuit between pins 6 and 7, then do these steps:
- Remove the Right Lower Side Panel on the Control Stand, P8.
 - Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
 - Do a wiring check between these pins at connector D381 at the Stab Trim Servo Motor, M1659 and connector D2485 at the Stab Trim Cutout Relay, R384 as follows:

SERVO MOTOR	CUTOUT RLY
D381	D2485
pin 6	pin A2

- <1> If there is continuity, then do these steps:
- Replace the Stab Trim Cutout Relay, R384.
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then continue.
- d) Disconnect connector D4083P from the E1-1 Shelf.
- e) Do a wiring check between these pins at connector D381 at the Column Switching Module, M1201 and connector D4083P at the E1-1 shelf as follows:

COLUMN SWITCHING MODULE	E1-1 SHELF
D381	D4083P
pin 6	pin A4

- <1> If there is continuity, then do these steps:
- Repair the wiring between the E1-1 Shelf and the Stab Trim Cutout Relay, R384.
 - Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
 - Re-install the Right Lower Side Panel on the Control Stand, P8.
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then do these steps:
- Replace the Stab Nose Down Limit Switch, S145. These are the tasks:
 - Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801

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- Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
- <c> Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
- <d> Re-install the Right Lower Side Panel on the Control Stand, P8.
- <e> Do the Repair Confirmation at the end of this task.
 - I. If the maintenance message still shows, correct the wiring problem at wire W3381-0004-20 or W3381-0012-20.

G. Repair Confirmation

(1) Do these steps:

- (a) If the RERUN still shows on the Control Display Unit (CDU) Display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
- (b) If the RERUN does not show on the CDU Display, then do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 32 SPD/STB TRIM test.
- (c) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

804. Roll CWS Force Transducer Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

(1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11155 WHEEL FORCE APPLIED (J1B-K06, J06)
 - 1) FCC-A receives Roll Force Transducer-1 data that exceeds 3 Lbs for 5 or more ENGAGE attempts.
- (b) 22-11156 WHEEL FORCE APPLIED (J1B-K06, J06)
 - 1) FCC-B receives Roll Force Transducer-2 data that exceeds 3 Lbs for 5 or more ENGAGE attempts.
- (c) 22-11650 RCWS SENSOR FAIL
 - 1) Roll Force Transducer fault detected during the BITE.
- (d) 22-11651 RCWS SENSOR FAIL

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- 1) Roll Force Transducer fault detected during the BITE.

SIA ALL

B. Possible Causes

- (1) Roll Force Transducer, M221
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-11-31
- (3) SSM 22-11-11
- (4) SSM 22-11-31

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this task: Roll Control Wheel Steering Rigging Test, AMM TASK 22-11-00-820-807.
 - (a) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not in the limits, then continue.

NOTE: The value that shows on the A side is for Channel A (FCC-A).
The value that shows on the B side is for Channel B (FCC-B).
- (3) Do the Roll Force Transducer Adjustment and Test, AMM TASK 22-11-11-820-801.

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- (a) Do the Repair Confirmation at the end of this task.
- (4) Do a check of the CAPT Roll Force Transducer, M221 as follows:
 - (a) Disconnect connector, D397 from the Roll Force Transducer, M221.
NOTE: You can find the Roll Force Transducer, M221 on the Aileron Drum at the bottom of the Captain's Control Wheel.
 The Roll Force Transducer has two connectors:
 - The connector D397 is for the FCC-A.
 - The connector D1713 is for the FCC-B.
 - (b) Do a continuity check at the Roll Force Transducer, M221 Receptacle as follows (WDM 22-11-11):

CHANNEL A FAULT

ROLL FORCE	ROLL FORCE
XDCR	XDCR
D397	D397
pin 1	pin 4

CHANNEL B FAULT

ROLL FORCE	ROLL FORCE
XDCR	XDCR
D1713	D1713
pin 1	pin 4

- 1) If you do not find continuity, replace the Roll Force Transducer, M221. These are the tasks:
 - Roll Force Transducer Removal, AMM TASK 22-11-11-000-801
 - Roll Force Transducer Installation, AMM TASK 22-11-11-400-801
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you find continuity, then continue.
- (5) Do this check for Excitation Voltage at the Roll Force Transducer, M221 as follows:
 - (a) Make sure that the applicable SYS-A (SYS-B) circuit breaker below is closed.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (b) Do a check for 26V AC (± 3) between pins 4 and 1 of the applicable CH-A (CH-B) Roll Force Transducer, M221 connector D397 (D1713) (WDM 22-11-11).

NOTE: The 26V AC (± 3) comes from the Integrated Flight System Accessory Unit (IFSAU).

If there is an IFSAU failure, then first correct the IFSAU problem before you do this check.

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- 1) If you do not find 26V AC (± 3), then do these steps:
 - a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - b) Examine the wiring between the Roll Force Transducer, M221 and the IFSAU as follows (WDM 22-11-11):

CHANNEL A FAULT

ROLL FORCE

XDCR

D397

pin 4 pin 2

IFSAU

DD2209A

ROLL FORCE

XDCR

D397

pin 1 GD1106-AC

pin 5 GD289-ST

CHANNEL B FAULT

ROLL FORCE

XDCR

D1713

pin 4 pin 2

IFSAU

D2209B

ROLL FORCE

XDCR

D1713

pin 1 GD1402-AC

pin 5 GD287-ST

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-connect the applicable Roll Force Transducer connector, D397 (D1713).
 - <c> Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you find 26V AC (± 3) between pins 4 and 1 of the connector D397 (D1713), then continue.

- (6) Do this check of the wiring.
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the Roll Force Transducer, M221 as follows (WDM 22-12-31, WDM 22-12-41):

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CHANNEL A FAULT

FCC-A	ROLL FORCE
D10135B	XDCR
pin K6	D397
pin J6	pin 2
	pin 3

CHANNEL B FAULT

FCC-B	ROLL FORCE
D10137B	XDCR
pin K6	D1713
pin J6	pin 2
	pin 3

- 1) If you find a problem with the wiring, do these steps:
 - a) Repair the wiring.
 - b) Re-connect the applicable CH-A (CH-B) connector, D397 (D1713) to the Roll Force Transducer, M221.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, do this step and then continue:
 - a) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (7) Replace the Roll Force Transducer, M221. These are the tasks:
 - Roll Force Transducer Removal, AMM TASK 22-11-11-000-801
 - Roll Force Transducer Installation, AMM TASK 22-11-11-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ROLL SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

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805. Pitch CWS Force Transducer (Captain's) Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

(1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11047 COLUMN FORCE INV (J1A-E02, E01)
 - 1) FCC-B receives incorrect data from the CAPT Pitch Force Transducer.
- (b) 22-11048 COLUMN FORCE INV (J1B-E02, E01)
 - 1) FCC-A receives incorrect data from the CAPT Pitch Force Transducer.
- (c) 22-11137 COLUMN FORCE APPLIED (J1A-E02, E01)
 - 1) FCC-B receives data from the CAPT Pitch Force Transducer that exceeds 5 Lbs for 5 or more ENGAGE attempts.
- (d) 22-11138 COLUMN FORCE APPLIED (J1B-E02, E01)
 - 1) FCC-A receives data from the CAPT Pitch Force Transducer that exceeds 5 Lbs for 5 or more ENGAGE attempts.
- (e) 22-11646 PCWS SENSOR FAIL (J1A-E02, E01)
 - 1) FCC-A detects a CAPT Pitch Force Transducer fault during the BITE.
- (f) 22-11647 PCWS SENSOR FAIL (J1B-E02, E01)
 - 1) FCC-B detects a CAPT Pitch Force Transducer fault during the BITE.
- (g) 22-11700 COLUMN OVERRIDE
 - 1) FCC-A detects High Column Force Transducer Load from the CAPT Pitch Force Transducer.
- (h) 22-11701 COLUMN OVERRIDE
 - 1) FCC-B detects High Column Force Transducer Load from the CAPT Pitch Force Transducer.

SIA ALL

B. Possible Causes

- (1) Captain's Pitch Force Transducer, M219
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring
- (5) Incorrect Elevator Cable Rigging

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-12-31
- (3) WDM 22-12-41
- (4) SSM 22-11-11
- (5) SSM 22-12-31
- (6) SSM 22-12-41

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message still shows, then continue.
- (2) Do this task: Pitch Control Wheel Steering Rigging Test, AMM TASK 22-11-00-820-806.
 - (a) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not in the limits, then make sure that the Elevator Cables and Shoulder Bolts are rigged correctly (Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801).

NOTE: The value that shows on the A side is for Channel A (FCC-A).

The value that shows on the B side is for Channel B (FCC-B).

- (c) If the cable rigging is OK then continue.
- (3) Adjust the CAPT Pitch Force Transducer, M219. This is the task: Pitch Force Transducer Adjustment (DFCS BITE Test), AMM TASK 22-11-92-820-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do a check of the CAPT Pitch Force Transducer, M219 as follows:
 - (a) Disconnect connector, D383 (D1673) from the CAPT Pitch Force Transducer, M219.

NOTE: You can find the CAPT Pitch Force Transducer, M219 on the Quadrant Assembly at the bottom of the Captain's Control Column.

The CAPT Pitch Force Transducer has two connectors.

- The connector D383 is for the FCC-A.
- The connector D1673 is for the FCC-B.

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- (b) Do a continuity check at the CAPT Pitch Force Transducer, M219 Receptacle as follows (WDM 22-11-11):

CHANNEL A FAULT

CAPT PCWS	CAPT PCWS
XDCR	XDCR
D383	D383
pin 1	pin 4

CHANNEL B FAULT

CAPT PCWS	CAPT PCWS
XDCR	XDCR
D1673	D1673
pin 1	pin 4

- 1) If you do not find continuity, replace the CAPT Pitch Force Transducer, M219. These are the tasks:
 - Pitch Force Transducer Removal, AMM TASK 22-11-92-000-801
 - Pitch Force Transducer Installation, AMM TASK 22-11-92-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you find continuity, then continue.
- (5) Do this check for Excitation Voltage at the CAPT Pitch Force Transducer as follows.
- (a) Make sure that the applicable CH-A (CH-B) circuit breaker below is closed.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (b) Do a check for 26V AC (± 3) between pins 1 and 4 of the applicable CH-A (CH-B) CAPT Pitch Force Transducer connector D383 (D1673) (WDM 22-11-11).

NOTE: The 26V AC (± 3) comes from the Integrated Flight System Accessory Unit (IFSAU).

If there is an IFSAU failure, then first correct the IFSAU problem before you do this check.

- 1) If you do not find 26V AC (± 3), then do these steps:
 - a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - b) Examine the wiring between the CAPT Pitch Force Transducer, M219 and the ISFDU as follows (WDM 22-11-11):

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CHANNEL A FAULT

CAPT PCWS

XDCR

IFSAU

D383

DD2209A

pin 1 pin 2

CAPT PCWS

XDCR

D383

pin 4 GD1106-AC

pin 5 GD287-ST

CHANNEL B FAULT

CAPT PCWS

XDCR

IFSAU

D1673

DD2209B

pin 1 pin 2

CAPT PCWS

XDCR

D1673

pin 4 GD1402-AC

pin 5 GD891-ST

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-connect the applicable CAPT Pitch Force Transducer connector, D383 (D1673).
 - <c> Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you find 26V AC (± 3) between pins 1 and 4 of the connector D383 (D1673), then continue.

- (6) Do this check of the wiring.
- (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the CAPT Pitch Force Transducer, M219 as follows (WDM 22-12-31, WDM 22-12-41):

CHANNEL A FAULT

FCC-A

CAPT PCWS

D10135B

XDCR

D383

pin E2 pin 2

pin E1 pin 3

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CHANNEL B FAULT

FCC-B	CAPT PCWS
D10137A	XDCR
	D1673
pin E2	pin 2
pin E1	pin 3

- 1) If you find a problem with the wiring, do these steps:
 - a) Repair the wiring.
 - b) Re-connect the applicable CH-A (CH-B) connector, D383 (D1673) to the CAPT Pitch Force Transducer, M219.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, do this step and then continue:
 - a) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (7) Replace the CAPT Pitch Force Transducer, M219. These are the tasks:
 - Pitch Force Transducer Removal, AMM TASK 22-11-92-000-801
 - Pitch Force Transducer Installation, AMM TASK 22-11-92-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. Pitch CWS Force Transducer (First Officer's) Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

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For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11049 COLUMN FORCE INV (J1A-E02, E01)
 - 1) FCC-A receives incorrect data from the F/O Pitch Force Transducer.
- (b) 22-11050 COLUMN FORCE INV (J1B-E02, E01)
 - 1) FCC-B receives incorrect data from the F/O Pitch Force Transducer.
- (c) 22-11139 COLUMN FORCE APPLIED (J1A-E02, E01)
 - 1) FCC-A receives data from the F/O Pitch Force Transducer that exceeds 5 Lbs for 5 or more ENGAGE attempts.
- (d) 22-11140 COLUMN FORCE APPLIED (J1B-E02, E01)
 - 1) FCC-B receives data from the F/O Pitch Force Transducer that exceeds 5 Lbs for 5 or more ENGAGE attempts.
- (e) 22-11648 PCWS SENSOR FAIL (J1A-E02, E01)
 - 1) FCC-A detects a F/O Pitch Force Transducer fault during the BITE.
- (f) 22-11649 PCWS SENSOR FAIL (J1B-E02, E01)
 - 1) FCC-B (J1B-E02, E01) detects a F/O Pitch Force Transducer fault during the BITE.
- (g) 22-11700 COLUMN OVERRIDE
 - 1) FCC-A detects High Column Force Transducer Load from the F/O Pitch Force Transducer.
- (h) 22-11701 COLUMN OVERRIDE
 - 1) FCC-B detects High Column Force Transducer Load from the F/O Pitch Force Transducer.

SIA ALL

B. Possible Causes

- (1) F/O's Pitch Force Transducer, M220
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring
- (5) Incorrect Elevator Cable Rigging

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-12-31

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- (3) WDM 22-12-41
- (4) SSM 22-11-11
- (5) SSM 22-12-31
- (6) SSM 22-12-41

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance messages still shows, then continue.

- (2) Do this task: Pitch Control Wheel Steering Rigging Test, AMM TASK 22-11-00-820-806.

- (a) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not in the limits, then make sure that the Elevator Cables and Shoulder Bolts are rigged correctly (Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801).

NOTE: The value that shows on the A side is for Channel A (FCC-A).

The value that shows on the B side is for Channel B (FCC-B).

- (c) If the cable rigging is OK then continue.

- (3) Adjust the F/O Pitch Force Transducer, M220. This is the task: Pitch Force Transducer Adjustment (DFCS BITE Test), AMM TASK 22-11-92-820-801.

- (a) Do the Repair Confirmation at the end of this task.

- (4) Do a check of the F/O's Pitch Force Transducer, M220 as follows:

- (a) Disconnect connector, D385 (D1675) from the F/O Pitch Force Transducer, M220.

NOTE: You can find the F/O Pitch Force Transducer, M220 on the Quadrant Assembly at the bottom of the F/O's Control Column.

The F/O Pitch Force Transducer has two connectors.

- The connector D385 is for the FCC-A.
- The connector D1675 is for the FCC-B.

- (b) Do a continuity check at the F/O Pitch Force Transducer, M220 Receptacle as follows (WDM 22-11-11):

CHANNEL A FAULT

F/O PCWS

XDCR

D385

pin 1 pin 4

F/O PCWS

XDCR

D385

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CHANNEL B FAULT

F/O PCWS

XDCR

D1675

pin 1

F/O PCWS

XDCR

D1675

pin 4

- 1) If you do not find continuity, replace the F/O's Pitch Force Transducer, M220. These are the tasks:
 - Pitch Force Transducer Removal, AMM TASK 22-11-92-000-801
 - Pitch Force Transducer Installation, AMM TASK 22-11-92-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you find continuity, then continue.
- (5) Do this check for Excitation Voltage at the F/O Pitch Force Transducer as follows:
- (a) Make sure that the applicable SYS-A (SYS-B) circuit breaker below is closed.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (b) Do a check for 26V AC (± 3) between pins 4 and 1 of the applicable CH-A (CH-B) F/O Pitch Force Transducer connector D385 (D1675) (WDM 22-11-11).

NOTE: The 26V AC (± 3) comes from the Integrated Flight System Accessory Unit (IFSAU).

If there is an IFSAU failure, then first correct the IFSAU problem before you do this check.

- 1) If you do not find 26V AC (± 3), then do these steps:
 - a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - b) Examine the wiring between the F/O Pitch Force Transducer, M220 and the IFSAU as follows (WDM 22-11-11):

CHANNEL A FAULT

F/O PCWS

XDCR

D385

pin 4

IFSAU

D2209A

pin 2

F/O PCWS

XDCR

D385

pin 1 GD1106-AC

pin 5 GD1041-ST

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CHANNEL B FAULT

F/O PCWS

XDCR

D1675

pin 4 pin 2

IFSAU

D2209B

F/O PCWS

XDCR

D1675

pin 1 GD1402-AC

pin 5 GD1053-ST

<1> If you find a problem with the wiring, then do these steps:

<a> Repair the wiring.

 Re-connect the applicable F/O Pitch Force Transducer connector, D385 (D1675).

<c> Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.

<d> Do the Repair Confirmation at the end of this task.

<2> If you find 26V AC (± 3) between pins 1 and 4 of the connector D385 (D1675), then continue.

(6) Do this check of the wiring.

(a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

(b) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the F/O Pitch Force Transducer, M220 as follows (WDM 22-12-31, WDM 22-12-41):

CHANNEL A FAULT

FCC-A

D10135A

pin E2 pin 2

pin E1 pin 3

F/O PCWS

XDCR

D385

CHANNEL B FAULT

FCC-B

D10137B

pin E2 pin 2

pin E1 pin 3

F/O PCWS

XDCR

D1675

1) If you find a problem with the wiring, do these steps:

a) Repair the wiring.

b) Re-connect the applicable CH-A (CH-B) connector, D385 (D1675) to the F/O Pitch Force Transducer, M220.

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- c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, do this step and then continue:
 - a) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (7) Replace the F/O Pitch Force Transducer, M220. These are the tasks:
 - Pitch Force Transducer Removal, AMM TASK 22-11-92-000-801
 - Pitch Force Transducer Installation, AMM TASK 22-11-92-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

807. Flap Position Transmitter Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FLAP POSN-1 (J1B-G06, F06, E06)
- (b) FLAP POSN-2 (J1B-G06, F06, E06)
- (2) FLAP POSN-1 (J1B-G06, F06, E06): The flight control computer A (FCC-A) receives incorrect data from the left flap position transmitter during the ground test.
- (3) FLAP POSN-2 (J1B-G06, F06, E06): The flight control computer B (FCC-B) receives incorrect data from the right flap position transmitter during the ground test.

B. Possible Causes

- (1) Left flap position transmitter, T427
- (2) Right flap position transmitter, T428
- (3) Flight control computer A (FCC-A), M1875
- (4) Flight control computer B (FCC-B), M1876
- (5) Wiring Problem

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C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) SSM 22-11-11
- (2) SSM 22-12-31
- (3) SSM 22-12-41
- (4) WDM 22-11-11
- (5) WDM 22-12-31
- (6) WDM 22-12-41

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this task: Flaps Rigging Test, AMM TASK 22-11-00-820-804.
 - (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).
- (3) If the maintenance message is on channel A, then do these steps:
 - (a) Disconnect the left flap position transmitter connector, D275.

NOTE: You can find the left flap position transmitter on the outboard end of the transmission No. 1.
 - (b) Do a continuity check between the pins shown below, at the flap position transmitter, T427.

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D275	D275
pin 9	pin 10
pin 12	pin 13
pin 12	pin 14
pin 13	pin 14

- (c) If there is an open circuit, do these steps;
- 1) Replace the flap position transmitter, T427.
These are the tasks:
Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801,
Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity between the above pins, then continue.
- (e) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- (f) Do a check for 26V AC (± 3) from pin 9 of the connector D275 to structure ground.
NOTE: The 26V AC (± 3) comes from the integrated flight system access unit (IFSAU). If there is a IFSAU failure, then correct the IFSAU problem first before you do this check.
- (g) If there is not 26V AC (± 3) between pin 9 of the connector D275 to structure ground, then do these steps:
- 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - 2) Do a wiring check between pin 2 of connector D2209A at the E1-1 shelf and pin 9 of connector D275 at STA W 450, WL P1, LBL LRS (WDM 22-11-11).
 - a) Make sure that pin 10 of connector D275 is connected to ground.
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D275.
 - c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (h) If there is 26V AC (± 3) between pin 9 of the connector D275 to structure ground, then continue.
- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (i) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D275 at STA W450, WL P1, LBL LRS (WDM 22-12-31).

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D10135B	D275
pin F6	pin 13
pin G6	pin 12
pin E6	pin 14

- (j) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D275.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (k) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message is on channel B, then do these steps:
- (a) Disconnect the right flap position transmitter connector, D229.
- NOTE: You can find the right flap position transmitter on the outboard end of the transmission No. 8.
- (b) Do a continuity check between the pins shown below, at the flap position transmitter, T428.

D229	D229
pin 9	pin 10
pin 12	pin 13
pin 12	pin 14
pin 13	pin 14

- (c) If there is an open circuit, do these steps:
- 1) Replace the flap position transmitter, T428. These are the tasks:
 - Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity between the above pins, then continue.
- (e) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	2	C01042	AFCS SYS B SNSR EXC AC

- (f) Do a check for 26V AC (± 3) from pin 9 of the connector D229 to structure ground.
- NOTE: The 26V AC (± 3) comes from the integrated flight system access unit (IFSAU). If there is a IFSAU failure, then correct the IFSAU problem first before you do this check.
- (g) If there is not 26V AC (± 3) from pin 9 of the connector D229 to structure ground, then do these steps:

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- 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - 2) Do a wiring check between pin 2 of connector D2209B at the E1-1 shelf and pin 9 of connector D229 at STA W450, WL P1, RBL RRS (WDM 22-11-11).
 - a) Make sure that pin 10 of connector D229 is connected to ground.
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D229.
 - c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (h) If there is 26V AC (± 3) from pin 9 of the connector D229 to structure ground, then continue.
- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (i) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D229 at STA W450, WL P1, RBL RRS (WDM 22-12-41).
- | D10137B | D229 |
|----------------|-------------|
| pin F6 | pin 13 |
| pin G6 | pin 12 |
| pin E6 | pin 14 |
- (j) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D229.
 - 3) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (k) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801 Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message is on channel A, then replace the flap position transmitter, T427. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) If the maintenance message is on channel B, then replace the flap position transmitter, T428. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If RERUN does not show on the CDU display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the ROLL SENS test.
 - a) If the maintenance message does not show, then you corrected the fault.
 - b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

808. DME Output Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) DME-1 (J1B-H04, G04)
 - (b) DME-2 (J1B-H04, G04)
- (2) DME-1 (J1B-H04, G04): The flight control computer A (FCC-A) receives invalid data or no data from the distance measuring equipment -1 during the ground test.
- (3) DME-2 (J1B-H04, G04): The flight control computer B (FCC-B) receives invalid data or no data from the distance measuring equipment -2 during the ground test.

B. Possible Causes

- (1) Distance measuring equipment-1 (DME-1), M164
- (2) Distance measuring equipment-2 (DME-2), M165
- (3) Flight control computer A (FCC-A), M1875
- (4) Flight control computer B (FCC-B), M1876
- (5) Wiring problem

C. Related Data

- (1) (SSM 22-11-52)
- (2) (SSM 22-55-11)
- (3) (SSM 22-55-21)
- (4) (WDM 34-55-11)
- (5) (WDM 34-55-21)

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D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: DME Interrogator BITE Procedure, 34-55 TASK 801.
 - (a) If there is a fault message, then do to the FIM task for that message.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there is no fault message, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the DME-1, M164. To remove it, do this task: DME Interrogator Removal, AMM TASK 34-55-21-000-801.
 - (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D161B at the E1-2 shelf (WDM 34-55-11).

D10135B

pin H4

pin G4

D161B

pin G3

pin H3

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DME-1, M164. To install it, do this task: DME Interrogator Installation, AMM TASK 34-55-21-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then continue.
 - 1) Re-install the DME-1, M164. To install it, do this task: DME Interrogator Installation, AMM TASK 34-55-21-400-801.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the DME-2, M165. To remove it, do this task: DME Interrogator Removal, AMM TASK 34-55-21-000-801.
 - (c) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D169B at the E1-5 shelf (WDM 34-55-21).

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D10137B

pin H4 pin G3
pin G4 pin H3

D169B

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DME-2, M165. To install it, do this task: DME Interrogator Installation, AMM TASK 34-55-21-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then continue.
 - 1) Re-install the DME-2, M165. To install it, do this task: DME Interrogator Installation, AMM TASK 34-55-21-400-801.
- (4) If the maintenance message is on channel A, then replace the FCC-A, M1875.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
- (5) If the maintenance message is on channel B, then replace the FCC-B, M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the DME test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

809. Elevator Neutral Shift Sensor Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) 22-11135 NSS-1 (J1A-D12, C12)
- 1) The Flight Control Computer A (FCC-A) receives incorrect data from the Elevator Neutral Shift Sensor, M958 during the Ground Test.
- (b) 22-11136 NSS-2 (J1A-D12, C12)
- 1) The Flight Control Computer B (FCC-B) receives incorrect data from the Elevator Neutral Shift Sensor, M958 during the Ground Test.

SIA ALL

- (2) 22-11614 NSS POS DISAGREE
- (a) The Elevator Neutral Shift Sensor, M958 inputs disagree.

B. Possible Causes

- (1) Elevator Neutral Shift Sensor, M958
- (2) Rigging problem
- (3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) SSM 22-12-31
- (2) SSM 22-12-41
- (3) WDM 22-12-31
- (4) WDM 22-12-41

E. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below: This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
- (a) Make these selections on the CDU:
- <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE

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- (b) If the maintenance message does not show, then there was an intermittent fault.
- (c) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the adjustment for the Elevator Neutral Shift Sensor, M958. This is the task: Elevator Neutral Shift Sensor Adjustment and Test, AMM TASK 22-11-14-820-801.

- (a) Do the Repair Confirmation at the end of this task.

- (2) Do a check of the resistance of the Elevator Neutral Shift Sensor, M958

NOTE: You can find the Elevator Neutral Shift Sensor, M958 on the aft bulkhead station 1156. You can get access to the Sensor through the Tailcone Access Door, 318BR. There are two connectors for the Elevator Neutral Shift Sensor, M958:

- The connector D1829 is for the FCC-A.
- The connector D1677 is for the FCC-B.

- (a) Disconnect the connector D1829 (D1677) from the Elevator Neutral Shift Sensor, M958. This is the task: Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801.

- (b) Measure the resistance between these pins (WDM 22-12-31, WDM 22-12-41):

FCC-A

M958 D1829	M958 D1829	
1	2	18.9 - 23.1 Ohms
4	5	6.75 - 8.25 Ohms

FCC-B

M958 D1677	M958 D1677	
1	2	18.9 - 23.1 Ohms
4	5	6.75 - 8.25 Ohms

- 1) If the resistance is not in the specified range, then do these steps:
 - a) Replace the Elevator Neutral Shift Sensor, M958. These are the tasks:
 - Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801
 - Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the resistance is within the specified range, then continue.
- (3) Do a wiring check between the FCC-A (B), M1875 (M1876) and the Elevator Neutral Shift Sensor, M958.
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins (WDM 22-12-31, WDM 22-12-41):

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FCC-A

FCC-A, M1875

D10135A

pin D12		pin 5
pin C12		pin 4
pin B15		pin 2
pin A15		pin 1

Sensor, M958

D1829

FCC-B

FCC-B, M1876

D10137A

pin D12	.....	pin 5
pin C12	.....	pin 4
pin B15	.....	pin 2
pin A15	.....	pin 1

Sensor, M958

D1677

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the applicable FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect the connector at the sensor, M958. This is the task: Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue
- (4) Do a check of the voltage at the Elevator Neutral Shift Sensor, M958.
 - (a) Re-install the applicable FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (c) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1829 (D1677) (WDM 22-12-31, WDM 22-12-41).
 - 1) If there is 14V AC (± 2), then do these steps:
 - a) Replace the Elevator Neutral Shift Sensor, M958. These are the tasks:
 - Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801
 - Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801

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G. Repair Confirmation

- (1) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
- (2) If RERUN does not show on the CDU display, then use the CDU to do the DFCS BITE Library Test in the steps below: This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE
 - (b) If the maintenance message does not show, then you have corrected the problem.
 - (c) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

810. A/P Elevator Actuator Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11463 ELV A/P ACT MON
 - 1) FCC-A detects error in Elevator command and Actuator response.
- (b) 22-11508 ELV A/P ACT MON
 - 1) FCC-B detects error in Elevator command and Actuator response.
- (c) 22-11083 ELV A/P ACT MON
 - 1) FCC-A detects an error between Pitch command and Actuator position.
- (d) 22-11084 ELV A/P ACT MON
 - 1) FCC-B detects an error between Pitch command and Actuator position.
- (e) 22-11121 ELEV ACT FAIL
 - 1) FCC-A receives incorrect data from the Autopilot Elevator Actuator A.
- (f) 22-11122 ELEV ACT FAIL
 - 1) FCC-B receives incorrect data from the Autopilot Elevator Actuator B.

SIA ALL

B. Possible Causes

- (1) A/P Elevator Actuator A (B), M1020 (M1022)
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) SSM 22-12-31
- (2) SSM 22-12-41
- (3) WDM 22-12-31
- (4) WDM 22-12-41

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

NOTE: If this message shows during EDFCS-BITE Library Test 32 or 35, when EDFCS-BITE shows the message "SET STAB TO VAC BELOW (STAB AT 8.0 UNITS)" in Library Test 32 or "SET STAB TO VAC BELOW (STAB AT 11.0 UNITS)" in Library Test 35, you should manually jiggle the Control Column near neutral after setting the Stab position to make sure that the system is centered. Then push LSK 6L "CONTINUE".

If the test still fails, then do the Fault Isolation Procedure below.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance message shows, then continue.

- (2) Do these Rigging Checks for the A/P Elevator Actuators:

- (a) Do the ELEV RIG Rigging Test. This is the task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.

NOTE: To do the ELEV RIG Rigging Test only, make the selection for the ELEV RIG on the ELEVATOR RIGGING Menu.

- (b) Do the ELEV AUTH DUAL Rigging Tests. This is the task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.

NOTE: To do the ELEV AUTH DUAL Rigging Test only, make the selection for the ELEV AUTH DUAL on the ELEVATOR RIGGING Menu.

- (c) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.

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- (d) If the values for the A side and B side are not in the limits, then continue.

NOTE: The value shows on the A side is for Channel A (FCC-A).

The value shows on the B side is for Channel B (FCC-B).

- (3) Do this task: Autopilot Elevator Actuator Adjustment and Test, AMM TASK 22-11-26-820-801.

- (a) Do the Repair Confirmation at the end of this task.

- (4) If the maintenance message is on Channel A (B), then do these steps:

- (a) Disconnect connector D1681 (D1687) from the A/P Elevator Actuator A (B), M1020 (M1022).

NOTE: You can find the A/P Elevator Actuator A (B), M1020 (M1022) on the Aft Bulkhead Station 1156. You can get access to the A/P Elevator Actuator through the Tailcone Access Door, 318BR.

- (b) Do a resistance check between these pins on the A/P Elevator Actuator A (B), M1020 (M1022) receptacle as follows (WDM 22-12-31, WDM 22-12-41):

CHANNEL A

A/P ELV ACT A, M1020 RECEPTACLE	A/P ELV ACT A, M1020 RECEPTACLE	RESISTANCE
pin 9	pin 10	90 - 95 Ω
pin 11	pin 12	240 - 260 Ω
pin 12	pin 13	120 - 130 Ω
pin 11	pin 13	120 - 130 Ω
pin 6	pin 5	900 - 1100 Ω
pin 7	pin 8	900 - 1100 Ω

CHANNEL B

A/P ELV ACT B, M1022 RECEPTACLE	A/P ELV ACT B, M1022 RECEPTACLE	RESISTANCE
pin 9	pin 10	90 - 95 Ω
pin 11	pin 12	240 - 260 Ω
pin 12	pin 13	120 - 130 Ω
pin 11	pin 13	120 - 130 Ω
pin 6	pin 5	900 - 1100 Ω
pin 7	pin 8	900 - 1100 Ω

- 1) If the resistance is not in the specified range for each pair of pins, then do these steps:
- a) Replace the A/P Elevator Actuator A (B), M1020, (M1022). These are the tasks:
- Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
- b) 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 continue.
- (c) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (d) Do a wiring check as follows (WDM 22-12-31, WDM 22-12-41):

CHANNEL A

FCC-A, M1875 D10135A	A/P ELV ACT A, M1020 D1681
pin J15	pin 11
pin H15	pin 13
pin G15	pin 12
pin D15	pin 5
pin E15	pin 8

CHANNEL B

FCC-B, M1876 D10137A	A/P ELV ACT B, M1022 D1687
pin J15	pin 11
pin H15	pin 13
pin G15	pin 12
pin D15	pin 5
pin E15	pin 8

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1681 (D1687).
 - c) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

811. A/P Aileron Actuator Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11460 AIL A/P ACT MON
- 1) FCC-A detects error in Aileron command and Actuator response.
- (b) 22-11505 AIL A/P ACT MON
- 1) FCC-B detects error in Aileron command and Actuator response.

SIA ALL

B. Possible Causes

- (1) A/P Aileron Actuator A (B), M943 (M1024)
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) SSM 22-11-31
- (2) WDM 22-11-31

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance messages shows, then continue.
- (2) Do the COMPLETE AIL RIG Rigging Test. This is the task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.

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- (a) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not in the limits, then continue.
- NOTE:** The value shows on the A side is for Channel A (FCC-A).
The value shows on the B side is for Channel B (FCC-B).
- (3) Do this task: Autopilot Aileron Actuator Adjustment, AMM TASK 22-11-25-820-801.
- (a) Do the Repair Confirmation at the end of this task.
- (4) If the maintenance message is on Channel A (B), then do these steps:
- (a) Disconnect connector D1827 (D1691) from the A/P Aileron Actuator A (B), M943 (M1024).
- NOTE:** You can find the A/P Aileron Actuator A (B), M943 (M1024) in the Left Main Landing Gear (MLG) Wheel Well, outboard of the Aileron Power Control Unit (PCU)s.
- (b) Do a resistance check between these pins on the A/P Aileron Actuator A (B), M943 (M1024) receptacle as follows (WDM 22-11-31):

CHANNEL A

A/P AIL ACT A, M943 RECEPTACLE	A/P AIL ACT A, M943 RECEPTACLE	RESISTANCE
pin 9	pin 10	90 - 95 Ω
pin 11	pin 12	240 - 260 Ω
pin 12	pin 13	120 - 130 Ω
pin 11	pin 13	120 - 130 Ω

CHANNEL B

A/P AIL ACT B, M1024 RECEPTACLE	A/P AIL ACT B, M1024 RECEPTACLE	RESISTANCE
pin 9	pin 10	90 - 95 Ω
pin 11	pin 12	240 - 260 Ω
pin 12	pin 13	120 - 130 Ω
pin 11	pin 13	120 - 130 Ω

- 1) If the resistance is not in the specified range for each pair of pins, then do these steps:
- a) Replace the A/P Aileron Actuator A (B), M943 (M1024). These are the tasks:
- Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
- 2) If the resistance is in the specified range for each pair of pins, then continue.
- (c) Do a resistance check between these pins on the Electro-Hydraulic Servo Valve (EHSV) as follows (WDM 22-11-31).

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CHANNEL A

A/P AIL ACT A, M943 D1827		A/P AIL ACT A, M943 D1827	RESISTANCE
pin 6		pin 5	900 - 1100 Ω
pin 7	.....	pin 8	900 - 1100 Ω

CHANNEL B

A/P AIL ACT B, M1024 D1827		A/P AIL ACT B, M1024 D1827	RESISTANCE
pin 6	.....	pin 5	900 - 1100 Ω
pin 7	.....	pin 8	900 - 1100 Ω

- 1) If the resistance is not in the specified range, then do these steps:
 - a) Replace the EHSV. These are the tasks:
 - A/P Solenoid and Electrohydraulic Servo Valves Removal, AMM TASK 22-11-12-000-801
 - A/P Solenoid and Electrohydraulic Servo Valves Installation, AMM TASK 22-11-12-400-801
 - <1> 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 continue.
- (d) Remove the FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (e) Do a wiring check as follows (WDM 22-11-31):

CHANNEL A

FCC-A, M1875 D10135B		A/P AIL ACT A, M943 D1827
pin J15	.....	pin 11
pin G15	.....	pin 12
pin H15	.....	pin 13
pin D15	.....	pin 8
pin E15	.....	pin 5

CHANNEL B

FCC-B, M1876 D10137B		A/P AIL ACT B, M1024 D1691
pin J15		pin 11
pin G15		pin 12
pin H15		pin 13
pin D15		pin 8
pin E15		pin 5

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- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1827 (D1691).
 - c) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message is on Channel A (B), then replace the A/P Aileron Actuator A (B), M943 (M1024). These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ROLL SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

812. Elevator Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

 - For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C
 - For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C
 - (a) ELEV POS SEN-1 (J1A-K13, J13, H13)
 - (b) ELEV POS SEN-2 (J1A-K13, J13, H13)
- (2) ELEV POS SENS-1 (J1A-K13, J13, H13): The FCC-A receives incorrect data from the Elevator Position Sensor during the Ground Test.
- (3) ELEV POS SENS-2 (J1A-K13, J13, H13): The FCC-B receives incorrect data from the Elevator Position Sensor during the Ground Test.

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B. Possible Causes

- (1) Elevator Position Sensor, M929

C. Related Data

- (1) SSM 22-12-31
- (2) SSM 22-12-41
- (3) WDM 22-12-31
- (4) WDM 22-12-41

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA. If necessary, you can push the LSK adjacent to RERUN to do the test again.

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NOTE: If the EDFCS-BITE Library Test 30 fails, the operator should select the LSK associated with "TEST DATA".

- If only Subtests S052 and/or S152 fail and the Data Field shows a value between 4.00 and 5.57, the test can be considered a PASS.
- If the value is outside these limits, do the Fault Isolation Procedure below.

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- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do these Rigging Checks for the Elevator Position Sensor. This is the task: Elevator Rigging Test, AMM TASK 22-11-00-820-802:

NOTE: To do the ELEV RIG Rigging Test only, make the selection for the ELEV RIG on the ELEVATOR RIGGING Menu.

NOTE: To do the ELEV AUTH DUAL Rigging Test only, make the selection for the ELEV AUTH DUAL on the ELEVATOR RIGGING Menu.

- ELEV RIG
- ELEV AUTH DUAL

- (a) If the values for the A side and B side are within the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not within specified limits, then continue.

NOTE: The value that shows on the A side is for Channel A (FCC-A).

The value that shows on the B side is for Channel B (FCC-B).

- (2) Do this task: Elevator Position Sensor Adjustment and Test, AMM TASK 22-11-30-820-801.

- (a) If the Elevator Rigging Test is performed successfully after the adjustment and test, do the Repair Confirmation at the end of this task.

- (b) If the values for the A side and B side are still not within specified limits, then continue.

NOTE: The value that shows on the A side is for Channel A (FCC-A).

The value that shows on the B side is for Channel B (FCC-B).

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- (3) Replace the Elevator Position Sensor, M929. These are the tasks:
 - Elevator Position Sensor Removal, AMM TASK 22-11-30-000-801
 - Elevator Position Sensor Installation, AMM TASK 22-11-30-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do the LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS Test.
 - (c) If the maintenance message does not show, then you corrected the problem.
 - (d) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

813. Aileron Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) AIL POS SEN-1 (J1B-K13, J13, H13)
 - (b) AIL POS SEN-2 (J1B-K13, J13, H13)
- (2) AIL POS SENS-1 (J1B-K13, J13, H13): The flight control computer A (FCC-A) receives incorrect data from the aileron position sensor during the ground test.
- (3) AIL POS SENS-2 (J1B-K13, J13, H13): The flight control computer B (FCC-B) receives incorrect data from the aileron position sensor during the ground test.
- (4) The flight control computer B (FCC-B) does not receive data from the aileron position sensor.

B. Possible Causes

- (1) Aileron position sensor, M937
- (2) Flight control computer A (FCC-A), M1875
- (3) Flight control computer B (FCC-B), M1876
- (4) Wiring problem

C. Related Data

- (1) (SSM 22-11-31)
- (2) (WDM 22-11-31)

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D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do the COMPLETE AIL RIG rigging test. To do it, do this task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.

- (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
- (b) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).

- (3) Do this task: Aileron Position Sensor Adjustment, AMM TASK 22-11-29-820-801.

- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.

- (4) If the maintenance message is on channel A, then do these steps:

- (a) Disconnect the aileron position sensor connector, D1709.

NOTE: The aileron position sensor connector (M937) is on the forward wall of the main landing gear wheel well, adjacent to the autopilot aileron actuators. There are two connectors for the aileron position sensor. The connector D 1709 is for the FCC-A.

- (b) Do a resistance check between pins 1 and 2 of the aileron position sensor, M937.
- (c) If the resistance is not 18.9-23.1 ohms, do these steps:

- 1) Replace the aileron position sensor, M937.

These are the tasks:

Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,

Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (d) If the resistance is 18.9-23.1 ohms, then continue.

- (e) Do a resistance check between pins 3 and 4, pins 3 and 5, and pins 4 and 5 of the aileron position sensor, M937.

- (f) If the resistance is not 6.75-8.25 ohms, do these steps:

- 1) Replace the aileron position sensor, M937.

These are the tasks:

Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,

Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.

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- 2) Do the Repair Confirmation at the end of this task.
- (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.
- (h) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1709.
NOTE: You only see 7V AC (± 2) if you measure from pin 2 to structure ground or from pin 1 to structure ground.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1709, then do these steps:
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first, then do this wiring check.
- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (k) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1709 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10135B	D1709
pin B15	pin 2
pin A15	pin 1

- (l) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-connect the aileron position sensor connector, D1709.
- 4) Do the Repair Confirmation at the end of this task.
- (m) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1709, then continue.
- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (n) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1709 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10135B	D1709
pin K13	pin 4
pin J13	pin 5
pin H13	pin 3

- (o) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-connect the connector, D1709.
- 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- 4) Do the Repair Confirmation at the end of this task.
- (p) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message is on channel B, then do these steps:
 - (a) Disconnect the aileron position sensor connector, D1707.

NOTE: The aileron position sensor connector (M937) is on the forward wall of the main landing gear wheel well, adjacent to the autopilot aileron actuators. There are two connectors for the aileron position sensor. The connector D 1707 is for the FCC-B.
 - (b) Do a resistance check between pins 1 and 2 of the aileron position sensor, M937.
 - (c) If the resistance is not 18.9-23.1 ohms, do these steps:
 - 1) Replace the aileron position sensor, M937.

These are the tasks:
Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,
Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the resistance is 18.9-23.1 ohms, then continue.
 - (e) Do a resistance check between pins 3 and 4, pins 3 and 5, and pins 4 and 5 of the aileron position sensor, M937.
 - (f) If the resistance is not 6.75-8.25 ohms, do these steps:
 - 1) Replace the aileron position sensor, M937.

These are the tasks:
Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,
Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (g) If the resistance is 6.75-8.25 ohms between the pins, then continue.
 - (h) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1707.

NOTE: You only see 7V AC (± 2) if you measure from pin 2 to structure ground or from pin 1 to structure ground.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1707, then do these steps:

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first, then do this wiring check.

 - 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (k) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1707 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10137B	D1707
pin B15	pin 2
pin A15	pin 1

- (l) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-connect the aileron position sensor connector, D1707.
 - 4) Do the Repair Confirmation at the end of this task.
- (m) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1707, then continue.
- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (n) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1707 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10137B	D1707
pin K13	pin 4
pin J13	pin 5
pin H13	pin 3

- (o) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1707.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (p) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Replace the aileron position sensor, M937.

These are the tasks:

Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,

Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.

- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.

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- 1) Make the selection for the channels A and B.
- 2) Make the selection for the ROLL SENS test.
- (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

815. Mach Trim Actuator Position Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) 22-11200 MT CMD MON (J1C-D04, E04) - FCC(s) receive incorrect mach trim position from mach trim actuator.
- (b) 22-11207 MT CMD MON BOTH INV - Both FCC(s) detect a mach trim command/response problem.

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- (2) The Flight Control Computer-A (B) receive incorrect mach trim position from the Mach Trim Actuator.

B. Possible Causes

- (1) Mach Trim Actuator, M414
- (2) Integrated Flight System Accessory Unit (IFSAU), M1474
- (3) Elevator Neutral Shift Sensor, M958
- (4) Wiring problem
- (5) FCC-A (B), M1875 (M1876)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

D. Related Data

- (1) SSM 22-18-11
- (2) WDM 22-18-11

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E. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the MACH TRIM test.
 - 1) If the maintenance message does not show, then there was an intermittent fault.
 - 2) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the adjustment for the Elevator Neutral Shift Sensor, M958. This is the task: Elevator Neutral Shift Sensor Adjustment and Test, AMM TASK 22-11-14-820-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Do the MACH TRIM RIGGING TEST:
 - (a) At the CDU, select INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > RIGGING > MACH TRIM.
 - (b) Do the maintenance instructions that show on the CDU display to complete the test.
 - 1) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check of the Mach Trim Actuator:
 - (a) Disconnect connector D545 from the Mach Trim Actuator, M414
 - (b) Do this check of the internal wiring of the actuator (WDM 22-18-11):

Mach Trim Actuator, M414 D545	Mach Trim Actuator, M414 D545
pin 23	pin 24
pin 25	pin 26
pin 3	pin 6
pin 1	pin 2
pin 11	pin 13

- (c) Make sure that pin 14 of connector D545 is connected to Ground.
 - 1) If there is an open circuit internal of the actuator, then replace the Mach Trim Actuator, M414. These are the tasks:
 - Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
 - Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there is continuity between the above pins, then continue.
- (4) Do a check of the wiring between the Mach Trim Actuator and the FCC-A (B).
 - (a) Remove the FCC-A (B). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a check of wiring between these pins (WDM 22-18-11):

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FCC-A

Mach Trim

Actuator, M414

FCC-A, M1875

D545

D10135C

pin 26 pin E4

pin 25 pin D4

FCC-B

Mach Trim

Actuator, M414

FCC-B, M1876

D545

D10137C

pin 26 pin E4

pin 25 pin D4

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect the connector D545 to the Mach Trim Actuator, M414.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
 - a) Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Do a wiring check between the Mach Trim Actuator and the IFSAU.
- (a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Do a wiring check between these pins (WDM 22-18-11):

Mach Trim

Actuator, M414

IFSAU, M1474

D545

D2209A

pin 24 pin 61

pin 6 pin 58

pin 3 pin 59

pin 23 Ground

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the IFSAU. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - c) Re-connect the connector D545 to the Mach Trim Actuator, M414.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D545 to the Mach Trim Actuator, M414.
- (6) Do a wiring check between the FCC-A (B) and the IFSAU.

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- (a) Remove the FCC-A (B). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Do a wiring check between these pins (WDM 22-18-11):

FCC-A

IFSAU, M1474

D2209A

pin 45 pin D1
pin 42 pin B1
pin 43 pin A1

FCC-A, M1875

D10135C

FCC-B

IFSAU, M1474

D2209B

pin 45 pin D1
pin 42 pin B1
pin 43 pin A1

FCC-B, M1876

D10137C

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the IFSAU. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - c) Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then continue.
- (7) Replace the Elevator Neutral Shift Sensor, M958. These are the tasks:
 - Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801
 - Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (8) Replace the Mach Trim Actuator, M414. These are the tasks:
 - Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
 - Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (9) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (10) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
 - (11) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801

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- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

- 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
- (2) If RERUN does not show on the CDU display, then do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the MACH TRIM test.
 - 1) If the maintenance message does not show, then you have corrected the fault.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

816. Mach Trim Select Status from IFSAU Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) IFSAU
 - (b) IFSAU (J1C-C3)
- (2) The flight control computers (FCC-A or FCC-B) receive incorrect Mach Trim Select Status from the Integrated Flight Systems Accessory Unit (IFSAU).

B. Possible Causes

- (1) Integrated Flight Systems Accessory Unit (IFSAU), M1474
- (2) Flight Control Computer, M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring Problem

C. Related Data

- (1) (SSM 22-18-11)
- (2) (WDM 22-18-11)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the MACH TRIM test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the IFSAU, M1474.

These are the tasks:

Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801,
Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.

- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.

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- (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the MACH TRIM test.
- (c) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (3) If the maintenance message is on channel A, do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Do a wiring check between these pins of connector D10135C and connector D2209A at the E1-1 shelf (WDM 22-18-11).

D10135C

D2209A

pin C3 pin 41

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 4) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - a) If the maintenance message does not show, then you corrected the fault.
 - 5) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - a) Make the selection for the channels A and B.
 - b) Make the selection for the MACH TRIM test.
 - 6) If the maintenance message does not show, then you corrected the fault.
 - 7) If the maintenance message shows, then continue.
- (e) If you do not find a problem with the wiring, then there was an intermittent fault.
 - 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (4) If the maintenance message is on channel B, do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.

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- (c) Do a wiring check between these pins of connector D10137C and connector D2209B at the E1-4 shelf (WDM 22-18-11).

D10137C	D2209B
pin C3	pin 41
pin G3	pin 55

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 4) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - a) If the maintenance message does not show, then you corrected the fault.
 - 5) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - a) Make the selection for the channels A and B.
 - b) Make the selection for the MACH TRIM test.
 - 6) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then there was an intermittent fault.
- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.

END OF TASK

817. Autopilot Disengage Warning Horn Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message: AURAL WARN UNIT
- (2) The autopilot warning horn did not operate when the autopilot disengaged.

B. Possible Causes

- (1) Digital flight control system mode selector panel (DFCS MCP), M198
- (2) Aural warning module, M315
- (3) Wiring Problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

D. Related Data

- (1) (SSM 22-14-11)
- (2) (WDM 22-14-11)
- (3) (SSM 31-51-11)
- (4) (WDM 31-51-11)

E. Initial Evaluation

- (1) Do this check of the aural warning module:
 - (a) Make sure that DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU page, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX display show.
 - 3) Push the line select key (LSK) adjacent to MAINT.
 - 4) Push the LSK adjacent to DFCS.
 - 5) When the DFCS self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
 - (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
 - (d) Push the LSK adjacent to BITE LIBRARY TEST.
 - (e) Push the LSK adjacent to CHANNEL A AND B.
 - (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
 - (g) Push and release the NEXT PAGE key on the CDU until 62 DISENG WARN shows on the CDU.
 - (h) Push the LSK adjacent to 62 DISENG WARN.
 - (i) Push the LSK adjacent to EXECUTE.
 - (j) Do the instructions on the CDU.
 - (k) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (l) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Replace the mode control panel.

These are the tasks:

DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801,

DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.

- (a) Do the check of the aural warning module again.
- (b) If the check of the aural warning module is satisfactory, then you corrected the fault. Do this step to complete the task:

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- 1) Get out of DFCS BITE (22-11 TASK 801).
- (c) If the check of the aural warning module is not satisfactory, then continue.
- (2) Replace the aural warning module, M315.
NOTE: The aural warning module is located in the P9 panel below the first officer's flight management computer control display unit (FMC CDU).
 - (a) Do the check of the aural warning module again.
 - (b) If the check of the aural warning module is satisfactory, then you corrected the fault. Do this step to complete the task:
 - 1) Get out of DFCS BITE (22-11 TASK 801).
 - (c) If the check of the aural warning module is not satisfactory, then continue.
- (3) Do this check of the wiring:
 - (a) Remove the DFCS MCP, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (b) Remove the aural warning module, M315.
 - (c) Do a wiring check between these pins of connector D299 on the P7 panel and connector D940 in the P9 panel (WDM 22-14-11).

D299	D940
pin 48	pin 4
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DFCS MCP, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install the aural warning module, M315.
 - 4) Do the check of the aural warning module again.
 - 5) If the aural warning module is satisfactory, then you corrected the fault. Do this step to complete the task:
 - a) Get out of DFCS BITE (22-11 TASK 801).

————— **END OF TASK** —————

818. Spoiler 4 Position Sensor and Spoiler 9 Position Sensor Disagree - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-11827 SPOIL-4 POS SEN,SPOIL-9 POS SEN
- (2) This maintenance message is set when the FCCs detect a difference between the Spoiler No. 4 and Spoiler No. 9 Position Sensors during Speed Brake or Ground Spoiler operation with no Control Wheel inputs.
- (3) This maintenance message will only be set when the FCCs have determined a valid Spoiler No. 4 and Spoiler No. 9 position.
- (4) This maintenance message can be caused by an internal mechanical failure of the Spoiler No. 4 Position Sensor or Spoiler No. 9 Position Sensor.
- (5) This maintenance message can be caused by a Spoiler No. 4 or Spoiler No. 9 PCU Solenoid failure.

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B. Possible Causes

- (1) Spoiler No. 4 Position Sensor, M931
- (2) Spoiler No. 9 Position Sensor, M930
- (3) Spoiler No. 4 PCU, M2598
- (4) Spoiler No. 9 PCU, M2601

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) WDM 22-11-31
- (2) SSM 22-11-31
- (3) WDM 27-62-11
- (4) SSM 27-62-11

E. Initial Evaluation

- (1) Look for one or more of the maintenance messages below:
 - 22-11157 SPOIL-4 POS SEN-1 (J1B-B12,A12)
 - 22-11158 SPOIL-4 POS SEN-2 (J1B-B12,A12)
 - 22-11159 SPOIL-9 POS SEN-1 (J1B-E12,D12)
 - 22-11160 SPOIL-9 POS SEN-2 (J1B-E12,D12)
- (a) If one or more of the maintenance messages above shows, do the applicable FIM Task(s) as indicated below, before you address the 22-11827 SPOIL-4 POS SEN,SPOIL-9 POS SEN maintenance message.
 - 1) 22-11157 SPOIL-4 POS SEN-1 (J1B-B12,A12): Go to Spoiler 4 Position Sensor Problem - Fault Isolation, 22-12 TASK 801.
 - 2) 22-11158 SPOIL-4 POS SEN-2 (J1B-B12,A12): Go to Spoiler 4 Position Sensor Problem - Fault Isolation, 22-12 TASK 801.
 - 3) 22-11159 SPOIL-9 POS SEN-1 (J1B-E12,D12): Go to Spoiler 9 Position Sensor Problem - Fault Isolation, 22-12 TASK 802.
 - 4) 22-11160 SPOIL-9 POS SEN-2 (J1B-E12,D12): Go to Spoiler 9 Position Sensor Problem - Fault Isolation, 22-12 TASK 802.

F. Fault Isolation Procedure

- (1) Do the Aileron Rigging Test, AMM TASK 22-11-00-820-803.

NOTE: To do the SPOILER Rigging Test only, make the selection for the SPOILER on the AILERON RIGGING Menu.

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- (a) If the values for SPOILER 4 are not in the limits, do these steps:
- 1) Do the Spoiler Position Sensor Adjustment, AMM TASK 22-11-27-820-801 for the Spoiler No. 4 Position Sensor, M931.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Replace the Spoiler No. 4 Position Sensor, M931. These are the tasks:
 - Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801
 - Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801
 - a) Do the Repair Confirmation at the end of this task.
- (b) If the values for SPOILER 9 are not in the limits, do these steps:
- 1) Do the Spoiler Position Sensor Adjustment, AMM TASK 22-11-27-820-801 for the Spoiler No. 9 Position Sensor, M930.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) Replace the Spoiler No. 9 Position Sensor, M930. These are the tasks:
 - Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801
 - Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801
 - a) Do the Repair Confirmation at the end of this task.
- (c) If the values for SPOILER 4 and SPOILER 9 are in the limits, refer to Flight Spoiler Does not Fully Deploy During Ground Speedbrake Operation - Fault Isolation, 27-62 TASK 817 to troubleshoot the problem.

G. Repair Confirmation

- (1) Do the Speed Brake Solenoid Operated Valve Test, AMM TASK 27-62-00-710-803.
- (2) If the 22-11827 SPOIL-4 POS SEN, SPOIL-9 POS SEN maintenance message does not show, then you corrected the fault.
- (3) If the 22-11827 SPOIL-4 POS SEN, SPOIL-9 POS SEN maintenance message still shows, continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

819. Mach Trim Position Sensor Excitation Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) 22-11335 MT SENSOR EXC INV (J1C-D01) - FCC-A detects problem with MT Position Sensor Excitation output.
- (b) 22-11336 MT SENSOR EXC INV (J1C-D01) - FCC-B detects problem with MT Position Sensor Excitation output.

SIA ALL

B. Possible Causes

- (1) Wiring problem
- (2) IFSAU, M1474

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- (3) Mach Trim Actuator, M414

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

D. Related Data

- (1) SSM 22-18-11
(2) WDM 22-18-11

E. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
- (a) Make the selection for the channels A and B.
- (b) Make the selection for the 21 ANALOG SENSORS Test.
- 1) If the maintenance message does not show on the CDU, then there was an intermittent fault.
- 2) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the voltage at the IFSAU.
- (a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- NOTE:** If you open any Circuit Breakers to remove the IFSAU, then you must close them before you do the voltage check below.
- (b) Do a check for voltage between pin 45 of connector D2209A (D2209B) and ground. The correct voltage is 26 VAC (WDM 22-18-11).
- 1) If the correct voltage is not present, then do this check of the wiring:
- a) Remove the FCC-A (B). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- b) Do a check of the wiring between the FCC-A (B) and the IFSAU:

FCC-A

FCC-A, M1875
D10135C
pin D1

IFSAU, M1474
D2209A
pin 45

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FCC-B

FCC-B, M1876

D10137C

pin D1

IFSAU, M1474

D2209B

pin 45

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Do the Repair Confirmation at the end of this task.
- <2> If you did not find a problem with the wiring, then continue.

2) If the correct voltage is present, then continue.

(2) Do a wiring check between the IFSAU and the Mach Trim Actuator.

(a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

(b) Disconnect the connector D545 at the Mach Trim Actuator, M414.

(c) Do a check of the wiring between these pins (WDM 22-18-11).

IFSAU, M1474

D2209A

pin 61

GD1106-AC

Actuator, M414

D545

pin 24

pin 23

1) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Do the Repair Confirmation at the end of this task.

2) If you did not find a problem with the wiring, then continue.

(3) Replace the IFSAU, M1474. These are the tasks:

- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
- Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801

(a) Do the Repair Confirmation at the end of this task.

(4) Replace the Mach Trim Actuator, M414. These are the tasks:

- Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
- Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801

(a) Do the Repair Confirmation at the end of this task.

(5) Do this task: FCC Exchange Check, 22-11 TASK 820.

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- (a) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If necessary, then re-install these component(s):
 - IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Mach Trim Actuator, M414. This is the task: Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801.
- (2) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the 21 ANALOG SENSORS Test.
 - 1) If the maintenance message does not show on the CDU, then you have corrected the fault.
 - 2) If the maintenance message shows on the CDU, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

820. Mach Trim Actuator Power Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) 22-11250 MT PWR INV (J1C-K01) - FCC-A detects problem with MT Fixed Phase power output.
- (b) 22-11261 MT PWR INV (J1C-K01) - FCC-B detects problem with MT Fixed Phase power output.

SIA ALL

B. Possible Causes

- (1) Wiring problem
- (2) IFSAU, M1474
- (3) FCC-A (B), M1875 (M1876)

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC
C	1	C01037	AFCS SYS B MACH TRIM AC

D. Related Data

- (1) SSM 22-18-11
(2) WDM 22-18-11

E. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
- (a) Make the selection for channels A and B.
- (b) Make the selection for the 33 MACH TRIM Test.
- 1) If the maintenance message does not show on the CDU, then there was an intermittent fault.
- 2) If the maintenance message shows on the CDU, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the voltage at the IFSAU.
- (a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- NOTE:** If you open any Circuit Breakers to remove the IFSAU, then you must close them before you do the voltage check below.
- (b) Do a check for voltage between pin 40 of connector D2209A (D2209B) and ground. The correct voltage is 115 VAC (WDM 22-18-11).
- 1) If the correct voltage is not present, then do this check of the wiring:
- a) Remove the FCC-A (B). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- b) Do a check of the wiring between the FCC-A (B) and the IFSAU:

FCC-A

FCC-A, M1875
D10135C
pin K1

IFSAU, M1474
D2209A
pin 40

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FCC-B

FCC-B, M1876
D10137C

IFSAU, M1474
D2209B

pin K1 pin 40

- <1> If you find a problem with the wiring, then do these steps:
 - <a> Repair the wiring.
 - Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - <c> Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you did not find a problem with the wiring, then continue.
 - <a> Re-install the FCC-A (B). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

2) If the correct voltage is present, then continue.

- (2) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the 33 MACH TRIM Test.
 - 1) If the maintenance message does not show on the CDU, then you have corrected the fault.
 - 2) If the maintenance message shows on the CDU, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

821. FCC Receives Incorrect Autopilot Aileron Actuator Position - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11349 AIL ACT FAIL.
 - (b) 22-11366 AIL ACT FAIL.

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- (2) Autopilot Aileron Actuator -A (B), M943 (M1024) is providing incorrect or invalid LVDT position data to FCC-A (B), M1875 (M1876) at connector D10135B (D10137B) pins J15, H15, G15.
- (3) When this problem is detected during flight, Autopilot will disconnect automatically and will be unavailable for use afterwards, until maintenance actions are completed and have corrected the problem.

B. Possible Causes

- (1) Rigging
- (2) Autopilot Aileron Actuator-A (B), M943 (M1024)
- (3) FCC-A, M1875 (M1876)
- (4) Wiring

C. Related Data

- (1) SSM 22-11-31
- (2) WDM 22-11-31

D. Initial Evaluation

- (1) Use the CDU to do the Digital Flight Control System (DFCS) BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A AND B > RUN SELECTED LIBRARY TESTS > 31 AILERON > EXECUTE.
 - (c) Follow the instructions on the CDU to find the maintenance messages. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - (d) If the maintenance message does not show on the CDU when the test is complete, then there was an intermittent fault.
 - (e) If the maintenance message shows on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do the COMPLETE AIL RIG rigging test. This is the task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.
 - (a) If the test is not satisfactory, then adjust the Aileron rigging to correct the problem.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the test is satisfactory, then continue.
- (2) Replace the Autopilot Aileron Actuator-A (B), M943 (M1024). These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 22-11-31):
 - (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1827 (D1691) from the Aileron Actuator-A (B), M943 (M1024).

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- (c) Do a wiring check between the FCC and the Aileron Actuator as follows:

FCC-A, M1875 D10135B	A/P AIL ACT A, M943 D1827
pin B15	pin 9
pin A15	pin 10
pin J15	pin 11
pin G15	pin 12
pin H15	pin 13

FCC-B, M1876 D10137B	A/P AIL ACT B, M1024 D1691
pin B15	pin 9
pin A15	pin 10
pin J15	pin 11
pin G15	pin 12
pin H15	pin 13

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector to the Aileron Actuator.
 - c) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and then continue:
 - a) Re-connect the connector to the Aileron Actuator.
- (4) Install a new FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Full details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TEST.
 - (b) Select CHANNEL A AND B > RUN SELECTED LIBRARY TESTS > 31 AILERON > EXECUTE.
- (2) If the maintenance message does not show on the CDU when the test is complete, then you corrected the problem.
- (3) If the maintenance message shows on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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823. Roll CWS Force Transducer High Force Load - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

- (a) 22-11833 WHEEL OVERRIDE
- (b) 22-11834 WHEEL OVERRIDE

(2) FCC-A (B) detects High Wheel Force Transducer Load.

NOTE: Maintenance message 22-11833 (22-11834) WHEEL OVERRIDE is shown when the flight crew disconnected the A (B) autopilot by applying manual force onto the control wheel during the flight.

B. Possible Causes

- (1) Manual force applied onto the control wheel during flight.
- (2) Roll Force Transducer rigging
- (3) Roll Force Transducer, M221
- (4) Wiring
- (5) FCC-A (B), M1875 (M1876)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) WDM 22-11-11
- (2) WDM 22-11-31
- (3) SSM 22-11-11
- (4) SSM 22-11-31

E. Initial Evaluation

(1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

(a) Make the selection for the channels A and B.

(b) Make the selection for the 31 AILERON Test.

1) If the maintenance message does not show, then there was an intermittent fault.

2) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Look for these related maintenance messages:

- 22-11650 - WHEEL FORCE APPLIED (Channel A)
- 22-11651 - WHEEL FORCE APPLIED (Channel B)

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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- (a) If you find a related maintenance message, then do the Fault Isolation Procedure for each message that shows.
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If you did not find a related maintenance message, then continue.
- (2) Do this task: Roll Control Wheel Steering Rigging Test, AMM TASK 22-11-00-820-807.
 - (a) If the values for the A side and B side are in the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not in the limits, then continue.

NOTE: The value that shows on the A side is for Channel A (FCC-A).
The value that shows on the B side is for Channel B (FCC-B).
- (3) Adjust the Roll Force Transducer. This is the task: Roll Force Transducer Adjustment and Test, AMM TASK 22-11-11-820-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do this task: Aileron - Response (Operational) Test, AMM TASK 27-11-00-710-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the Roll Force Transducer, M221. These are the tasks:
 - Roll Force Transducer Removal, AMM TASK 22-11-11-000-801
 - Roll Force Transducer Installation, AMM TASK 22-11-11-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Do this check of the wiring:
 - (a) Disconnect connector D397 (D1713) from the roll control wheel steering force transducer, M221.
 - (b) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Examine the wiring between the FCC-A (B), M1875 (M1876) and the Roll Force Transducer, M221 (WDM 22-11-31).

FCC-A

FCC-A, M1875	Roll Force Transducer, M221
D10135B	D397
pin K6	pin 2
pin J6	pin 3

FCC-B

FCC-B, M1876	Roll Force Transducer, M221
D10137B	D1713
pin K6	pin 2
pin J6	pin 3

- 1) If you find a problem with the wiring, then do these steps:

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- a) Repair the wiring.
- b) Re-connect the connector D397 (D1713) to the Roll Force Transducer, M221.
- c) Re-install the applicable FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then do these steps and continue:
 - a) Re-connect the connector D397 (D1713) to the Roll Force Transducer, M221.
- (7) Swap the FCC-A and the FCC-B. This is the task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Exit the DFCS BITE completely, then re-enter the DFCS BITE.
 - (b) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 31 AILERON Test.
 - (c) If the fault moves to the other FCC, then replace the FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the 31 AILERON Test.
 - 1) If the maintenance message does not show, then there was an intermittent fault.
 - 2) If the maintenance message shows, then do the Fault Isolation Procedure below.

———— **END OF TASK** ————

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801. IRS Transfer Switch Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- CREW OPERATION
 - IRS TRANSFER SW
- (a) 22-11015 IRS TRANSFER FGN FAIL
- 1) FCC(s) receive no input from IRS Transfer Switch - FGN (normal) during BITE.
- (b) 22-11016 IRS TRANSFER LCL FAIL
- 1) FCC(s) receive no input from IRS Transfer Switch - LCL (normal) during BITE.
- (c) 22-11034 LCL IRS SW TRANSFERRED
- 1) FCC(s) detect that the IRS Switch transferred.
- (d) 22-11612 FGN IRS SW TRANSFERRED
- 1) FCC(s) detect that the IRS Switch transferred.

SIA ALL

B. Possible Causes

- (1) Instrument Switching Module, P5-28
- (2) Wiring
- (3) Flight Control Computer (FCC)-A (B), M1875 (M1876)

C. Related Data

- (1) WDM 34-21-15
- (2) SSM 22-11-14
- (3) SSM 34-21-15

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
- NOTE: When the DFCS BITE Test fails, RERUN shows on the Control Display Unit (CDU) Display after you push the Line Select Key (LSK) adjacent to TEST DATA.
- If it is necessary, you can push the LSK adjacent to RERUN to do the test again.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, and CREW OPERATION is the indication under SUSPECT LRU(S), then no maintenance action is necessary.
- (c) If the maintenance message shows, and IRS TRANSFER SW is the indication under SUSPECT LRU(S), then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance message shows, then continue.
- (2) If the maintenance message shows and the fault is on Channel A (B) then do this check of the wiring:

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- (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect applicable connector D1817 (D553) from the Instrument Switching Module, P5-28.
- (c) Examine the wiring between the Instrument Switching Module, P5-28 and the FCC-A (B), M1875 (M1876) as follows (WDM 34-21-15):

CHANNEL A FAULT

	INSTR SW MODL	FCC-A
(For 22-11612 and 22-11015 messages)	D1817 pin 40	D10135A pin G1
(For 22-11034 and 22-11016 messages)	D553 pin 40	D10135B pin G1
	INSTR SW MODL	
(For 22-11612 and 22-11015 messages)	D1817 pin 39	GND
(For 22-11034 and 22-11016 messages)	D553 pin 41	GND

CHANNEL B FAULT

	INSTR SW MODL	FCC-B
(For 22-11612 and 22-11015 messages)	D553 pin 43	D10137A pin G1
(For 22-11034 and 22-11016 messages)	D1817 pin 37	D10137B pin G1

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INSTR SW MODL

(For 22-11612
and 22-11015
messages)

D553

pin 44 GND

(For 22-11034
and 22-11016
messages)

D1817

pin 36 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1817 (D553).
 - c) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Replace the Instrument Switching Module, P5-28. These are the tasks:
 - Instrument Switching Module Removal, AMM TASK 31-62-14-000-801
 - Instrument Switching Module Installation, AMM TASK 31-62-14-400-801
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the ADIRU TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

802. LOC Antenna Switch Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- J1B-E03

NOTE: SUSPECT LRU(S):

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- LOC ANT SW-1
- LOC ANT SW-2

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- IFSAU

- (a) 22-11108 ANT SW DISAGREE

1) FCC-A detects that it has selected the wrong antenna for VOR or Localizer.

- (b) 22-11109 ANT SW DISAGREE

1) FCC-B detects that it has selected the wrong antenna for VOR or Localizer.

SIA ALL

B. Possible Causes

- (1) LOC ANT Switch Relay-1 (2), R315 (R316)
- (2) Integrated Flight System Accessory Unit (IFSAU), M1474
- (3) FCC-A (B), M1875 (M1876)
- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) WDM 34-51-41
- (2) SSM 34-51-41

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E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows for Channel A or B, then do the Fault Isolation Procedure below for the applicable Channel.

F. Fault Isolation Procedure

- (1) Remove and then re-install these components:
 - (a) The applicable FCC-A (B), M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (b) The IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - (c) The VHF Omnidirectional Range/Marker Beacon (VOR/MB), M1724. These are the tasks:
 - VOR/MKR Receiver Removal, AMM TASK 34-51-01-000-801
 - VOR/MKR Receiver Installation, AMM TASK 34-51-01-400-801
 - (d) Do the Repair Confirmation at the end of this task.
- (2) Exchange the FCC-A (B), M1875 (M1876). This is the task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the applicable LOC ANT SW RLY 1 (2), R315 (R316). These are the tasks:
 - Localizer Antenna Switch Removal, AMM TASK 34-31-72-000-801
 - Localizer Antenna Switch Installation, AMM TASK 34-31-72-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Do this check of the wiring:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876) at the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Disconnect applicable connector D2119 (D2127) from the LOC ANT SW RLY 1 (2), R315 (R316).

NOTE: The LOC ANT SW RLY 1 (2) is located on the E1 Shelf in the Electronic Equipment Area.

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- (d) Examine the wiring between the applicable FCC-A (B), M1875 (M1876) and the LOC ANT SW RLY 1 (2), R315 (R316) as follows (WDM 34-51-41):

Channel A

FCC-A	LOC ANT SW 1
D10135B	D2119
pin E3	pin A

Channel B

FCC-B	LOC ANT SW 2
D10137B	D2127
pin E3	pin A

- (e) Examine the wiring between the applicable LOC ANT SW RLY 1 (2), R315 (R316) and the Structure Ground as follows (WDM 34-51-41):

Channel A

LOC ANT SW 1
D2119
pin C GD315-DC

Channel B

LOC ANT SW 2
D2127
pin C GD317-DC

- (f) Examine the wiring between the applicable FCC-A (B), M1875 (M1876) and the IFSAU, M1474 as follows (WDM 34-51-41):

Channel A

FCC-A	IFSAU
D10135B	D235A
pin E7	pin 79

Channel B

FCC-B	IFSAU
D10137B	D235B
pin E7	pin 79

- (g) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D2119 (D2127).
 - 3) Re-install the IFSAU, M147. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 4) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (h) If you do not find a problem with the wiring, then do these steps and then continue:

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- 1) Re-connect connector D2119 (D2127).
 - 2) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Do this voltage check (WDM 34-51-41):
- (a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2

- (c) Do a check for 28V DC at pin 117 (for Channel A) of connector D235A or pin 12 (for Channel B) of connector D235B at the IFSAU, M1474 (WDM 34-51-41).
 - 1) If you find 28V DC at pins of connector D235A (D235B), then do these steps:
 - a) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - <1> Do the Repair Confirmation at the end of this task.
 - 2) If you do not find 28V DC at pins of connector D235A (D235B), then do these steps:
 - a) Disconnect connector D41807P (D46065P) from the Load Control Center - Left (Right) (LCC-L (R)).
 - b) Examine the wiring between the applicable Load Control Center - Left (Right) (LCC-L (R)) and the IFSAU, M1474 as follows (WDM 34-51-41):

Channel A

LCC-L	IFSAU
D41807P	D235A
pin 15	pin 117

Channel B

LCC-R	IFSAU
D46065P	D235B
pin 5	pin 12

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-connect connector D41807P (D46065P).

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- <c> Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - <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 and continue:
 - <a> Re-connect connector D41807P (D46065P).
 - Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (7) Do this check of the wiring (WDM 34-51-41):
- (a) Disconnect applicable connector D263 (D265) from the captain's NAV Control Panel, P8-25 (P8-26).
 - (b) Disconnect applicable connector D2119 (D2127) from the LOC ANT SW RLY 1 (2), R315 (R316).
- NOTE: The LOC ANT SW RLY 1 (2) is located on the E1 Rack in the Electronic Equipment Area.
- (c) Examine the wiring between the LOC ANT SW RLY 1 (2), R315 (R316) and the NAV Control Panel, P8-25 (P8-26) as follows (WDM 34-51-41):

Channel A

LOC ANT	NAV CONTRL
SWITCH - 1	PNL, P8-25
D2119	D263
pin D	pin 38

Channel B

LOC ANT	NAV CONTRL
SWITCH - 1	PNL, P8-26
D2127	D265
pin D	pin 38

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2119 (D2127).
 - c) Re-connect connector D263 (D265).
 - 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 and continue:
 - a) Re-connect connector D2119 (D2127).
 - b) Re-connect connector D263 (D265).
- (8) Do this check of the wiring (WDM 34-51-41):
- (a) Disconnect applicable connector D263 (D265) from the captain's NAV Control Panel, P8-25 (P8-26).
 - (b) Remove the applicable FCC-A (B), M1875 (M1876) at the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (c) Examine the wiring between the FCC-A (B), M1875 (M1876) and the NAV Control Panel, P8-25 (P8-26) as follows (WDM 34-51-41):

Channel A

FCC-A	NAV CONTRL
D10135B	PNL, P8-25
	D263
pin K14	pin 38

Channel B

FCC-B	NAV CONTRL
D10137B	PNL, P8-26
	D265
pin K14	pin 38

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect connector D263 (D265).
 - d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (b) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the Channels A and B.
 - 2) Make the selection for the MMR/ILS TEST.
 - a) If the maintenance message does not show, then you corrected the problem.
 - b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

803. VHF/NAV Switch Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

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For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) VHF/NAV SW (J1B-A07)
- (b) VHF/NAV SW (J1B-J07)
- (c) VHF/NAV SW (J1B-J01)
- (d) VHF/NAV SW (J1A-K12)

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- (2) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- J1B-J07

NOTE: SUSPECT LRU(S):

- VHF/NAV SW
- VHF/NAV CONT PANL-1
- VHF/NAV CONT PANL-2
- CREW OPERATION

- (a) 22-11085 NAV FREQ TRANSFERRED
 - 1) FCC-A detects unexpected NAV Frequency transfer.
- (b) 22-11086 NAV FREQ TRANSFERRED
 - 1) FCC-B detects unexpected NAV Frequency transfer.
- (c) 22-11098 ILS INST XFR FAIL
 - 1) FCC(s) receive invalid input from VHF NAV Switch during Ground Test [ILS Instrument Transfer].
- (d) 22-11110 ILS SW TRANSFERRED
 - 1) FCC(s) detect unexpected ILS Switch transfer.

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B. Possible Causes

- (1) Instrument Switching Module, P5-28
- (2) Left (Right) NAV Control Panel, P8-25 (P8-26)
- (3) FCC-A (B), M1875 (M1876)
- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) WDM 22-11-14
- (2) WDM 34-51-41
- (3) SSM 22-11-14
- (4) SSM 34-51-41

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows for Channel A, then do the "Fault Isolation Procedure - Channel A" below.
- (c) If the maintenance message shows for Channel B, then do the "Fault Isolation Procedure - Channel B" below.

F. Fault Isolation Procedure - Channel A

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Replace the Instrument Switching Module, P5-28. These are the tasks:
 - Instrument Switching Module Removal, AMM TASK 31-62-14-000-801
 - Instrument Switching Module Installation, AMM TASK 31-62-14-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 34-51-41):
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the CAPT NAV Control Panel, P8-25. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (c) Remove the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Removal, AMM TASK 31-62-14-000-801.
 - (d) Examine the wiring between the CAPT NAV Control Panel and FCC-A at the E1-1 Shelf as follows:

CAPT NAV

CTRL PNL

D263

pin 31

FCC-A

D10135A

pin K12

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D263	D10135B
pin 31	pin J1

- (e) Examine the Ground Wiring as follows:

INSTR SW MDL

D553

pin 28	GD503-DC
pin 29	GD503-DC

- (f) Examine the wiring between Instrument Switching Module and the CAPT NAV Control Panel as follows:

INSTR SW MDL

D553

pin 30	pin 15

CAPT NAV

CTRL PNL

D263

- (g) If you find a problem in the wiring do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.
 - 3) Re-install the CAPT NAV Control Panel, P8-25. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 4) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (h) If you do not find a problem in the wiring, do these steps and then continue.
- 1) Re-install the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.
 - 2) Re-install the FCC-A, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) Replace the Left NAV Control Panel, P8-25. These are the tasks:
- Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Channel B

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Replace the Instrument Switching Module, P5-28. These are the tasks:
 - Instrument Switching Module Removal, AMM TASK 31-62-14-000-801
 - Instrument Switching Module Installation, AMM TASK 31-62-14-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 34-51-41):

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- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the F/O NAV Control Panel, P8-26. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
- (c) Remove the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Removal, AMM TASK 31-62-14-000-801.
- (d) Examine the wiring between the F/O NAV Control Panel and FCC-B at the E1-4 Shelf as follows:

F/O NAV CTRL

PNL

D265

pin 31 pin K12

FCC-B

D10137A

D265

pin 31 pin J1

D10137B

- (e) Examine the Ground Wiring as follows:

INSTR SW MDL

D1817

pin 14 GD515-DC

pin 15 GD515-DC

- (f) Examine the wiring between Instrument Switching Module and the NAV Control Panel as follows:

INSTR SW MDL

D1817

pin 13 pin 15

F/O NAV CTRL

PNL

D265

- (g) If you find a problem in the wiring do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.
 - 3) Re-install the F/O NAV Control Panel, P8-25. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 4) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (h) If you do not find a problem in the wiring, do these steps and then continue.
 - 1) Re-install the Instrument Switching Module, P5-28. This is the task: Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.
 - 2) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (4) Replace the F/O NAV Control Panel, P8-26. These are the tasks:

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- Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the VOR TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

804. Aileron Autopilot Pressure Switch-1 Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) AIL PRESS SW-1 (J1B-K01)
 - (b) AIL PRESS SW-1 (J1B-B13)
 - (c) AIL DETENT SOLENOID-1

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
- (d) AIL PRESS SW-1 (J1B-K01) and AIL DETENT SOLENOID-1: Flight control computer B (FCC-B) receives invalid input from HYD PRESS SW AIL ACTR - A during the ground test.
- (e) AIL PRESS SW-1 (J1B-B13) and AIL DETENT SOLENOID-1: Flight control computer A (FCC-A) receives invalid input from HYD PRESS SW AIL ACTR - A during the ground test.

B. Possible Causes

- (1) Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774
- (2) Autopilot Actuator-A Arm Solenoid
- (3) Autopilot Actuator-A Detent Solenoid
- (4) Aileron Autopilot Actuator-A, M943
- (5) FCC-A (B), M1875 (M1876)
- (6) Wiring

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C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

D. Related Data

- (1) SSM 22-11-12
- (2) SSM 22-11-31
- (3) WDM 22-11-12
- (4) WDM 22-11-31

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance message shows, then continue.
- (2) Do this check of the Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774 (WDM 22-11-12):

- (a) Disconnect connector D1863 from the Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774.

NOTE: The Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774 is located on the Aileron Autopilot Actuator-A, M943, which is located in the Left Main Landing Gear Wheel Well on the Forward Bulkhead.

- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28 VDC between pin 2 of connector D1863 and A/P electrical ground.
- 1) If there is not 28 VDC at pin 2 of connector D1863, then do these steps:
 - a) Disconnect connector D4073P from D4073J at the E1-1 Shelf.
 - b) Do a continuity check between these pins of connector D1863 and connector D4073P as follows:

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HYD PRESS SW

AIL ACTR-A

E1-1 SHELF

D1863

D4073P

pin 2 pin A2

- c) If you do not have continuity, then do these steps:
- <1> Repair the wiring.
 - <2> Re-connect connector D1863.
 - <3> Re-connect connector D4073P.
 - <4> Do the Repair Confirmation at the end of this task.
- 2) If there is 28 VDC at pin 2 of connector D1863, then continue.
- a) Re-connect connector D4073P.
- (3) Replace the Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774. These are the tasks:
- Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
 - Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the Aileron Autopilot Actuator-A Arm Solenoid (WDM 22-11-31):
- NOTE: The Aileron Autopilot Actuator-A, M943 is located in the Left Main Landing Gear Wheel Well on the Forward Bulkhead.
- (a) Disconnect connector D1827 from Aileron Autopilot Actuator-A, M943.
- (b) Do a resistance check between these pins on the Aileron Autopilot Actuator-A, M943 connector as follows:
- NOTE: The Aileron Autopilot Actuator can be different, and thus have different resistance limits.

P/N	AILERON A/P ACT-A		RESISTANCE
	D1827	D1827	
P/N 45080-1	pin 1	pin 2	79 - 115 Ω
P/N	AILERON A/P ACT-A		RESISTANCE
	D1827	D1827	
P/N 45080	pin 1	pin 2	49 - 80 Ω
P/N	AILERON A/P ACT-A		RESISTANCE
	D1827	D1827	
881600-1001	pin 1	pin 2	71 - 77 Ω
P/N	AILERON A/P ACT-A		RESISTANCE
	D1827	D1827	
59600-5007 & 59600-5011	pin 1	pin 2	71 - 87 Ω

- 1) If the resistance is not in the specified range, then do these steps:
- a) Replace the Aileron Autopilot Actuator-A Arm Solenoid. These are the tasks:

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- A/P Solenoid and Electrohydraulic Servo Valves Removal, AMM TASK 22-11-12-000-801
 - A/P Solenoid and Electrohydraulic Servo Valves Installation, AMM TASK 22-11-12-400-801
 - b) Re-connect connector D1827.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If the resistance is in the specified range, then continue.
- (5) Do this check of the Aileron Autopilot Actuator-A Detent Solenoid (WDM 22-11-31):
- (a) Do a resistance check between these pins on the Aileron Autopilot Actuator-A, M943 connector as follows:
- NOTE: The Aileron Autopilot Actuator can be different, and thus have different resistance limits.
- | | AILERON A/P ACT-A | AILERON A/P ACT-A | |
|--|--------------------------|--------------------------|-------------------|
| P/N 45080-1 | D1827 | D1827 | RESISTANCE |
| | pin 21 | pin 22 | 79 - 115 Ω |
| P/N 45080 | D1827 | D1827 | RESISTANCE |
| | pin 21 | pin 22 | 49 - 80 Ω |
| P/N 881600-1001 | D1827 | D1827 | RESISTANCE |
| | pin 21 | pin 22 | 71 - 77 Ω |
| P/N 59600-5007 & 59600-5011 | D1827 | D1827 | RESISTANCE |
| | pin 21 | pin 22 | 71 - 87 Ω |
- 1) If the resistance is not in the specified range, then do these steps:
- a) Replace the Aileron Autopilot Actuator-A Detent Solenoid. These are the tasks:
 - A/P Solenoid and Electrohydraulic Servo Valves Removal, AMM TASK 22-11-12-000-801
 - A/P Solenoid and Electrohydraulic Servo Valves Installation, AMM TASK 22-11-12-400-801
 - b) Re-connect connector D1827.
 - c) Do the Repair Confirmation at the end of this task.
- 2) If the resistance is in the specified range, then continue.
- (6) Replace the Aileron Autopilot Actuator-A, M943. These are the tasks:
- Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (7) If the maintenance messages AIL PRESS SW-1 (J1B-K01) and AIL DETENT SOLENOID-1 show and the fault is on channel B, then do these wiring checks (WDM 22-11-12):

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- (a) Remove the FCC-B. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect connector D1863 at the Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774.
- (c) Do a wiring check between these pins of connector D10137B at the E1-4 Shelf and connector D1863 as follows:

FCC-B	HYD PRESS SW
D10137B	AIL ACT-A
	D1863
pin K1	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1863.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then continue.
 - a) Re-connect connector D1863.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (d) Do these wiring checks between the Aileron Autopilot Actuator-A, M943 and FCC-A, M1875 (WDM 22-11-31):
 - 1) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D1827 at the Aileron Autopilot Actuator-A, M943.
 - 3) Do a wiring check between these pins of connector D10135B at the E1-1 Shelf and connector D1827 as follows:

FCC-A	AILERON A/P
D10135B	ACTUATOR-A
	D1827
pin D13	pin 21

- 4) Make sure that pin 22 of connector D1827 has continuity to electrical ground.
 - a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D1827.
 - <3> Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
- (8) If the maintenance messages AIL PRESS SW-1 (J1B-B13) and AIL DETENT SOLENOID-1 show and the fault is on channel A, then do these wiring checks (WDM 22-11-12):

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- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect connector D1863 at the Aileron Autopilot Actuator-A Hydraulic Pressure Switch, S774.
- (c) Do a wiring check between these pins of connector D10135B at the E1-1 Shelf and connector D1863 as follows:

FCC-A	HYD PRESS SW
D10135B	AIL ACTR-A
pin B13	D1863
	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1863.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance messages show, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for channel A and B.
 - (b) Make the selection for the ROLL SENS test.
 - (c) If the maintenance messages do not show, then you corrected the problem.
 - (d) If the maintenance messages show, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

805. Aileron Autopilot Pressure Switch-2 Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) AIL PRESS SW-2 (J1B-B13)
 - (b) AIL PRESS SW-2 (J1B-K01)
 - (c) AIL DETENT SOLENOID-2
- NOTE:** J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
- (d) AIL PRESS SW-2 (J1B-B13) and AIL DETENT SOLENOID-2: Flight control computer B (FCC-B) receives no input from HYD PRESS SW AIL ACTR - B during the ground test.

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- (e) AIL PRESS SW-2 (J1B-K01) and AIL DETENT SOLENOID-2: Flight control computer A (FCC-A) receives no input from HYD PRESS SW AIL ACTR - B during the ground test.

B. Possible Causes

- (1) Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772
- (2) Autopilot Actuator-B Arm Solenoid
- (3) Autopilot Actuator-B Detent Solenoid
- (4) Aileron Autopilot Actuator-B, M1024
- (5) FCC-A (B), M1875 (M1876)
- (6) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) SSM 22-11-12
- (2) SSM 22-11-31
- (3) WDM 22-11-12
- (4) WDM 22-11-31

E. Initial Evaluation

- (1) The DFCS BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance message shows, then continue.

- (2) Do this check of the Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772 (WDM 22-11-12):

- (a) Disconnect connector D1859 from the Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772.

NOTE: The Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772 is located on the Aileron Autopilot Actuator-B, M1024, which is located in the Left Main Landing Gear Wheel Well on the Forward Bulkhead.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

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- (c) Do a check for 28 VDC between pin 2 of connector D1859 and A/P electrical ground.
- 1) If there is not 28 VDC at pin 2 of connector D1859, then do these steps:
 - a) Disconnect connector D4077J from D4077P at the E1-4 Shelf.
 - b) Do a continuity check between these pins of connector D1859 and connector D4077J as follows:

HYD PRESS SW

AIL ACTR-B

D1859

pin 2 pin 20

E1-4 SHELF

D4077J

- <1> If you do not have continuity, then do these steps:
- <a> Repair the wiring.
 - Re-connect connector D1859.
 - <c> Re-connect connector D4077J.
 - <d> Do the Repair Confirmation at the end of this task.

- 2) If there is 28 VDC at pin 2 of connector D1859, then continue.
 - a) Re-connect connector D4077J.

- (3) Replace the Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772. These are the tasks:

- Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
- Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801

- (a) Do the Repair Confirmation at the end of this task.

- (4) Do this check of the Aileron Autopilot Actuator-B Arm Solenoid (WDM 22-11-31):

NOTE: The Aileron Autopilot Actuator-B, M1024 is located in the Left Main Landing Gear Wheel Well on the Forward Bulkhead.

- (a) Disconnect connector D1691 from the Aileron Autopilot Actuator-B, M1024.
- (b) Do a resistance check between these pins on the Aileron Autopilot Actuator-B, M1024 connector as follows:

NOTE: The Aileron Autopilot Actuator can be different, and thus have different resistance limits.

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P/N	AILERON A/P ACT-B		RESISTANCE
	D1691	D1691	
P/N 45080-1	pin 1	pin 2	79 - 115 Ω
P/N 45080	pin 1	pin 2	49 - 80 Ω
P/N 881600-1001	pin 1	pin 2	71 - 77 Ω
P/N 59600-5007 & 59600-5011	pin 1	pin 2	71 - 87 Ω

- 1) If the resistance is not in the specified range, then do these steps:
 - a) Replace the Aileron Autopilot Actuator-B Arm Solenoid. These are the tasks:
 - A/P Solenoid and Electrohydraulic Servo Valves Removal, AMM TASK 22-11-12-000-801
 - A/P Solenoid and Electrohydraulic Servo Valves Installation, AMM TASK 22-11-12-400-801
 - b) Re-connect connector D1691.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If the resistance is in the specified range, then continue.
- (5) Do this check of the Aileron Autopilot Actuator-B Detent Solenoid (WDM 22-11-31):
- (a) Do a resistance check between these pins on the Aileron Autopilot Actuator-B, M1024 connector as follows:

NOTE: The Aileron Autopilot Actuator can be different, and thus have different resistance limits.

P/N	AILERON A/P ACT-B		RESISTANCE
	D1691	D1691	
P/N 5080-1	pin 21	pin 22	79 - 115 Ω
P/N 45080	pin 21	pin 22	49 - 80 Ω
P/N 881600-1001	pin 21	pin 22	71 - 77 Ω
P/N 59600-5007 & 59600-5011	pin 21	pin 22	71 - 87 Ω

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- 1) If the resistance is not in the specified range, then do these steps:
 - a) Replace the Aileron Autopilot Actuator-B Detent Solenoid. These are the tasks:
 - A/P Solenoid and Electrohydraulic Servo Valves Removal, AMM TASK 22-11-12-000-801
 - A/P Solenoid and Electrohydraulic Servo Valves Installation, AMM TASK 22-11-12-400-801
 - b) Re-connect connector D1691.
 - c) Do the Repair Confirmation at the end of this task.
- 2) If the resistance is in the specified range, then continue.
- (6) Replace the Aileron Autopilot Actuator-B, M1024. These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (7) If the maintenance messages AIL PRESS SW-2 (J1B-K01) and AIL DETENT SOLENOID-2 show and the fault is on channel A, then do these wiring checks (WDM 22-11-12):
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1859 at the Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772.
 - (c) Do a wiring check between these pins of connector D10135B at the E1-1 Shelf and connector D1859 as follows:

FCC-A	HYD PRESS SW
D10135B	AIL ACTR-B
	D1859
pin K1	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1859.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then continue.
 - a) Re-connect connector D1859.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (d) Do these wiring checks between the Aileron Autopilot Actuator-B, M1024 and FCC-B, M1876 (WDM 22-11-31).
 - 1) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Disconnect connector D1691 at the Aileron Autopilot Actuator-B, M1024.
 - 3) Do a wiring check between these pins of connector D10137B at the E1-4 Shelf and connector D1691 as follows:

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**FCC-B
D10137B**
pin D13

**AIL A/P ACTR-B
D1691**
pin 21

- 4) Make sure that pin 22 of connector D1691 has continuity to electrical ground.
 - a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D1691.
 - <3> Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Do the Repair Confirmation at the end of this task.
- (8) If the maintenance messages AIL PRESS SW-2 (J1B-B13) and AIL DETENT SOLENOID-2 show and the fault is on channel B, then do these wiring checks (WDM 22-11-12):
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1859 at the Aileron Autopilot Actuator-B Hydraulic Pressure Switch, S772.
 - (c) Do a wiring check between these pins of connector D10137B at the E1-4 Shelf and connector D1859 as follows:

**FCC-B
D10137B**
pin B13

**HYD PRESS SW
AIL ACTR-B
D1859**
pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1859.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance messages show, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for channel A and B.
 - (b) Make the selection for the ROLL SENS test.
 - (c) If the maintenance messages do not show, then you corrected the problem.

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- (d) If the maintenance messages show, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. Elevator Autopilot Pressure Switch-1 Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- FCC-A: J1A-B13
- FCC-B: J1A-K01

NOTE: SUSPECT LRU(S):

- ELEV DETENT SOLENOID-1
- ELEV PRESS SW-1
- FCC-A
- FCC-B

- (a) 22-11088 DUAL W/O FLARE H<350

- 1) FCC-B detects that both channels are in command, R/A is less than 350' and Flare Arm Logic is not set.

- (b) 22-11123 ELEV DETENT SOL FAIL

- 1) FCC(s) receive(s) no input from the Elevator Actuator-A Hydraulic Pressure Switch.

- (c) 22-11127 ELV ACT PRESS LCL INV

- 1) FCC-A receives incorrect input from the Elevator Actuator-A Hydraulic Pressure Switch.
- 2) This maintenance message can occur when the FCC-A sensed a problem with the Elevator Autopilot Actuator-A Detent Solenoid.

- (d) 22-11128 ELV ACT PRESS FGN INV

- 1) FCC-B receives incorrect input from the Elevator Actuator-A Hydraulic Pressure Switch.

- (e) 22-11535 P FLARE W/O AOC-G/A

- 1) FCC-B detects Pitch Flare valid without Approach on Course or Go-around Mode.

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B. Possible Causes

- (1) Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771
- (2) Elevator Autopilot Actuator-A, M1020
- (3) FCC-A, M1875
- (4) FCC-B, M1876

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- (5) Elevator Autopilot Actuator-A Detent Solenoid
- (6) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

D. Related Data

- (1) SSM 22-11-12
- (2) SSM 22-12-31
- (3) WDM 22-11-12
- (4) WDM 22-12-31

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance message still shows, then continue.

- (2) Do this check of the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771:

- (a) Disconnect connector D1861 from the Elevator Autopilot Actuator-A Hydraulic Pressure Switch.

NOTE: The Elevator Autopilot Actuator-A Hydraulic Pressure Switch is located on the Elevator Autopilot Actuator-A, which is located in the Tailcone, behind Access Door 318BR.

- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28V DC at pin 2 of connector D1861 (WDM 22-11-12).

- 1) If you find 28V DC, then replace the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771. These are the tasks:

- Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
- Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801
- a) Do the Repair Confirmation at the end of this task.

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- 2) If you do not find 28V DC, then examine the wiring from the Load Control Center-L (LCC-L) to the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771 as follows (WDM 22-11-12):

LCC-L (P18)	ELV A/P ACT-A
D41803P	HYD PRESS SW
D1861	D1861
pin 3	pin 2

- a) If you find a problem in the wiring, then do these steps:
- <1> Repair the wiring.
 - <2> Re-connect connector D1861.
 - <3> Do the Repair Confirmation at the end of this task.
- (3) Replace the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771. These are the tasks:
- Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
 - Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the Elevator Autopilot Actuator-A:
- (a) Disconnect connector D1681 from the Elevator Autopilot Actuator-A.
- NOTE: The Elevator Autopilot Actuator-A is located in the Tailcone, behind Access Door 318BR.
- (b) Do a Resistance check on the Elevator Autopilot Actuator-A Receptacle as follows (WDM 22-12-31):
- NOTE: The Elevator Autopilot Actuator can be different, and thus have different resistance limits.

P/N 45080-1	ELV A/P ACT-A	ELV A/P ACT-A	RESISTANCE
	D1681	D1681	
	pin 21	pin 22	79 - 115 Ω
P/N 45080	D1681	D1681	RESISTANCE
	pin 21	pin 22	49 - 80 Ω
P/N			
881600-1001	D1681	D1681	RESISTANCE
	pin 21	pin 22	71 - 77 Ω
P/N			
59600-5007 &			
59600-5011	D1681	D1681	RESISTANCE
	pin 21	pin 22	71 - 87 Ω

- 1) If the Resistance is not in the specified range, replace the Elevator Autopilot Actuator-A, M1020. These are the tasks:
- Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801

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- a) Do the Repair Confirmation at the end of this task.
- 2) If the Resistance is in the specified range, then re-connect connector D1681 and continue.
- (5) For a CH-A Fault, do these wiring checks.
 - (a) Remove FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1861 from the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771.
 - (c) Disconnect connector D1681 from the Elevator Autopilot Actuator-A, M1020.
 - (d) Examine the wiring between the FCC-A, M1875 and the Hydraulic Pressure Switch, S771 as follows (WDM 22-11-12):

CHANNEL A FAULT

FCC-A	HYD PRESS SW
D10135A	D1861
pin B13	pin 1

- (e) Examine the wiring between the FCC-A, M1875 and the Elevator Autopilot Actuator-A, M1020 as follows (WDM 22-12-31):

CHANNEL A FAULT

FCC-A	ELV A/P ACT-A
D10135A	D1681
pin D13	pin 21

ELV A/P ACT-A

D1681	
pin 2	GND
pin 22	GND

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connectors D1861 and D1681.
 - 3) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (6) For a CH-B Fault, do this wiring check.
 - (a) Remove FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1861 from the Elevator Autopilot Actuator-A Hydraulic Pressure Switch, S771.
 - (c) Examine the wiring between the FCC-B, M1876 and the Hydraulic Pressure Switch, S771 as follows (WDM 22-11-12):

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CHANNEL B FAULT

FCC-B	HYD PRESS SW
D10137A	D1861
pin K1	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Re-connect connector D1861.
 - b) Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

807. Elevator Autopilot Pressure Switch-2 Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the Flight Control Computer A (FCC-A) and Flight Control Computer B (FCC-B).

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS:

- FCC-A: J1A-K01
- FCC-B: J1A-B13

NOTE: SUSPECT Line Replaceable Unit (LRU)(S):

- ELEV DETENT SOLENOID-2
- ELEV PRESS SW-2
- FCC-A
- FCC-B

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SIA ALL; WITH COLLINS FCCs (Continued)

- (a) 22-11087 DUAL W/O FLARE H<350
 - 1) FCC-A detects that both channels are in command, R/A is less than 350' and Flare Arm Logic is not set.
- (b) 22-11124 ELEV DETENT SOL FAIL
 - 1) FCC(s) receive(s) no input from the Elevator Actuator-B Hydraulic Pressure Switch.
- (c) 22-11129 ELV ACT PRESS LCL INV
 - 1) FCC-B receives incorrect input from the Elevator Actuator-B Hydraulic Pressure Switch.
 - 2) This maintenance message can occur when the FCC-B sensed a problem with the Elevator Autopilot Actuator-B Detent Solenoid.
- (d) 22-11130 ELV ACT PRESS FGN INV
 - 1) FCC-A receives incorrect input from the Elevator Actuator-B Hydraulic Pressure Switch.
- (e) 22-11472 P FLARE W/O AOC-G/A
 - 1) FCC-A detects Pitch Flare valid without Approach on Course or Go-around Mode.

SIA ALL

B. Possible Causes

- (1) Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773
- (2) Elevator Autopilot Actuator-B, M1022
- (3) FCC-A, M1875
- (4) FCC-B, M1876
- (5) Elevator Autopilot Actuator-B Detent Solenoid
- (6) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) SSM 22-11-12
- (2) SSM 22-12-41
- (3) WDM 22-11-12
- (4) WDM 22-12-41

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

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- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message still shows, then continue.
- (2) Do this check of the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773:
 - (a) Disconnect connector D1857 from the Elevator Autopilot Actuator-B Hydraulic Pressure Switch.

NOTE: The Elevator Autopilot Actuator-B Hydraulic Pressure Switch is located on the Elevator Autopilot Actuator-B, which is located in the Tailcone, behind Access Door 318BR.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for 28V DC at pin 2 of connector D1857 (WDM 22-11-12).
 - 1) If you find 28V DC, then replace the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773. These are the tasks:
 - Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
 - Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find 28V DC, then examine the wiring from the Load Control Center-R (LCC-R) to the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773 as follows (WDM 22-11-12):

LCC-R (P6)	ELV A/P ACT-B HYD PRESS SW
D46065P	D1857
pin 12	pin 2

- a) If you find a problem in the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D1857.
 - <3> Do the Repair Confirmation at the end of this task.
- (3) Replace the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773. These are the tasks:
 - Hydraulic Pressure Switch Removal, AMM TASK 22-11-40-000-801
 - Hydraulic Pressure Switch - Installation, AMM TASK 22-11-40-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the Elevator Autopilot Actuator-B:
 - (a) Disconnect connector D1687 from the Elevator Autopilot Actuator-B.

NOTE: The Elevator Autopilot Actuator-B is located in the Tailcone, behind Access Door 318BR.

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- (b) Do a Resistance check on the Elevator Autopilot Actuator-B Receptacle as follows (WDM 22-12-41):

NOTE: The Elevator Autopilot Actuator can be different, and thus have different resistance limits.

	ELV A/P ACT-B	ELV A/P ACT-B	
P/N 45080-1	D1687	D1687	RESISTANCE
	pin 21	pin 22	79 - 115 Ω
P/N 45080	D1687	D1687	RESISTANCE
	pin 21	pin 22	49 - 80 Ω
P/N 881600-1001	D1687	D1687	RESISTANCE
	pin 21	pin 22	71 - 77 Ω
P/N 59600-5007 & 59600-5011	D1687	D1687	RESISTANCE
	pin 21	pin 22	71 - 87 Ω

- 1) If the Resistance is not in the specified range, replace the Elevator Autopilot Actuator-B, M1022. These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the Resistance is in the specified range, then re-connect connector D1687 and continue.
- (5) For a CH-B Fault, do these wiring checks.
- (a) Remove FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1857 from the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773.
 - (c) Disconnect connector D1687 from the Elevator Autopilot Actuator-B, M1022.
 - (d) Examine the wiring between the FCC-B, M1876 and the Hydraulic Pressure Switch, S773 as follows (WDM 22-11-12):

CHANNEL B FAULT

FCC-B	HYD PRESS SW
D10137A	D1857
pin B13	pin 1

- (e) Examine the wiring between the FCC-B, M1876 and the Elevator Autopilot Actuator-B, M1022 as follows (WDM 22-12-41):

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CHANNEL B FAULT

FCC-B	ELV A/P ACT-B
D10137A	D1687
pin D13	pin 21

ELV A/P ACT-B
D1687
pin 2 GND
pin 22 GND

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connectors D1857 and D1687.
 - 3) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (6) For a CH-A Fault, do this wiring check.
 - (a) Remove FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D1857 from the Elevator Autopilot Actuator-B Hydraulic Pressure Switch, S773.
 - (c) Examine the wiring between the FCC-A, M1875 and the Hydraulic Pressure Switch, S773 as follows (WDM 22-11-12):

CHANNEL A FAULT

FCC-A	HYD PRESS SW
D10135A	D1857
pin K1	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Re-connect connector D1857.
 - b) Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the PITCH SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.

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- 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

808. FCC, Column Switching Module Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) COL SW MODULE M1201 (J1C-BO2)
 - (b) COL SW MODULE M1201 (J1C-F02)
- (2) The FCC did not receive the column switching module signal as expected.

B. Possible Causes

- (1) Column switching module, M1201
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem
- (4) Elevator rigging

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

 - (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the column switching module, M1201.

These are the tasks:
Column Cutout Switch Removal, AMM TASK 27-41-51-000-801,
Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (2) If the fail message is on channel A, then do this wiring check:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the column switching module, M1201. To remove it, do this task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
 - (c) For input pin J1C-B02;

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- 1) Do this wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2257 at the column switching module.

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C.

D10135C	D2257
pin B2	pin 16

- (d) For input pin J1C-F02;

- 1) Do this wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2257 at the column switching module.

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C.

D10135C	D2257
pin F2	pin 22

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
- 4) Do the Repair Confirmation at the end of this task.

- (f) If you do not find a problem with the wiring, then continue.

- 1) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.

- (3) If the fail message is on channel B, then do this wiring check:

- (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the column switching module, M1201. To remove it, do this task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
- (c) For input pin J1C-B02;

- 1) Do this wiring check between these pins of connector D10137C at the E1-1 shelf and connector D2257 at the column switching module.

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C.

D10137C	D2257
pin B2	pin 14

- (d) For input pin J1C-F02;

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- 1) Do this wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2257 at the column switching module.

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C.

D10137C	D2257
pin F2	pin 24

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
- (4) Do the check of the Elevator, these are the tasks:

Elevator Rigging Test, AMM TASK 22-11-00-820-802

Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801

 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) SPEED/STAB TRIM 32>
 - d) EXECUTE

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- (c) If the maintenance message does not show, then you corrected the fault.

END OF TASK

809. Autopilot Disengage Switch Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (a) A/P DISC SW 1 (J1B-K07)
(b) A/P DISC SW 2 (J1B-K07)
- (2) A/P DISC SW 1 (J1B-K07), A/P DISC SW 2 (J1B-K07): Flight control computer A (FCC-A) or flight control computer B (FCC-B) or both flight control computers receives invalid input from the CAPT A/P DISENGAGE SW, S231, or F/O A/P DISENGAGE SW, S232 during the ground test.

B. Possible Causes

- (1) CAPT A/P DISENGAGE SW, S231
(2) F/O A/P DISENGAGE SW, S232
(3) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
(4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-12)
(2) (WDM 22-11-12)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.

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- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this initial check of the disengage switches and associated wiring:

- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do this check for 28 VDC between pin K7 of connector D10135B for FCC-A and structure ground:.

- 1) Push and release the CAPT A/P DISENGAGE SW, S231 located on the captains control column.

NOTE: Use two people to do this step, one person should watch the voltmeter while the other pushes the switch.

- a) Make sure there is 0 VDC at pin K7 of D10135B when the CAPT A/P DISENGAGE SW was pushed.
- b) Make sure there is 28 VDC at pin K7 of D10135B when the CAPT A/P DISENGAGE SW was released.

- 2) Push and release the F/O A/P DISENGAGE SW, S232 located on the first officers control column.

NOTE: Use two people to do this step, one person should watch the voltmeter while the other pushes the switch.

- a) Make sure there is 0 VDC at pin K7 of D10135B when the F/O A/P DISENGAGE SW was pushed.
- b) Make sure there is 28 VDC at pin K7 of D10135B when the F/O A/P DISENGAGE SW was released.

- (d) If this check is satisfactory, then do these steps:

- 1) Replace the FCC-A, M1875.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (e) If this check is not satisfactory, then continue.

- (2) Do this check of the wiring:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (b) Remove the medallion and approach plate from the captains control column and the first officers control column.
- (c) Get access to the terminal block for the disengage switch.
- (d) Do a wiring check between these pins of connector D10135B on the E1-1 rack and the terminal block for the captain's A/P disengage switch, S231 on the captain's control column:

D10135B	S231
pin K7	pin 5

- (e) Do a wiring check between these pins of the terminal block for the first officers A/P disengage switch, S232 on the first officer's control column and the terminal block for the captains A/P disengage switch, S231 on the captain's control column:

S231	S232
pin 4	pin 4

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Install the terminal block cover and the medallion and approach plate on the captains control column and the first officer's control column.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 5) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (h) Do this continuity check from pin 4 to pin 5 of the captain's A/P disengage switch, S231:
 - 1) Make sure there is continuity.
 - 2) Push the captain's A/P disengage switch, S231.
 - 3) Make sure there is no continuity.
- (i) If you find a problem with the captain's A/P disengage switch, S231, then do these steps:
 - 1) Replace the captain's A/P disengage switch, S231.

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These are the tasks:

Autopilot Disengage Switch Removal, AMM TASK 22-11-41-000-801,
Autopilot Disengage Switch Installation, AMM TASK 22-11-41-400-801.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 3) Do the Repair Confirmation at the end of this task.

- (j) If you do not find a problem with the captain's A/P disengage switch, S231, then do these steps:

- 1) Replace the first officer's A/P disengage switch, S232.

These are the tasks:

Autopilot Disengage Switch Removal, AMM TASK 22-11-41-000-801,
Autopilot Disengage Switch Installation, AMM TASK 22-11-41-400-801.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 3) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this initial check of the disengage switches and associated wiring:

- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do this check for 28 VDC between pin K7 of connector D10137B for FCC-B and structure ground.

- 1) Push and release the CAPT A/P DISENGAGE SW, S231 located on the captains control column.

NOTE: Use two people to do this step, one person should watch the voltmeter while the other pushes the switch.

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- a) Make sure there is 0 VDC at pin K7 of D10137B when the CAPT A/P DISENGAGE SW was pushed.
 - b) Make sure there is 28 VDC at pin K7 of D10137B when the CAPT A/P DISENGAGE SW was released.
- 2) Push and release the F/O A/P DISENGAGE SW, S232 located on the first officers control column.

NOTE: Use two people to do this step, one person should watch the voltmeter while the other pushes the switch.

- a) Make sure there is 0 VDC at pin K7 of D10137B when the F/O A/P DISENGAGE SW was pushed.
 - b) Make sure there is 28 VDC at pin K7 of D10137B when the F/O A/P DISENGAGE SW was released.
- (d) If this check is satisfactory, then do these steps:
- 1) Replace the FCC-B, M1876.
These are the tasks:
Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (e) If this check is not satisfactory, then continue.
- (2) Do this check of the wiring:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (b) Remove the medallion and approach plate from the captains control column and the first officers control column.
- (c) Get access to the terminal block for the disengage switch.
- (d) Do a wiring check between these pins of connector D10137B on the E1-1 rack and the terminal block for the captain's A/P disengage switch, S231 on the captain's control column:

D10137B	S231
pin K7	pin 1

- (e) Do a wiring check between these pins of the terminal block for the first officer's A/P disengage switch, S232 on the first officer's control column and the terminal block for the captain's A/P disengage switch, S231 on the captain's control column:

S231	S232
pin 2	pin 2

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- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Install the terminal block cover and the medallion and approach plate on the captain's control column and the first officer's control column.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 5) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (h) Do this continuity check from pin 1 to pin 2 of the captain's A/P disengage switch, S231:
- 1) Make sure there is continuity.
 - 2) Push the captain's A/P disengage switch, S231.
 - 3) Make sure there is no continuity.
- (i) If you find a problem with the captain's A/P disengage switch, S231, then do these steps:
- 1) Replace the captain's A/P disengage switch, S231.
- These are the tasks:
- Autopilot Disengage Switch Removal, AMM TASK 22-11-41-000-801,
Autopilot Disengage Switch Installation, AMM TASK 22-11-41-400-801.
- 2) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 3) Do the Repair Confirmation at the end of this task.
- (j) If you do not find a problem with the captain's A/P disengage switch, S231, then do these steps:
- 1) Replace the first officer's A/P disengage switch, S232.
- These are the tasks:
- Autopilot Disengage Switch Removal, AMM TASK 22-11-41-000-801,

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Autopilot Disengage Switch Installation, AMM TASK 22-11-41-400-801.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 3) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - 1) Make the selection for the channels A and B.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

810. TOGA Inputs Disagree - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins: J1A-F04

- (a) 22-11704 TOGA SW MISCOMPARE
 - 1) TOGA input is failed activated.

SIA ALL

B. Possible Causes

- (1) Thrust Lever Takeoff Go-Around Switch-1 (2), S786 (S787)
- (2) FCC-A (B), M1875 (M1876)
- (3) Wiring

C. Related Data

- (1) SSM 22-11-14
- (2) WDM 22-11-14

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D. Initial Evaluation

- (1) Do this check of the Takeoff/Go-Around (TO/GA) Switch-1 (2), S786 (S787):
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Find the CDU display that shows the input discrete for the TO/GA.
 - 1) Push the LSK adjacent to INPUT DISCRETES.
 - 2) Follow the instructions on the CDU.
NOTE: This test checks numerous inputs of the A/T system. If a fault does occur during the tests troubleshooting tips will be displayed at test completion.
 - 3) Make sure that the TEST PASSED shows on the CDU.
 - 4) Push the LSK adjacent to INDEX to return to the INTERACTIVE INDEX page.
 - (h) If the TO/GA Switch is satisfactory, then there was an intermittent fault.
 - (i) If the TO/GA Switch is not satisfactory, then do the Fault Isolation Procedures below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) If the maintenance message shows and the fault is on Channel A, then do this wiring check:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the Captain's TO/GA Switch, S786 connector D8313P from D8313J, at the connection point.
 - (c) Examine the wiring between the FCC-A, M1875 at the E1-1 Shelf and the Captain's TO/GA Switch, S786 at the Control Stand as follows (WDM 22-11-14):

FCC-A, M1875

D10135A

pin F4 pin 1

CAPT TOGA

SW, S786

D8313P

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CAPT TOGA

SW, S786

D8313P

pin 2 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8313P.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message shows and the fault is on Channel A, then do this wiring check:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the First Officer (F/O) TO/GA Switch, S787 connector D8313P from D8313J, at the connection point.
 - (c) Examine the wiring between the FCC-A, M1875 at the E1-1 Shelf and the F/O TO/GA Switch, S787 at the Control Stand as follows (WDM 22-11-14):

FCC-A, M1875	F/O TOGA SW,
D10135A	S787
D8313P	D8313P
pin F4	pin 11

F/O TOGA SW,

S787

D8313P

pin 12 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8313P.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message shows and the fault is on Channel B, then do this wiring check:

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- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) On the Control Stand, disconnect the Captain's TO/GA Switch, S786 connector D8315P from D8315J, at the connection point.
- (c) Examine the wiring between the FCC-B, M1876 at the E1-4 Shelf and the Captain's TO/GA Switch, S786 at the Control Stand as follows (WDM 22-11-14):

FCC-B, M1876	CAPT TOGA
D10137A	SW, S786
	D8315P
pin F4	pin 1

CAPT TOGA
SW, S786
D8315P
pin 2 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8315P.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8315P.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message shows and the fault is on Channel B, then do this wiring check:
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the F/O TO/GA Switch, S787 connector D8315P from D8315J, at the connection point.
 - (c) Examine the wiring between the FCC-B, M1876 at the E1-4 Shelf and the F/O TO/GA Switch, S787 at the Control Stand as follows (WDM 22-11-14):

FCC-B, M1876	F/O TOGA SW,
D10137A	S787
	D8315P
pin F4	pin 11

F/O TOGA SW,
S787
D8315P
pin 12 GND

- 1) If you find a problem with the wiring, then do these steps:

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- a) Repair the wiring.
 - b) Re-connect connector D8315P.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
- a) Re-connect connector D8315P.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Replace the TO/GA Switch-1 (2), S786 (S787). These are the tasks:
- Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the TO/GA Switch-1 (2), S786 (S787):
- (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Find the CDU display that shows the input discrete for the TO/GA.
 - 1) Push the LSK adjacent to INPUT DISCRETES.
 - 2) Follow the instructions on the CDU.
NOTE: This test checks numerous inputs of the A/T system. If a fault does occur during the tests troubleshooting tips will be displayed at test completion.
 - 3) Make sure that the TEST PASSED shows on the CDU.
 - 4) Push the LSK adjacent to INDEX to return to the INTERACTIVE INDEX page.
 - (h) If the TO/GA Switch is satisfactory, then there was an intermittent fault.
 - (i) If the TO/GA Switch is not satisfactory, then do the Fault Isolation Procedures below.

————— **END OF TASK** —————

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811. TOGA Input is Failed Activated - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins: J1A-F04

- (a) 22-11705 TOGA FAIL ACTIVE

- 1) TOGA input is failed activated.

SIA ALL

B. Possible Causes

- (1) Thrust Lever Takeoff Go-Around Switch-1 (2), S786 (S787)
(2) FCC-A (B), M1875 (M1876)
(3) Wiring

C. Related Data

- (1) SSM 22-11-14
(2) WDM 22-11-14

D. Initial Evaluation

- (1) Do this check of the TO/GA Switch-1, S786:
- (a) Make sure that the A/T BITE TEST Index shows on the CDU.
- (b) If you are not at the A/T BITE TEST Index, then do these steps:
- 1) On the CDU, push the INIT REF function key.
- 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
- 3) Push the LSK adjacent to MAINT.
- 4) Push the LSK adjacent to A/T.
- 5) Make sure that the A/T BITE TEST Index shows on the CDU.
- (c) Push the LSK adjacent to INTERACTIVE.
- (d) Push the LSK adjacent to INPUT DISCRETES.
- (e) Read the instructions on the CDU.
- (f) Push the NEXT PAGE key.
- (g) Push and hold the TO/GA Switch on Thrust Lever 1.
- 1) Make sure that the CDU indication adjacent to TO/GA changes from NOT PRESSED to PRESSED.
- (h) Release the TO/GA Switch on Thrust Lever 1.
- 1) Make sure that the CDU indication adjacent to TO/GA changes from PRESSED to NOT PRESSED.

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- (i) If the TO/GA Switch is satisfactory, then there was an intermittent fault.
- (j) If the TO/GA Switch is not satisfactory, then do the Fault Isolation Procedures below.
- (2) Do this check of the TO/GA Switch-2, S787:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Push and hold the TO/GA Switch on Thrust Lever 2.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from NOT PRESSED to PRESSED.
 - (h) Release the TO/GA Switch on Thrust Lever 2.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from PRESSED to NOT PRESSED.
 - (i) If the TO/GA Switch is satisfactory, then there was an intermittent fault.
 - (j) If the TO/GA Switch is not satisfactory, then do the Fault Isolation Procedures below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) If the maintenance message shows and the fault is on Channel A, then do this wiring check:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the Captain's TO/GA Switch, S786 connector D8313P from D8313J, at the connection point.
 - (c) Examine the wiring between the FCC-A, M1875 at the E1-1 Shelf and the Captain's TO/GA Switch, S786 at the Control Stand as follows (WDM 22-11-14):

FCC-A, M1875	CAPT TOGA
D10135A	SW, S786
D10135A	D8313P
pin F4	pin 1

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**CAPT TOGA
SW, S786
D8313P**

pin 2 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8313P.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message shows and the fault is on Channel A, then do this wiring check:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the F/O TO/GA Switch, S787 connector D8313P from D8313J, at the connection point.
 - (c) Examine the wiring between the FCC-A, M1875 at the E1-1 Shelf and the F/O TO/GA Switch, S787 at the Control Stand as follows (WDM 22-11-14):

FCC-A, M1875	F/O TOGA SW,
D10135A	S787
D8313P	D8313P
pin F4	pin 11

**F/O TOGA SW,
S787
D8313P**

pin 12 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8313P.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8313P.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message shows and the fault is on Channel B, then do this wiring check:

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- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) On the Control Stand, disconnect the Captain's TO/GA Switch, S786 connector D8315P from D8315J, at the connection point.
- (c) Examine the wiring between the FCC-B, M1876 at the E1-4 Shelf and the Captain's TO/GA Switch, S786 at the Control Stand as follows (WDM 22-11-14):

FCC-B, M1876	CAPT TOGA
D10137A	SW, S786
	D8315P
pin F4	pin 1

CAPT TOGA
SW, S786
D8315P
pin 2 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D8315P.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D8315P.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) If the maintenance message shows and the fault is on Channel B, then do this wiring check:
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) On the Control Stand, disconnect the F/O TO/GA Switch, S787 connector D8315P from D8315J, at the connection point.
 - (c) Examine the wiring between the FCC-B, M1876 at the E1-4 Shelf and the F/O TO/GA Switch, S787 at the Control Stand as follows (WDM 22-11-14):

FCC-B, M1876	F/O TOGA SW,
D10137A	S787
	D8315P
pin F4	pin 11

F/O TOGA SW,
S787
D8315P
pin 12 GND

- 1) If you find a problem with the wiring, then do these steps:

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- a) Repair the wiring.
 - b) Re-connect connector D8315P.
 - c) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
- a) Re-connect connector D8315P.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Replace the TO/GA Switch-1 (2), S786 (S787). These are the tasks:
- Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the TO/GA Switch-1, S786:
- (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Push and hold the TO/GA Switch on Thrust Lever 1.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from NOT PRESSED to PRESSED.
 - (h) Release the TO/GA Switch on Thrust Lever 1.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from PRESSED to NOT PRESSED.
 - (i) If the TO/GA Switch is satisfactory, then you corrected the problem.
 - (j) If the TO/GA Switch is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.
- (2) Do this check of the TO/GA Switch-2, S787:
- (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) On the CDU, push the INIT REF function key.



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- 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
- 3) Push the LSK adjacent to MAINT.
- 4) Push the LSK adjacent to A/T.
- 5) Make sure that the A/T BITE TEST Index shows on the CDU.
- (c) Push the LSK adjacent to INTERACTIVE.
- (d) Push the LSK adjacent to INPUT DISCRETES.
- (e) Read the instructions on the CDU.
- (f) Push the NEXT PAGE key.
- (g) Push and hold the TO/GA Switch on Thrust Lever 2.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from NOT PRESSED to PRESSED.
- (h) Release the TO/GA Switch on Thrust Lever 2.
 - 1) Make sure that the CDU indication adjacent to TO/GA changes from PRESSED to NOT PRESSED.
- (i) If the TO/GA Switch is satisfactory, then you corrected the problem.
- (j) If the TO/GA Switch is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

812. Gear Up Switch Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (a) GEAR UP SW 1 (J1B-J05)
- (b) GEAR UP SW 2 (J1B-J05)
- (c) PROX SW ELEX UNIT (J1B-J05)
- (2) GEAR UP SW 1 (J1B-J05): The flight control computer A (FCC-A) receives invalid data or no data from the proximity switch electronics unit, M2061 during the ground test.
- (3) GEAR UP SW 2 (J1B-J05): The flight control computer B (FCC-B) receives invalid data or no data from the proximity switch electronics unit, M2061 during the ground test.

B. Possible Causes

- (1) Proximity switch electronics unit (PSEU), M2061
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

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C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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

D. Related Data

- (1) (SSM 22-11-12)
(2) (WDM 22-11-12)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
(b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this initial check of the PSEU (gear down switch) and associated wiring:
- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Make sure that these circuit breakers are closed:

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

- (c) Do a check for continuity between D10135B pin J5 and ground.
- (d) If there is continuity between pin J5 of D10135B and ground, then do these steps:
- 1) Replace the FCC-A, M1875.
- These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Do the Repair Confirmation at the end of this task.

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- (e) If there is not continuity between pin J5 of D10135B and ground, then continue.
- (2) Do this check of the wiring:
- (a) 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

- (b) Disconnect connector D10982 from the PSEU, M2061.
- NOTE: You get access to the PSEU, M2061, through the forward access door 112A.
- (c) Do a wiring check between these pins of connector D10135B on the E1-1 rack and connector D10982 removed from the PSEU:

D10135B	D10982
pin J5	pin 10

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D10982 to the PSEU, M2061.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Replace the PSEU, M2061.

These are the tasks:

Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801,
Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

- (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this initial check of the PSEU (gear down switch) and associated wiring:
- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Make sure that these circuit breakers are closed:

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

- (c) Do a check for continuity between D10137B pin J5 and ground.
(d) If there is continuity between pin J5 of D10137B and ground, then do these steps:
- 1) Replace the FCC-B, M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (e) If there is not continuity between pin J5 of D10137B and ground, then continue.

- (2) Do this check of the wiring:

- (a) 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

- (b) Disconnect connector D10984 from the PSEU, M2061.

NOTE: You get access to the PSEU, M2061, through the Forward Access Door 112A.

- (c) Do a wiring check between these pins of connector D10137B on the E1-4 rack and connector D10984 removed from the PSEU:

D10137B	D10984
pin J5	pin 10

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D10984 to the PSEU, M2061.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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) Do the Repair Confirmation at the end of this task.

- (e) If you do not find a problem with the wiring, then continue.

- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- (3) Replace the PSEU, M2061.

These are the tasks:

Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801,

Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

- (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:

- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.

- 1) If the maintenance message does not show, then you corrected the fault.

- (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.

- 1) Make the selection for the channels A and B.

- 2) Make the selection for the DME test.

- (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

813. Stab Trim Cutout Relay Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

- (a) STAB TRIM CUTOUT RELAY

- (b) TRIM CUTOUT (J1C-B03)

- (2) The FCC does not detect the Stab Trim Cutout Relay when you switch it to cutout.

B. Possible Causes

- (1) Stab Trim Cutout Relay, R384

- (2) A/P Trim Cutout Switch, S149

- (3) IFSAU, M1474

- (4) FCC-A (B), M1875 (M1876)

- (5) Circuit Breaker (CB), C1048 (C716)

- (6) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

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D. Related Data

- (1) SSM 22-13-11
- (2) WDM 22-13-11
- (3) WDM 22-11-12

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (2) Use the CDU to do the DFCS BITE Library Test. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE
 - (b) If the maintenance message does not show, then there was an intermittent fault.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this check for power at the Stab Trim Cutout Relay (WDM 22-13-11):
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (b) Make sure that the A/P Trim Cutout Switch is in the NORMAL position.
- (c) Remove the Right Lower Side Panel on the Control Stand, P8.
- (d) Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
- (e) Do a check of the connector and sockets for bent or broken pins, dirt and damage.

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (g) Do a check for 28 Volts Direct Current (VDC) between pin X1 of connector D2485 and Structure Ground.
- 1) If there is 28 VDC at pin X1, then do these steps:
- a) Do a check for continuity at pin X2 of connector D2485 and Structure Ground.
 - <1> If there is continuity, then replace the A/P Trim Cutout Switch, S149.
 - <2> If there is no continuity, then continue.
 - b) Put the A/P Trim Cutout Switch in the CUTOOUT position.
 - c) Do a check for continuity at pin X2 of connector D2485 and Structure Ground.
 - <1> If there is no continuity, then replace the A/P Trim Cutout Switch, S149.
 - <2> If there is continuity, then replace the Stab Trim Cutout Relay, R384.
 - d) Do the Repair Confirmation at the end of this task.
 - e) Remove the appropriate FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - f) Do a wiring check between this pin of connector D10135C (or D10137C for FCC B) at the E1-1 (E1-4) Shelf, and connector D2485 at the Control Stand, P8 as follows:

**FLIGHT
CONTROL
COMPUTER - A
(B), M1875
(M1876)
D10135C
(D10137C)
pin B3**

**STAB TRIM
CUTOOUT
RELAY, R384

D2485
pin B2**

- <1> If you find a problem with the wiring, then do these steps.
 - <a> Repair the wiring.
 - Re-connect connector D2485.
 - <c> Re-install the Right Lower Side Panel on the Control Stand, P8.
 - <d> Re-install the appropriate FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <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-connect connector D2485.

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- Re-install the Right Lower Side Panel on the Control Stand, P8.
- <c> Re-install the appropriate FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 2) If there is no 28 VDC at pin X1, then do these steps and continue:
 - a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- b) Re-connect connector D2485.
- c) Re-install the Right Lower Side Panel on the Control Stand, P8.

- (3) Do this check for power at the IFSAU (WDM 22-11-12):

- (a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- (b) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- (c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (d) Do a check for 28 VDC between pins 107 of connector D2209A and D2209B and Structure Ground (WDM 22-11-12).
 - 1) If there is no 28 VDC at pins 107, then do these steps:
 - a) Do the applicable wiring check between the IFSAU, M1474 and these circuit breakers as follows:

INTEG FLT SYS

**ACCESS UNIT,
M1474**

D2209A

pin 107 term =L

**AFCS -A ENGA
INTLK (D3)**

C1048

INTEG FLT SYS

**ACCESS UNIT,
M1474**

D2209B

pin 107 term =L

**AFCS -B ENGA
INTLK (B4)**

C716

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- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - <c> 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> Replace these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- <c> Do the Repair Confirmation at the end of this task.

2) If there is 28 VDC at the pins 107, then continue.

(4) Do a check of the wiring (WDM 22-13-11):

(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (b) Remove the Right Lower Side Panel on the Control Stand, P8.
- (c) Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
- (d) Do a wiring check between the IFSAU, M1474 and Stab Trim Cutout Relay, R384 as follows:

**INTEG FLT SYS
ACCESS UNIT,
M1474
D2209A
pin 121**

**STAB TRIM
CUTOUT
RELAY, R384
D2485
pin X1**

- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-connect connector D2485.

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- c) Re-install the Right Lower Side Panel on the Control Stand, P8.
 - d) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 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:
- a) Re-connect connector D2485.
 - b) Re-install the Right Lower Side Panel on the Control Stand, P8.
 - c) Install a new IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the CDU to do the DFCS BITE Library Test. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
- (a) Make these selections on the CDU:
- <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE
- (b) If the maintenance message does not show, then you have corrected the problem.
- (c) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

814. STAB TRIM WARN Light Problem - Fault Isolation

A. Description

- (1) This task is for the maintenance message: TRIM WARN ANN (J1C-D02)
- NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
- (2) TRIM WARN ANN (J1C-D02): During the Ground Test, the FCC sets the STAB TRIM WARN signal HIGH and then LOW. During the test, the CDU prompts the operator, "IS THE STAB OUT OF TRIM WARN ANN ON/OFF?".
- (a) If the operator answers "NO" to either question, the FCC sets the flag for this message.

B. Possible Causes

- (1) Lamp
- (2) STAB TRIM WARN Light, L4
- (3) Flight Control Computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring problem

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) SSM 22-13-11
- (2) SSM 22-14-12
- (3) SSM 33-18-21
- (4) WDM 22-13-11

E. Initial Evaluation

- (1) Do the DFCS BITE Procedure (22-11 TASK 801).

NOTE: When the DFCS BITE test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA. If necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent problem.

F. Fault Isolation Procedure

NOTE: Resetting this circuit breaker resets the internal STM logic.

- (1) Open this circuit breaker, wait for at least 10 seconds, then close the circuit breaker.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- (2) Do the DFCS BITE Procedure (22-11 TASK 801).
 - (a) If the maintenance message does not show, then there was an intermittent problem.
 - (b) If the maintenance message shows, continue.
- (3) Do a check of the lamps in the STAB TRIM WARN Light, L4 located on the P1-3 Panel:
 - (a) If necessary, replace the lamp(s). This is the task: Indicator Light - Lamp Replacement, AMM TASK 33-18-00-960-801.
 - 1) Do the Repair Confirmation at the end of this task.
- (4) Replace the STAB TRIM WARN Light, L4 located on the P1-3 Panel. This is the task: Indicator Light - Light Assembly Replacement, AMM TASK 33-18-00-960-802.
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (6) If the maintenance message is on Channel A, then do this wiring check (WDM 22-13-11):

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- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the Integrated Flight System Accessory Unit, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- (c) Disconnect connector D423 from the Captain's Main Instrument Panel, P1-3.
NOTE: The P1-3 Panel is installed in the flight compartment. The connectors are installed on the rear of the panel.
- (d) Do a wiring check between these pins of connector D10135C on the E1-1 Rack and connector D423 removed from the P1-3 Panel:

D10135C	D423
pin D2	pin 29

- 1) If you find a problem with the wiring, then repair the wiring.
 - (e) Re-connect connector D423 to the Captain's Main Instrument Panel, P1-3.
 - (f) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (g) Re-install the Integrated Flight System Accessory Unit, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - (h) Do the Repair Confirmation at the end of this task.
- (7) If the maintenance message is on Channel B, then do this wiring check (WDM 22-13-11):
- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Integrated Flight System Accessory Unit, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Disconnect connector D895 from the Captain's Main Instrument Panel, P1-3.
NOTE: The P1-3 Panel is installed in the flight compartment. The connectors are installed on the rear of the panel.
 - (d) Do a wiring check between these pins of connector D10137C on the E1-4 rack and connector D895 removed from the P1-3 Panel:

D10137C	D895
pin D2	pin 10

- 1) If you find a problem with the wiring, then repair the wiring.
- (e) Re-connect connector D895 to the Captain's Main Instrument Panel, P1-3.
- (f) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (g) Re-install the Integrated Flight System Accessory Unit, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (h) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the problem.

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- (b) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
- Make the selection for the Channels A and B.
 - Make the selection for the STAB SENS Test.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows continue this Fault Isolation Procedure at the subsequent step.

END OF TASK

815. Mach Trim Position Sensor Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1C-E04,D04

NOTE: Suspect LRU: MT ACT

- (a) 22-11202 MT POS INV

- 1) FCC(s) receive invalid input from the Position Sensor in the Mach Trim Actuator during the BITE.

SIA ALL

B. Possible Causes

- (1) Mach Trim Actuator, M414
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Integrated Flight System Accessory Unit (IFSAU), M1474
- (5) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC
D	2	C01045	AFCS SYS A FCC DC
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	1	C01037	AFCS SYS B MACH TRIM AC

D. Related Data

- (1) WDM 22-18-11
- (2) SSM 22-18-11

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the MACH TRIM RIGGING TEST:
 - (a) From the CDU use the Line Select Key (LSK) and select the items that follow:
 - 1) INDEX
 - 2) MAINT
 - 3) DFCS
 - 4) EXTENDED MAINTENANCE
 - 5) RIGGING
 - 6) MACH TRIM
 - 7) Do the maintenance instructions that show on the CDU display to complete the test.
 - (b) After the MACH TRIM RIGGING TEST is completed, do these steps:
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (3) Do this wiring check:
 - (a) Remove the FCC-A, M1875 and FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - (c) Disconnect connector D545 from the Mach Trim Actuator, M414 (STA 1164 WL 276 RBL 0).

NOTE: You get access to the Mach Trim Actuator, M414, through the Tailcone Access Door.

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- (d) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- (e) Do a check for 115 VAC at connector D10135C, pins A5 and B5.

- (f) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- (g) If 115 VAC was not present, then do the step that follows:

- 1) Repair the wiring from the above listed circuit breaker or replace the circuit breaker if required.

- (h) Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- (i) Do a check for 28 VDC at connector D10135C, pin 53.

- (j) Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- (k) If 28 VDC was not present, then do the step that follows:

- 1) Repair the wiring from the above listed circuit breaker or replace the circuit breaker if required.

- (l) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

- (m) Do a check for 115 VAC at connector D10137C, pins A5 and B5.

- (n) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

- (o) If 115 VAC was not present, then do the step that follows:

- 1) Repair the wiring from the above listed circuit breaker or replace the circuit breaker if required.

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- (p) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- (q) Do a check for 28 VDC at connector D10137C, pin 53 and connector D2209B, pin 39.

- (r) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- (s) If 28 VDC was not present, then do the step that follows:

- 1) Repair the wiring from the above listed circuit breaker or replace the circuit breaker if required.

- (t) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D545 removed from the Mach Trim Actuator, M414:

D10135C	D545
pin E4	pin 26
pin D4	pin 25

- 1) If you find a problem with the wiring, then repair the wiring.

- (u) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D545 removed from the Mach Trim Actuator, M414:

D10137C	D545
pin E4	pin 26
pin D4	pin 25

- 1) If you find a problem with the wiring, then repair the wiring.

- (v) Do a wiring check between these pins of connector D2209A at the E1-1 shelf and connector D545 removed from the Mach Trim Actuator, M414:

D2209A	D545
pin 61	pin 24
pin 58	pin 6
pin 59	pin 3

- 1) If you find a problem with the wiring, then repair the wiring.

- (w) Do a check for continuity to ground at pin 23 and pin 1 of connector D545.

- 1) If there is no continuity, then repair the wiring.

- (x) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2209A at the E1-1 shelf:

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D10135C

pin D1		pin 45
pin B1		pin 42
pin A1		pin 43

D2209A

- 1) If you find a problem with the wiring, then repair the wiring.
- (y) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2209B at the E1-1 shelf:

D10137C

pin D1	.....	pin 45
pin B1	.....	pin 42
pin A1	.....	pin 43

D2209B

- 1) If you find a problem with the wiring, then repair the wiring.
- (z) Re-connect connector D545 to the Mach Trim Actuator, M414.
- (aa) Re-install the two FCCs. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (ab) Re-install the Integrated Flight System Accessory Unit, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (ac) Do the Repair Confirmation at the end of this task.
- (4) Replace the Mach Trim Actuator, M414. These are the tasks:
 - Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
 - Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the MACH TRIM TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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816. MACH TRIM FAIL Light Problem - Fault Isolation

A. Description

- (1) This task is for the maintenance message: MT FAIL ANN (J1C-J03)

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (2) MT FAIL ANN (J1C-J03): During ground test the FCC sets the MACH TRIM WARN signal low and then high. The CDU prompts the operator during the test, "IS THE MACH TRIM FAIL ANN (P5-3) ON/OFF", if the operator answers "NO" to either question, the FCC sets the flag for this message.

B. Possible Causes

- (1) Lamp
- (2) MACH TRIM FAIL light
- (3) Flight controls module, P5-3
- (4) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (5) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) (SSM 22-18-11)
- (2) (WDM 22-18-11)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do a check of the lamps in the MACH TRIM FAIL Light located on the P5-3 panel:
 - (a) If any of the lamps need to be replaced, do this task: Indicator Light - Lamp Replacement, AMM TASK 33-18-00-960-801.
 - 1) Do the Repair Confirmation at the end of this task.

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- 2) If the Repair Confirmation is not satisfactory, then continue.
- (b) If none of the lamps need to be replaced, then continue.
- (2) Replace the MACH TRIM FAIL light located on the P5-3 panel, do this task: Indicator Light - Light Assembly Replacement, AMM TASK 33-18-00-960-802.
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Replace the flight controls module, P5-3.
- These are the tasks:
- Flight Controls Panel Removal, AMM TASK 27-09-45-000-801,
Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance message shows, then continue.
- (5) If the maintenance message is on channel A, then do this wiring check:
- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect connector D630 from the flight controls module, P5-3.
- NOTE: The P5-3 panel is installed on the P5 overhead panel in the flight compartment.
- (c) Do a wiring check between these pins of connector D10135C on the E1-1 rack and connector D630 removed from the P5-3 panel:

D10135C	D630
pin J3	pin 2

- 1) If you find a problem with the wiring, then repair the wiring.
- (d) Re-connect connector D630 to the flight controls module, P5-3.
- (e) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (f) Do the Repair Confirmation at the end of this task.
- (6) If the maintenance message is on channel B, then do this wiring check:
- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect connector D624 from the flight controls module, P5-3.
- NOTE: The P5-3 panel is installed on the P5 overhead panel in the flight compartment.
- (c) Do a wiring check between these pins of connector D10137C on the E1-4 rack and connector D624 removed from the P5-3 panel:

D10137C	D624
pin J3	pin 36

- 1) If you find a problem with the wiring, then repair the wiring.
- (d) Re-connect connector D624 to the flight controls module, P5-3.

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- (e) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (f) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the MACH TRIM test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

817. SPEED TRIM FAIL Light Problem - Fault Isolation

A. Description

- (1) This task is for the maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
- (a) ST FAIL ANN (J1C-H02)
- (2) ST FAIL ANN (J1C-H02): During ground test the FCC sets the SPD TRIM WARN signal low and then high. The CDU prompts the operator during the test, "IS THE SPD TRIM FAIL ANN (P5-3) ON/OFF", if the operator answers "NO" to either question, the FCC sets the flag for this message.

B. Possible Causes

- (1) Lamp
- (2) SPEED TRIM FAIL light
- (3) Flight controls module, P5-3
- (4) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (5) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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D. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Reset the following circuit breaker.

NOTE: Resetting this circuit breaker is resetting the internal STM logic.
Open circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- (2) Do a Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) check for Flight Deck Effect Fault Speed Trim.
 - (a) If no fault message show, then there was an intermittent fault.
 - (b) If fault message shows, continue.
- (3) Do a check of the lamps in the SPEED TRIM FAIL light located on the P5-3 panel:
 - (a) If any of the lamps need to be replaced, do this task: Indicator Light - Lamp Replacement, AMM TASK 33-18-00-960-801.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If none of the lamps need to be replaced, then continue.
- (4) Replace the SPEED TRIM FAIL light located on the P5-3 panel, do this task: Indicator Light - Light Assembly Replacement, AMM TASK 33-18-00-960-802.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (5) Replace the flight controls module, P5-3,

These are the tasks:

Flight Controls Panel Removal, AMM TASK 27-09-45-000-801,

Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

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- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (6) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (7) If the maintenance message is on channel A, then do this wiring check:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D630 from the flight controls module, P5-3.
NOTE: The P5-3 panel is installed on the P5 overhead panel in the flight compartment.
 - (c) Do a wiring check between these pins of connector D10135C on the E1-1 rack and connector D630 removed from the P5-3 panel:

D10135C	D630
pin H2	pin 1

- 1) If you find a problem with the wiring, then repair the wiring.
 - (d) Re-connect connector D630 to the flight controls module, P5-3.
 - (e) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (f) Do the Repair Confirmation at the end of this task.
- (8) If the maintenance message is on channel B, then do this wiring check:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D624 from the flight controls module, P5-3.
NOTE: The P5-3 panel is installed on the P5 overhead panel in the flight compartment.
 - (c) Do a wiring check between these pins of connector D10137C on the E1-4 rack and connector D624 removed from the P5-3 panel:

D10137C	D624
pin H2	pin 38

- 1) If you find a problem with the wiring, then repair the wiring.
 - (d) Re-connect connector D624 to the flight controls module, P5-3.
 - (e) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (f) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.

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- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

818. Stab Trim Relay Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance messages:

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- (a) 22-11176 STAB TRIM MAIN ELECT
- (b) 22-11208 MAIN ELECT TRIM

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- (2) The FCC does not receive 28 VDC Power from the ENGAGE INTERLINK circuit breakers.
- (3) This fault can be caused by a Flight Crew operation.
 - (a) If the pilot uses the Main Electric Trim immediately before requesting autopilot engagement, the autopilot may not engage because it detects manual trim applied.

B. Possible Causes

- (1) Main ELEC Stab Trim Relay, R64
- (2) Integrated Flight System Accessory Unit (IFSAU), M1474
- (3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2

D. Related Data

- (1) WDM 22-13-11
- (2) SSM 22-13-11

E. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below: This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE
 - (b) If the maintenance message does not show, then there was an intermittent fault.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.

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NOTE: If the INTERACTIVE TEST 32 shows TEST FAILED and only maintenance messages 22-11176 and 22-11216 show on the CDU Display, then ignore this failure. This is a nuisance fault.

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F. Fault Isolation Procedure

- (1) Do this check for power at the FCC-A (B), M1875 (M1876) (WDM 22-13-11):
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2

- (c) Do a check of the applicable connector and pin for any problems:
 - 1) If FCC-A was removed, check connector D10135C pin D3
 - 2) If FCC-B was removed, check connector D10137C, pin D3
 - 3) Repair any problems if found.
 - (d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2

- (e) Make sure that the Trim Cutout Switches are in the NORMAL position.
 - (f) Make sure that the Main Electric Trim Switches on the control wheels are not being operated.
 - (g) Do a check for 28V DC between pin D3 of the FCC-A (B), M1875 (M1876) of connector, D10135C (D10137C) and Ground.
 - 1) If you do not find 28V DC at pin D3, then do these steps:
 - a) Disconnect the connector D40610P from the J4 junction box.
 - b) Do a check for 28V DC between pin 12 of connector D40610P and ground.
 - <1> If you find 28VDC at connector D40610P pin 12, then do these steps:
 - <a> Replace the Main ELEC Stab Trim Relay, R64
 - Re-install the applicable FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <c> Re-install connector D40610P to the J4 junction box

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- <d> Do the Repair Confirmation at the end of this task.
- <2> If you do not find 28VDC at connector D40610P pin 12, then do these steps:
 - <a> Replace the IFSAU, M1474
 - Re-install the applicable FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <c> Re-install connector D40610P to the J4 junction box
 - <d> Do the Repair Confirmation at the end of this task.
- 2) If you find 28VDC at pin D3, then continue.
- 3) Do this check of the wiring (WDM 22-13-11):
 - a) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801

FCC-A, M1875	IFSAU, M1474
D10135C	D2209A
D3	121

FCC-B, M1876	IFSAU, M1474
D10137C	D2209A
D3	121

- <1> If you do not find continuity, then do these steps:
 - <a> Repair the wiring
 - Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - <c> Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <d> Do the Repair Confirmation at the end of this task.
- <2> If you find continuity, then continue.
- 4) Do a voltage check at the IFSAU. The correct voltage is 28V DC (WDM 22-11-12):
 - a) Remove the IFSAU. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	3	C01631	AFCS INTLK 2

- c) Do a check for 28V DC between pin 107 of the IFSAU connector, D2209A and ground.

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- <1> If you find 28V DC at pin 107, then replace the IFSAU. These are the tasks:
- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- <a> Do the Repair Confirmation at the end of this task.
- <2> If you do not find 28V DC at pin 107, then do these steps:
- <a> Repair the wiring.
- Re-install the IFSAU. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- <c> Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below: This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - EXECUTE
 - (b) If the maintenance message does not show, then you have corrected the problem.
 - (c) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

819. Wheel Spin Switch-1 Problem - Fault Isolation

A. Description

- (1) This task is for maintenance message:
 - (a) WHEEL SPIN-1 (J1A-J10)

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
 - (b) WHEEL SPIN-1 (J1A-J10): Flight control computer A (FCC-A) receives no input from the AUTOMATIC SPEEDBRAKE MODULE during the ground test.

B. Possible Causes

- (1) Automatic speedbrake module, M980
- (2) Wiring problem
- (3) Flight control computer A (FCC- A), M1875

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C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-12)
- (2) (WDM 22-11-12)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this check of the wheel spin switch, which is located inside the automatic speedbrake module, M980:
 - (a) Remove the automatic speedbrake module. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28 VDC between pin 56 of connector D2586B and A/P electrical ground (WDM 22-11-12).
- (d) If there is not 28 VDC at pin 56 of connector D2586B, then do these steps:
 - 1) Disconnect connector D41125P from D41125J at the E1-1 shelf.
 - 2) Do a continuity check between these pins of connector D2586B and connector D41125P:

D2586B	D41125P
pin 56	pin A11

- 3) If there is not continuity, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - c) Re-connect connector D41125P.

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- d) Do the Repair Confirmation at the end of this task.
- (e) If there is 28 VDC at pin 56 of connector D2586B, then continue.
 - 1) Re-connect connector D41125P.
- (3) Install a new automatic speedbrake module, M980, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do these wiring checks between the automatic speedbrake module, M980, and FCC-A.
 - (a) Remove the automatic speedbrake module. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (b) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a wiring check between these pins of connector D10135A on the E1-1 shelf and connector D2586B on the E4-2 shelf (WDM 22-11-12):

D10135A	D2586B
pin J10	pin 55

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-A. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-A. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for channel A and B.
 - 2) Make the selection for the FCC LRU Replacement test.
 - (c) If the maintenance messages do not show, then you corrected the fault.

———— **END OF TASK** ————

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820. Wheel Spin Switch-2 Problem - Fault Isolation

A. Description

(1) This task is for maintenance message:

(a) WHEEL SPIN-2 (J1A-J10)

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

(b) WHEEL SPIN-2 (J1A-J10): Flight control computer B (FCC-B) receives no input from the AUTOMATIC SPEEDBRAKE MODULE during the ground test.

B. Possible Causes

- (1) Automatic speedbrake module, M980
- (2) Wiring problem
- (3) Flight control computer B (FCC-B), M1876

C. Circuit Breakers

(1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-12)
- (2) (WDM 22-11-12)

E. Initial Evaluation

(1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this check of the wheel spin switch, which is located inside the automatic speedbrake module, M980:
 - (a) Remove the automatic speedbrake module. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.

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- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for 28 VDC between pin 55 of connector D2586A and A/P electrical ground (WDM 22-11-12).
- (d) If there is not 28 VDC at pin 55 of connector D2586A, then do these steps:
- 1) Disconnect connector D40490J from D40490P at the E1-4 shelf.
 - 2) Do a continuity check between these pins of connector D2586A and connector D40490J:

D2586A	D40490J
pin 55	pin 10

- 3) If there is no continuity, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - c) Re-connect connector D40490J.
 - d) Do the Repair Confirmation at the end of this task.
- (e) If there is 28 VDC at pin 55 of connector D2586A, then continue.
 - 1) Re-connect connector D40490J.
- (3) Install a new automatic speedbrake module, M980, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do these wiring checks between the automatic speedbrake module, M980, and FCC-B:
 - (a) Remove the automatic speedbrake module. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (b) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a wiring check between these pins of connector D10137A on the E1-4 shelf and connector D2586A on the E4-2 shelf (WDM 22-11-12):

D10137A	D2586A
pin J10	pin 53

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install FCC-B. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-B. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Re-install the automatic speedbrake module. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for channel A and B.
 - 2) Make the selection for the FCC LRU Replacement test.
 - (c) If the maintenance messages do not show, then you corrected the fault.

————— **END OF TASK** —————

821. AFCS Engage Interlock-1 Problem - Fault Isolation

A. Description

- (1) This task is for maintenance message:
 - (a) AFCS ENG INTLK CB-1 (J1B-F03)
NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
 - (b) AFCS ENG INTLK CB-1 (J1B-F03): Flight control computer A (FCC-A) has no 28 VDC on the ENGAGE INTLK input during the ground test.

B. Possible Causes

- (1) AFCS system A engage interlock circuit breaker, C1048
- (2) Wiring problem
- (3) Flight control computer A (FCC-A), M1875

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-12)
- (2) (WDM 22-11-12)

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E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this check of the engage interlock input on FCC-A:
 - (a) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28 VDC between pin F3 of connector D10135B and A/P electrical ground (WDM 22-11-12).
- (d) If there is not 28 VDC at pin F3 of connector D10135B, then do these steps:
 - 1) Disconnect connector D41803P from D41803J at the P18 load control center-left.
 - 2) Do a check for 28 VDC between pin 3 of connector D41803J and A/P electrical ground.
 - 3) If there is not 28 VDC at pin 3 of connector D41803J, then do these steps:
 - a) Replace the circuit breaker (C1048):

This is the circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- b) Re-install FCC-A. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Reconnect connector D41803P to D41803J at the P18 load control center-left.
 - d) Do the Repair Confirmation at the end of this task.
- 4) If there is 28 VDC at pin 3 of connector D41803J, then do a continuity check between these pins of connector D41803P and connector D10135B on the E1-1 shelf.

D41803P	D10135B
pin 3	pin F3

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- 5) If there is not continuity between pin 3 of connector D41803P and pin F3 of connector D10135B, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-A. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect connector D41803P.
 - d) Do the Repair Confirmation at the end of this task.
- (e) If there is 28 VDC at pin F3 of connector D10135B, then continue.
 - 1) Re-install FCC-A. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for channel A and B.
 - 2) Make the selection for the FCC LRU Replacement test.
 - (c) If the maintenance messages do not show, then you corrected the fault.

————— **END OF TASK** —————

822. AFCS Engage Interlock-2 Problem - Fault Isolation

A. Description

- (1) This task is for maintenance message:
 - (a) AFCS ENG INTLK CB-2 (J1B-F03)

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
 - (b) AFCS ENG INTLK CB-2 (J1B-F03): Flight control computer B (FCC-B) has no 28 VDC on the ENGAGE INTLK input during the ground test.

B. Possible Causes

- (1) AFCS system B engage interlock circuit breaker, C716
- (2) Wiring problem
- (3) Flight control computer B (FCC-B), M1876

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

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D. Related Data

- (1) (SSM 22-11-12)
- (2) (WDM 22-11-12)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, then continue.
- (2) Do this check of the engage interlock input on FCC-B:
 - (a) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for 28 VDC between pin F3 of connector D10137B and A/P electrical ground (WDM 22-11-12).
- (d) If there is not 28 VDC at pin F3 of connector D10137B, then do these steps:
 - 1) Disconnect connector D46065P from D46065J at the P6 load control center-right.
 - 2) Do a check for 28 VDC between pin 12 of connector D46065J and A/P electrical ground.
 - 3) If there is not 28 VDC at pin 12 of connector D46065J, then do these steps:
 - a) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- b) Re-install FCC-B. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect connector D46065P to D46065J at the P6 load control center-right.
 - d) Do the Repair Confirmation at the end of this task.
- 4) If there is 28 VDC at pin 12 of connector D46065J, then do a continuity check between these pins of connector D46065P and connector D10137B on the E1-4 shelf.

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D46065P

pin 12

D10137B

pin F3

- 5) If there is not continuity between pin 12 of connector D46065P and pin F3 of connector D10137B, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-B. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect connector D46065P.
 - d) Do the Repair Confirmation at the end of this task.
- (e) If there is 28 VDC at pin F3 of connector D10137B, then continue.
 - 1) Re-install FCC-B. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for channel A and B.
 - 2) Make the selection for the FCC LRU Replacement test.
 - (c) If the maintenance messages do not show, then you corrected the fault.

———— **END OF TASK** ————

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801. FCC Internal Problem - Fault Isolation

A. Description

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(1) This task is for these maintenance messages:

FCC-A (B) Internal Fault Messages

MAINT MSG No.	MESSAGE TEXT	FAULT DESCRIPTION
22-11235	CALIBRATION ERROR	The FCCs detect a failure when they run the Calibration Test at BITE Entry.
22-11299	A/P DISENG TST	FCC-A detects inability to disengage the A/P.
22-11303	FCC INTERNAL FAULT	FCC-A internal failure.
22-11317	FCC INTERNAL FAULT	FCC-B internal failure.
22-11414	FGN FCC DROPPED IN APP	FCC-B detects that FCC-A disengaged during Approach.
22-11415	FGN FCC DROPPED IN APP	FCC-A detects that FCC-B disengaged during Approach.
22-11416	MCP SEL ALT COUNTER	FCC-A detects an error in Altitude present/past values.
22-11417	MCP SEL ALT COUNTER	FCC-B detects an error in Altitude present/past values.
22-11418	SIMULTANEOUS UP/DN TRM	FCC-A detects Trim UP and DOWN commands at the same time.
22-11419	SIMULTANEOUS UP/DN TRM	FCC-B detects Trim UP and DOWN commands at the same time.
22-11461	AIL CMD MON	FCC-A detects an error when stimulating a command and monitoring for Position Feedback Errors.
22-11462	AIL LIM MON	FCC-A detects a possible Roll Hardover based on the Aileron Actuator position.
22-11464	ELV ACT NOT TRIMMED	FCC-A detects Elevator Actuator position greater than 5 Degrees for more than 10 seconds. Monitor includes inputs from Stab position, ELEV LVDT, ELEV position and NSS.
22-11466	ELV CMD WRAP TST	FCC-A detects Elevator Actuator position greater than 5 Degrees for more than 10 seconds. Monitor includes inputs from Stab position, ELEV LVDT, ELEV position and NSS.
22-11473	P CMD MON	FCC-A detects that the Elevator command wrap failed.
22-11474	P F/D COMP	FCC-A detects that the difference between Pitch F/D Bar commands is greater than the Threshold 75% of the time during a 4.0 second period.

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FCC-A (B) Internal Fault Messages (Continued)

MAINT MSG No.	MESSAGE TEXT	FAULT DESCRIPTION
22-11479	P SPM MON	FCC-A detects that Pitch/Roll Actuator positions and Surface positions differ by more than 6 to 9 Deg/sec (dependent on Altitude).
22-11485	R CMD MON	FCC-A detects a difference of 2 Degrees/second or greater between Lane 1 and Lane 2 Aileron commands.
22-11486	R F/D COMP	FCC-A detects Roll command difference (between FCC A and FCC B) of more than 3 Degrees for a period of 8 sec.
22-11488	R SPM FGN	FCC-A detects Roll command difference (between FCC A and FCC B) of more than 3 Degrees for a period of 8 sec.
22-11488	R SPM FGN	FCC-A detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11489	R SPM LCL	FCC-A detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11490	R SPM MON	FCC-A detects that Pitch/Roll Actuator positions and Surface positions differ by more than 6 to 9 Deg/sec (dependent on Altitude).
22-11499	A/P DISENG TST	FCC-B detects inability to disengage the A/P.
22-11506	AIL CMD MON	FCC-B detects an error when stimulating a command and monitoring Position Feedback.
22-11507	AIL LIM MON	FCC-B detects a possible Roll Hardover based on the Aileron Actuator position.
22-11509	ELV ACT NOT TRIMMED	FCC-B detects Elevator Actuator position greater than 5 Degrees for more than 10 seconds. Monitor includes inputs from Stab position, ELEV LVDT, ELEV position and NSS.
22-11510	ELV CMD MON	FCC-B detects an error when stimulating a command and monitoring for Position Feedback.
22-11527	ELV CMD WRP TST	FCC-B detects that the Elevator command wrap failed.
22-11536	P CMD MON	FCC-B detects a difference in Elevator commands from Lane 1 and Lane 2.

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FCC-A (B) Internal Fault Messages (Continued)

MAINT MSG No.	MESSAGE TEXT	FAULT DESCRIPTION
22-11537	P F/D COMP	FCC-B detects that the difference between Pitch F/D Bar commands is greater than the Threshold 75% of the time during a 4.0 second period.
22-11550	P SPM FGN	FCC-B detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11551	P SPM LCL	FCC-B detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11552	P SPM MON	FCC-B detects that Pitch/Roll Actuator positions and Surface positions differ by more than 6 to 9 Deg/sec (dependent on Altitude).
22-11558	R CMD MON	FCC-B detects a difference of 2 Degrees/second or greater between Lane 1 and Lane 2 Aileron commands.
22-11559	R F/D COMP	FCC-B detects Roll command difference (between FCC A and FCC B) of more than 3 Degrees for a period of 8 sec.
22-11561	R SPM FGN	FCC-B detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11562	R SPM LCL	FCC-B detects a failure of Power-up Surface Position Monitors (confirms that Surface Position Monitors and Engage Logic are working correctly).
22-11563	R SPM MON	FCC-B detects that Pitch/Roll Actuator positions and Surface positions differ by more than 6 to 9 Deg/sec (dependent on Altitude).
22-11566	STAB DELAY TST	FCC-B detects a problem in the Stabilizer Delay Test (Trim up or down command should be delayed by 3 seconds).
22-11567	STAB TRIM CLUTCH WRAP	FCC-B detects that the Stab Trim Clutch Output and Wrap Around does not agree.
22-11797	FGN FCC DROPPED IN GA	FCC-B detects that FCC-A disengaged during Go-Around.
22-11798	FGN FCC DROPPED IN GA	FCC-A detects that FCC-B disengaged during Go-Around.

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B. Possible Causes

- (1) Flight Control Computer (FCC)-A, M1875
- (2) FCC-B, M1876
- (3) Wiring

C. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.

- Make the selection for the Channels A and B.
- Make the selection for the FCC TEST.

NOTE: If you push the LSK adjacent to CHANNEL A or CHANNEL A AND B, DFCS/AT will show on the BITE display.

If you push the LSK adjacent to CHANNEL B, FCC will show on the BITE display.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:

- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
- Flight Control Computer Installation, AMM TASK 22-11-33-400-801

- (a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) If RERUN still shows on the Control Display Unit (CDU) Display, then push the LSK adjacent to RERUN.

- (a) If the maintenance message does not show, then you corrected the problem.

- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.

- (a) Make the selection for the Channels A and B.

- (b) Make the selection for the FCC TEST.

- 1) If the maintenance message does not show, then you corrected the problem.

————— **END OF TASK** —————

802. FCC Engage Solenoid Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1A-H14)
- (b) FCC-A (J1A-K14)
- (c) FCC-B (J1A-H14)
- (d) FCC-B (J1A-K14)
- (e) 22-11304 - ENG SOL ENABLE LO
- (f) 22-11305 - ENG SOL ENABLE HI

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- (g) 22-11318 - ENG SOL ENABLE LO
- (h) 22-11319 - ENG SOL ENABLE HI
- (2) FCC-A (J1A-H14), FCC-A (J1A-K14): FCC-A does not detect the correct engage A solenoid Lo or Hi wrap signal at the specified output pin.
- (3) FCC-B (J1A-H14), FCC-B (J1A-K14): FCC-B does not detect the correct engage A solenoid Lo or Hi wrap signal at the specified output pin.

B. Possible Causes

- (1) Mode Control Panel (MCP), M198
- (2) Wiring problem
- (3) FCC-A (-B), M1875 (M1876)

C. Related Data

- (1) SSM 22-11-11
- (2) WDM 22-11-11

D. Initial Evaluation

- (1) Do the DFCS BITE Library Test 60.58 - MCP CMD/CWS Interlock. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (c) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the mode control panel, M198. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring:
 - (a) Remove the applicable FCC. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MCP, M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Do a wiring check between these pins (WDM 22-11-11):

NOTE: Make sure the wiring is not shorted to ground, and inspect the connectors and pins for any problems.

FCC-A

FCC-A, M1875
D10135A

pin H14
pin K14

MCP, M198
D299

pin 28
pin 52

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FCC-B

FCC-B, M1876

D10137A

pin H14 pin 28

pin K14 pin 52

MCP, M198

D1815

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do the DFCS BITE Library Test 60.58 - MCP CMD/CWS Interlock. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) If maintenance message does not show, then you have corrected the fault.
 - (c) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

803. FCC Elevator Actuator Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the applicable FIM instructions.

- (a) FCC-A (J1A-E15, D15)
 - (b) FCC-A (J1A-D13)
 - (c) FCC-B (J1A-E15, D15)
 - (d) FCC-B (J1A-D13)
- (2) FCC-A (J1A-E15, D15): FCC-A pitch valve amplifier output problem during the ground test.
 - (3) FCC-A (J1A-D13): FCC-A does not receive the elevator actuator detent wrap signal during the ground test.
 - (4) FCC-B (J1A-E15, D15): FCC-B pitch valve amplifier output problem during the ground test.
 - (5) FCC-B (J1A-D13): FCC-B does not receive the elevator actuator detent wrap signal during the ground test.

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B. Possible Causes

- (1) A/P elevator actuator, M1020 (actuator A) or M1022 (actuator B)
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Integrated flight system accessory unit (IFSAU), M1474
- (4) Wiring problem

C. Related Data

- (1) (SSM 22-12-31)
- (2) (SSM 22-12-41)
- (3) (WDM 22-12-31)
- (4) (WDM 22-12-41)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do these rigging checks for the A/P elevator actuators:
 - (a) Do the ELEV RIG rigging test. To do it, do this task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.

NOTE: To do the ELEV RIG rigging test only, make the selection for the ELEV RIG on the ELEVATOR RIGGING menu.
 - (b) Do the ELEV AUTH DUAL rigging tests. To do it, do this task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.

NOTE: To do the ELEV AUTH DUAL rigging test only, make the selection for the ELEV AUTH DUAL on the ELEVATOR RIGGING menu.
 - (c) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
 - (d) If the values for the A side and B side are not between the limits, then continue.

NOTE: The value shows on the A side is for channel A (FCC-A); The value shows on the B side is for channel B (FCC-B).
- (3) Do the adjustment for the A/P elevator actuators. To do it, do this task: Autopilot Elevator Actuator Adjustment and Test, AMM TASK 22-11-26-820-801.
 - (a) Do this task: Autopilot Elevator Actuator Test, AMM TASK 22-11-26-710-801.
 - (b) Do the Repair Confirmation at the end of this task.
 - (c) If the Repair Confirmation is not satisfactory, then continue.
- (4) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Disconnect the A/P elevator actuator A connector, D1681.

NOTE: You can find the A/P elevator actuator A (M1020) on the aft bulkhead station 1156. You can get access to the A/P elevator actuator through the Tailcone Access Door, 318BR..

- (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D1681 at STA 1165, WL 278, LBL 7 (WDM 22-12-31).

D10135A	D1681
pin E15	pin 8
pin D15	pin 5
pin D13	pin 21

- (d) Make sure that pin 22 of D1681 is connected to ground.

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect the connector, D1681.
- 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Do the Repair Confirmation at the end of this task.

- (f) If you do not find a problem with the wiring, then continue.

- 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (5) If the maintenance message is on channel B, then do this check of the wiring:

- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect the A/P elevator actuator B connector, D1687.

NOTE: You can find the A/P elevator actuator B (M1022) on the aft bulkhead station 1156. You can get access to the A/P elevator actuator through the Tailcone Access Door, 318BR..

- (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D1687 at STA 1161, WL 278, LBL 7 (WDM 22-12-41).

D10137A	D1687
pin E15	pin 8
pin D15	pin 5
pin D13	pin 21

- (d) Make sure that pin 22 of D1687 is connected to ground.

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect the connector, D1687.
- 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Do the Repair Confirmation at the end of this task.

- (f) If you do not find a problem with the wiring, then continue.

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- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Do the wiring check of the IFSAU.

- (a) Do these steps.

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

Remove the safety tags 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	3	C01631	AFCS INTLK 2
B	4	C00716	AFCS SYS B ENGAGE INTLK

- 1) Make sure that pin 121 of D2209A is 28V.
- (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>
A	3	C01631	AFCS INTLK 2
B	4	C00716	AFCS SYS B ENGAGE INTLK

Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- 1) Make sure that pin 121 of D2209A is 28V.
- (c) If pin 121 of D2209A is not 28V, replace the IFSAU.
Do these Task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801 Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801

- 1) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the IFSAU wiring, then continue.
 - 1) Remove the safety tags 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	3	C01631	AFCS INTLK 2
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (7) If the maintenance message is on channel A, then replace the A/P elevator actuator A, M1020.

These are the tasks:

Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801,

Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801.

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- (a) Do the Repair Confirmation at the end of this task.
- (8) If the maintenance message is on channel B, then replace the A/P elevator actuator B, M1022.
These are the tasks:
Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801,
Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801.
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

804. FCC Aileron Actuator Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
 - (a) FCC-A (J1B-E15, D15)
 - (b) FCC-A (J1B-D13)
 - (c) FCC-B (J1B-E15, D15)
 - (d) FCC-B (J1B-D13)
- (2) FCC-A (J1B-E15, D15): FCC-A roll valve amplifier output problem during the ground test.
- (3) FCC-A (J1B-D13): FCC-A does not receive the aileron actuator detent wrap signal during the ground test.
- (4) FCC-B (J1B-E15, D15): FCC-B roll valve amplifier output problem during the ground test.
- (5) FCC-B (J1B-D13): FCC-B does not receive the aileron actuator detent wrap signal during the ground test.

B. Possible Causes

- (1) FCC-A (B), M1875 (M1876)
- (2) A/P Aileron Actuator A (B), M943 (M1024)
- (3) Wiring

C. Related Data

- (1) SSM 22-11-31
- (2) WDM 22-11-31

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D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - 1) If the maintenance message does not show, then there was an intermittent problem.
 - 2) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do the COMPLETE AIL RIG rigging test. This is the task: Aileron Rigging Test, AMM TASK 22-11-00-820-803.
 - (a) If the values for the A side and B side are between the limits, then do the Repair Confirmation at the end of this task.
 - (b) If the values for the A side and B side are not between the limits, then continue.
NOTE: The value shows on the A (B) side is for channel A (B) (FCC-A (B)).
- (3) Do the adjustment for the A/P Aileron Actuators. This is the task: Autopilot Aileron Actuator Adjustment, AMM TASK 22-11-25-820-801.
 - (a) Do this task: Autopilot Aileron Actuator Test, AMM TASK 22-11-25-710-801.
 - (b) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the wiring:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect applicable connector D1827 (D1691) from the A/P Aileron Actuator A (B), M943 (M1024).
NOTE: You can find the A/P Aileron Actuator A (B), M943 (M1024) in the Left Main Landing Gear (MLG) Wheel Well, outboard of the Power Control Unit (PCU)s for the Ailerons. The A/P Aileron Actuator A (B), M943 (M1024) located approximately at STA 670, WL 193, LBL 40 (STA 670, WL 193, LBL 50).
 - (c) Do a wiring check as follows (WDM 22-11-31):

CHANNEL A

AIL A/P ACT-A,

M943

FCC-A, M1875

D1827

D10135B

pin 5 pin E15

pin 8 pin D15

pin 21 pin D13

D1827

pin 22 GD320-DC

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CHANNEL B

AIL A/P ACT-B,

M1024

FCC-B, M1876

D1691

D10137B

pin 5 pin E15

pin 8 pin D15

pin 21 pin D13

D1691

pin 22 GD330-DC

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1827 (D1691).
 - c) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Replace the applicable A/P Aileron Actuator A (B), M943 (M1024). These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the Line Select Key (LSK) adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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805. FCC Flap Down Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1C-J02)
 - (b) FCC-B (J1C-J02)
- (2) FCC-A (J1C-J02): FCC-A does not receive the flap down wrap signal during the ground test.
- (3) FCC-B (J1C-J02): FCC-B does not receive the flap down wrap signal during the ground test.

B. Possible Causes

- (1) Left Elevator Stab Solenoid Valve, V160
- (2) Stab Trim Motor, M1659
- (3) FCC-A (B), M1875 (M1876)
- (4) Wiring

C. Related Data

- (1) SSM 22-13-11
- (2) SSM 27-31-11
- (3) WDM 22-13-11
- (4) WDM 27-31-11

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - 1) If the maintenance message does not show, then there was an intermittent problem.
 - 2) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this check of the wiring:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D381 from the Stab Trim Motor, M1659.

NOTE: You can get access to the Stab Trim Motor, M1659 through the Access Door to Aft Unpressurized Compartment, 311AL. The Stab Trim Motor, M1659 located approximately at STA 1075, WL 232, RBL 4.
 - (c) Do a wiring check as follows (WDM 22-13-11):



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CHANNEL A

FCC-A, M1875	PRIMARY ELEC
D10135C	ACTR - STAB
	TRIM
	D381
pin J2	pin 12

CHANNEL B

FCC-B, M1876	PRIMARY ELEC
D10137C	ACTR - STAB
	TRIM
	D381
pin J2	pin 12

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D381.
 - c) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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 and continue:
 - a) Re-connect connector D381.
 - b) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Do this check of the wiring for the Left Elevator Tab Solenoid Valve (WDM 27-31-11):
 - (a) Disconnect connector D10531 from the Left Elevator Tab Solenoid Valve, V160.
 - (b) Use the WDM 27-31-11 to identify the splice of the wire bundle, W6134, its location, and interface with pin 1 of connector D10531.
 - (c) Do a wiring check between pin 1 of connector D10531 and splice of the wire bundle, W6134.
 - (d) Make sure that pin 2 of connector D10531 is connected to ground.
 - 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D10531.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (4) Replace the Left Elevator Tab Solenoid Valve, V160. These are the tasks:
 - Elevator Tab Control Valve - Removal, AMM TASK 27-31-35-000-801
 - Elevator Tab Control Valve - Installation, AMM TASK 27-31-35-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the Stab Trim Motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801

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- Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801

(a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

806. FCC MMR/ILS Inhibit Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the Flight Control Computer A (FCC-A) and Flight Control Computer B (FCC-B). For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1B-E07)
 - (b) FCC-B (J1B-E07)
- (2) FCC-A (J1B-E07): FCC-A does not receive the Multi-Mode Receiver (MMR)/Instrument Landing System (ILS) test inhibit/antenna warp signal during the ground test.
 - (3) FCC-B (J1B-E07): FCC-B does not receive the MMR/ILS test inhibit/antenna warp signal during the ground test.

B. Possible Causes

- (1) Integrated Flight System Accessory Unit (IFSAU), M1474
- (2) Localizer antenna switch relay, R315 (relay 1) or R316 (relay 2)
- (3) FCC, M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2

D. Related Data

- (1) WDM 22-11-18
- (2) SSM 22-11-18
- (3) WDM 34-51-41
- (4) SSM 34-51-41

E. Initial Evaluation

- (1) Do the LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this voltage check at the IFSAU:
 - (a) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01376	RADIO NAVIGATION NAV SNSR DC-1

- (c) Do a check of 28V DC between pin 117 of the connector D235A for the IFSAU and structure ground.
- (d) If there is not 28V DC between pin 117 of the D235A and structure ground, then do these steps:
 - 1) Do a wiring check between these pins of connector D235A and connector D41807P at the left load control center (P18 panel) (WDM 34-51-41):

D235A	D41807P
pin 117	pin 4
 - 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - c) Do the Repair Confirmation at the end of this task.
- (e) If there is 28V DC between pin 117 of the D253A and structure ground, then continue.

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- (3) Replace the IFSAU, M1474, do these tasks:
- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Replace the localizer antenna switch relay 1, R315, do these tasks:
- Localizer Antenna Switch Removal, AMM TASK 34-31-72-000-801
 - Localizer Antenna Switch Installation, AMM TASK 34-31-72-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (5) Do this check of the wiring between the FCC-A and the IFSAU:
- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
- (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D235A at the E1-1 shelf (WDM 34-51-41):

D10135B	D235A
pin E7	pin 79

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Do this check of the wiring between the IFSAU and the localizer antenna switch relay 1:
- (a) Disconnect the connector D2119 from the localizer antenna relay 1, R315.
- (b) Do a wiring check between these pins of connector D235A at the E1-1 shelf and connector D2119 at STA 306, WL 180, RBL 21 (WDM 34-51-41):

D235A	D2119
pin 73	pin E

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector D2119.
 - 3) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.

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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.
 - 1) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (7) Do this check of the wiring between the localizer antenna switch relay 1 and the FCC-A:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D2119 at STA 306, WL 180, RBL 21 (WDM 34-51-41):

D10135B	D2119
pin K14	pin D
pin E3	pin A

- (c) Make sure that pin C of D2119 is connected to ground.
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector D2119.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this voltage check at the IFSAU:
 - (a) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	10	C01377	RADIO NAVIGATION NAV SNSR DC-2

- (c) Do a check for 28V DC between pin 12 of the connector D235B for the IFSAU and structure ground.
 - 1) If there is not 28V DC between pin 12 of the D235B and the structure ground, then do these steps:
 - a) Do a wiring check between these pins of connector D235B and connector D46065P at the right load control center (P6 panel) (WDM 34-51-41):

D235B	D46065P
pin 12	pin 5

- b) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.

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- <2> Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- <3> Do the Repair Confirmation at the end of this task.
- 2) If there is 28V DC between pin 12 of the D235B and the structure ground, then continue.
- (3) Replace the IFSAU, M1474, do these tasks:
- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Replace the localizer antenna switch relay 2, R316.
- These are the tasks:
- Localizer Antenna Switch Removal, AMM TASK 34-31-72-000-801,
Localizer Antenna Switch Installation, AMM TASK 34-31-72-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (5) Do this check of the wiring between the FCC-B and the IFSAU:
- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
- (c) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D235B at the E1-1 shelf (WDM 34-51-41):
- | D10137B | D235B |
|------------------|--------------|
| pin E7 | pin 79 |
- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (6) Do this check of the wiring between the IFSAU and the localizer antenna switch relay 2:
- (a) Disconnect the connector D2127 from the localizer antenna relay 2, R316.
- (b) Do a wiring check between these pins of connector D235B at the E1-1 shelf and connector D2127 at STA 319, WL 175, RBL 21 (WDM 34-51-41):

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D235B

pin 73

D2127

pin E

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector D2127.
 - 3) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (7) Do this check of the wiring between the localizer antenna switch relay 2 and the FCC-B:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D2127 at STA 319, WL 175, RBL 21 (WDM 34-51-41):

D10137B

pin K14

pin E3

D2127

pin D

pin A

- (c) Make sure that pin C of D2127 is connected to ground.
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector D2127.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

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807. FCC Stab Trim Warning Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1C-D02)
 - (b) FCC-B (J1C-D02)
- (2) FCC-A (J1C-D02): FCC-A does not receive the stab trim warn wrap signal during the ground test.
- (3) FCC-B (J1C-D02): FCC-B does not receive the stab trim warn wrap signal during the ground test.

B. Possible Causes

- (1) Stab trim warn light, L4
- (2) Annunciation and dimming module, M469
- (3) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-12)
- (2) (SSM 22-13-11)
- (3) (SSM 33-18-21)
- (4) (WDM 22-11-12)
- (5) (WDM 22-13-11)
- (6) (WDM 33-18-21)

E. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

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F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this check of the STAB OUT OF TRIM warning light on the captain's instrument panel:
 - (a) Push and hold the STAB OUT OF TRIM warning light.
 - (b) Make sure that the STAB OUT OF TRIM warning light comes on.
 - (c) Release the STAB OUT OF TRIM warning light.
 - (d) Make sure that the STAB OUT OF TRIM warning light goes off.
 - (e) If the STAB OUT OF TRIM warning light does not operate correctly, then do these steps:
 - 1) Replace the STAB OUT OF TRIM warning light, L4.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If the STAB OUT OF TRIM warning light operates correctly, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) Replace the annunciation and dimming module, M469 (WDM 33-18-21).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this voltage check at the annunciation and dimming module:
 - (a) Remove the annunciation and dimming module, M469 (WDM 33-18-21).
 - (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28V DC between pin 7 of the connector D1344 and structure ground (WDM 33-18-21).
- (d) If there is not 28V DC, then do these steps:
 - 1) Do a wiring check between these pins of the connector D1344 and connector D41803P at the left load control center on the P18 panel (WDM 22-11-12) and (WDM 33-18-21):

D1344	D41803P
pin 7	pin 3
 - 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).
 - c) Do the Repair Confirmation at the end of this task.
- (e) If there is 28V DC, then continue.
- (5) Do this check of the wiring between the annunciation and dimming module and the captain's main instrument panel:
 - (a) Do a wiring check between these pins of connector D1344 and connector D423 at the captain's main instrument panel (WDM 33-18-21):

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D1344

pin 8

D423

pin 28

- (b) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).
 - 3) Do the Repair Confirmation at the end of this task.
- (c) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).
- (6) Do this check of the wiring between the FCC-A and the captain's main instrument panel:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D423 at the captain main instrument panel (WDM 22-13-11):

D10135C

pin D2

D423

pin 29

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this check of the STAB OUT OF TRIM warning light on the captain's instrument panel:
 - (a) Push and hold the STAB OUT OF TRIM warning light.
 - (b) Make sure that the STAB OUT OF TRIM warning light comes on.
 - (c) Release the STAB OUT OF TRIM warning light.
 - (d) Make sure that the STAB OUT OF TRIM warning light goes off.
 - (e) If the STAB OUT OF TRIM warning light does not operate correctly, then do these steps:
 - 1) Replace the STAB OUT OF TRIM warning light, L4.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If the STAB OUT OF TRIM warning light operates correctly, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) Replace the annunciation and dimming module, M469 (WDM 33-18-21).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this voltage check at the annunciation and dimming module:
 - (a) Remove the annunciation and dimming module, M469 (WDM 33-18-21).

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- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for 28V DC between pin 47 of the connector D2866 and structure ground (WDM 33-18-21).

- (d) If there is not 28V DC, then do these steps:

- 1) Do a wiring check between these pins of the connector D2866 and connector D46065P at the right load control center on the P6 panel (WDM 22-11-12) and (WDM 33-18-21):

D2866	D46065P
pin 47	pin 12

- 2) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
b) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).
c) Do the Repair Confirmation at the end of this task.

- (e) If there is 28V DC, then continue.

- (5) Do this check of the wiring between the annunciation and dimming module and the captain's main instrument panel:

- (a) Do a wiring check between these pins of connector D2866 and connector D895 at the captain's main instrument panel (WDM 33-18-21):

D2866	D895
pin 46	pin 3

- (b) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
2) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).
3) Do the Repair Confirmation at the end of this task.

- (c) If you do not find a problem with the wiring, then continue.

- 1) Re-install the annunciation and dimming module, M469 (WDM 33-18-21).

- (6) Do this check of the wiring between the FCC-B and the captain's main instrument panel:

- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D895 at the captain main instrument panel (WDM 22-13-11):

D10137C	D895
pin D2	pin 10

- (c) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.

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- 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

808. FCC Speed Trim Warning Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) FCC-A (J1C-H02)
 - (b) FCC-B (J1C-H02)
- (2) FCC-A (J1C-H02): FCC-A does not receive the speed trim warn wrap signal during the ground test.
- (3) FCC-B (J1C-H02): FCC-B does not receive the speed trim warn wrap signal during the ground test.

B. Possible Causes

- (1) Speed trim fail light
- (2) Flight controls panel (P5-3)
- (3) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring problem

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

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E. Fault Isolation Procedure

- (1) Do this check of the SPEED TRIM FAIL warning light on the flight controls panel (P5-3):
 - (a) Push and hold the SPEED TRIM FAIL warning light.
 - (b) Make sure that the SPEED TRIM FAIL warning light comes on.
 - (c) Release the SPEED TRIM FAIL warning light.
 - (d) Make sure that the SPEED TRIM FAIL warning light goes off.
 - (e) If the SPEED TRIM FAIL warning light does not operate correctly, then do these steps:
 - 1) Replace the SPEED TRIM FAIL warning light.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If the SPEED TRIM FAIL warning light operates correctly, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) Replace the flight controls panel.

These are the tasks:

Flight Controls Panel Removal, AMM TASK 27-09-45-000-801,
Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the flight controls panel (P5-3). To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D630 at the P5-3 panel (WDM 22-13-11):

D10135C	D630
pin H2	pin 1
 - (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the flight controls panel (P5-3). To re-install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (5) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the flight controls panel (P5-3). To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D624 at the P5-3 panel (WDM 22-13-11):

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D10137C

pin H2

D624

pin 38

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the flight controls panel (P5-3). To re-install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

809. FCC R/A <10 (A) ft Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
- (a) FCC-A (J1A-J03)
 - (b) FCC-B (J1A-J03)
- (2) FCC-A (J1A-J03): FCC-A does not receive the R/A <10 (A) ft wrap signal during the ground test.
- (3) FCC-B (J1A-J03): FCC-B does not receive the R/A <10 (A) ft wrap signal during the ground test.

B. Possible Causes

- (1) R/A <10 FT B relay, R709 or R/A <10 FT A relay, R710
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

C. Related Data

- (1) (SSM 78-34-11)
- (2) (SSM 78-34-21)
- (3) (WDM 78-34-11)

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(4) (WDM 78-34-21)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the R/A <10 FT B relay, R709 (WDM 78-34-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the R/A <10 FT B relay, R709 (WDM 78-34-11).
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D10571 at the J22 junction box (WDM 78-34-11):

D10135A	D10571
pin J3	pin D1

- (d) Make sure that pin D2 of D10571 is connected to ground.
- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the R/A <10 FT B relay, R709 (WDM 78-34-11).
 - 4) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Replace the R/A <10 FT A relay, R710 (WDM 78-34-21).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (2) Do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the R/A <10 FT A relay, R710 (WDM 78-34-21).
 - (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D10573 at the J20 junction box (WDM 78-34-21):

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D10137A

pin J3

D10573

pin D1

- (d) Make sure that pin D2 of D10573 is connected to ground.
- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the R/A <10 FT A relay, R710 (WDM 78-34-21).
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

810. FCC R/A <10 (B) ft Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) FCC-A (J1B-J03)
 - (b) FCC-B (J1B-J03)
- (2) FCC-A (J1B-J03): FCC-A does not receive the R/A <10 (B) ft wrap signal during the ground test.
- (3) FCC-B (J1B-J03): FCC-B does not receive the R/A <10 (B) ft wrap signal during the ground test.

B. Possible Causes

- (1) R/A <10 FT B relay, R709 or R/A <10 FT A relay, R710
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

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C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) (SSM 22-11-75)
- (2) (SSM 27-62-11)
- (3) (WDM 22-11-75)
- (4) (WDM 27-62-11)

E. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the R/A <10 FT A relay, R710 (WDM 27-62-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do a check for 28V DC at the R/A <10FT A relay:
 - (a) Remove the R/A <10 FT A relay, R710 (WDM 27-62-11).
 - (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

- (c) Do a check for 28V DC between pin X1 of the connector D10573 and structure ground (WDM 27-62-11).
- (d) If there is not 28V DC, then do these steps:
 - 1) Do a wiring check between these pins of connector D10573 at the J20 junction box and connector D41803P at the left load control center (P18 panel) (WDM 22-11-12):

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D10573

pin X1 pin 3

D41803P

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the R/A <10 FT A relay, R710 (WDM 27-62-11).
 - c) Do the Repair Confirmation at the end of this task.
- (e) If there is 28V DC, then continue.
- (4) Do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D10573 at the J20 junction box (WDM 27-62-11):

D10135B

pin J3 pin X2

D10573

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the R/A <10 FT A relay, R710 (WDM 27-62-11).
 - 4) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the R/A <10 FT B relay, R709 (WDM 27-62-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do a check for 28V DC (± 4) at the R/A <10 FT B relay:
 - (a) Remove the R/A <10 FT B relay, R709 (WDM 27-62-11).
 - (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for 28V DC between pin X1 of the connector D10571 and structure ground (WDM 27-62-11).
- (d) If there is not 28V DC, then do these steps:
 - 1) Do a wiring check between these pins of connector D10571 at the J22 junction box and connector D46065P at the right load control center (P6 panel) (WDM 22-11-12):

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D10571

pin X1 pin 12

D46065P

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the R/A <10 FT B relay, R709 (WDM 27-62-11).
 - c) Do the Repair Confirmation at the end of this task.
- (e) If there is 28V DC, then continue.
- (4) Do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D10571 at the J22 junction box (WDM 27-62-11):

D10137B

pin J3 pin X2

D10571

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the R/A <10 FT B relay, R709 (WDM 27-62-11).
 - 4) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

811. FCC R/A <800 ft Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1A-C01)
- (b) FCC-B (J1A-C01)

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- (2) FCC-A (J1A-C01): FCC-A does not receive the R/A <800 ft wrap signal during the ground test.
- (3) FCC-B (J1A-C01): FCC-B does not receive the R/A <800 ft wrap signal during the ground test.

B. Possible Causes

- (1) Proximity switch electronic unit (PSEU), M2061
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

C. Related Data

- (1) (WDM 22-11-75)
- (2) (SSM 27-62-21)
- (3) (WDM 27-62-21)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the PSEU, M2061.

These are the tasks:

Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801,
Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) If the maintenance message is on channel A, do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the PSEU, M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D10986 at the PSEU (WDM 27-62-21):

D10135A	D10986
pin C1	pin 4
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- 3) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (4) If the maintenance message is on channel B, do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the PSEU, M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D10986 at the PSEU (WDM 27-62-21):

D10137A	D10986
pin C1	pin 12

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

812. FCC Alt Alert Aural Warn Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11313 ALT ALERT AURAL
 - 1) FCC-A does not receive Altitude Alert Aural Warn Wrap Around Signal during Ground Test.

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SIA ALL; WITH COLLINS FCCs (Continued)

- (b) 22-11326 ALT ALERT AURAL
 - 1) FCC-B does not receive Altitude Alert Aural Warn Wrap Around Signal during Ground Test..

SIA ALL

- (2) The maintenance message shows when power is supplied to the FCC or when a DFCS BITE Procedure is attempted.

B. Possible Causes

- (1) Remote Electronics Unit (REU), M1353
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 22-14-11
- (2) SSM 22-14-11

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.
If it is necessary, you can push the LSK adjacent to RERUN to do the test again.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the REU, M1353. These are the tasks:
 - Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801
 - Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the REU, M1353. This is the task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.
 - (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2501A at the E3-2 shelf (WDM 22-14-11):

D10135C	D2501A
pin K2	pin F10

- (d) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install the REU, M1353. This is the task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.
- 4) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the REU, M1353. These are the tasks:
 - Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801
 - Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring:
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the REU, M1353. To remove it, do this task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.
 - (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2501A at the E3-2 shelf (WDM 22-14-11):

D10137C	D2501A
pin K2	pin F10

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the REU, M1353. This is the task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) On the CDU, make these selections:<CHANNEL A AND B.
 - <CHANNEL A AND B
 - <FCC TEST
 - 1) If the maintenance message does not show, then you corrected the problem.

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- 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

813. FCC Airspeed Warning Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1B-G05)
 - (b) FCC-B (J1B-G05)
- (2) FCC-A (J1B-G05): FCC-A does not receive the airspeed warn wrap signal during the ground test.
- (3) FCC-B (J1B-G05): FCC-B does not receive the airspeed warn wrap signal during the ground test.

B. Possible Causes

- (1) A/T P/RST warning light
- (2) Autoflight status annunciator, N170 (captain's) or N171 (first officer's)
- (3) Flight control computer A (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

D. Related Data

- (1) (SSM 22-14-11)
- (2) (WDM 22-14-11)

E. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If the maintenance message does not show, then there was an intermittent fault.

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F. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this check of the A/T P/RST warning light on the captain's autoflight status annunciator:
 - (a) Push and hold the TEST switch in the position 1.
 - (b) Make sure that the A/T P/RST warning light comes on (amber steady).
 - (c) Release the TEST switch to the center position.
 - (d) Make sure that the A/T P/RST warning light goes off.
 - (e) Push and hold the TEST switch in the position 2.
 - (f) Make sure that the A/T P/RST warning light comes on (red steady).
 - (g) Release the TEST switch to the center position.
 - (h) Make sure that the A/T P/RST warning light goes off.
 - (i) If the A/T P/RST warning light does not operate correctly, then do these steps:
 - 1) Replace the A/T P/RST warning light.
 - 2) Do the Repair Confirmation at the end of this task.
 - (j) If the A/T P/RST warning light operates correctly, then continue.

- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.

- (a) If the maintenance messages shows, then continue.

- (3) Replace the captain's autoflight status annunciator, N170.

These are the tasks:

Annunciator - Removal, AMM TASK 22-11-32-000-801,

Annunciator - Installation, AMM TASK 22-11-32-400-801.

- (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.

- (4) Do this check of 28V DC for the captain's autoflight status annunciator:

- (a) Remove the captain's autoflight status annunciator, N170. To remove it, do this task:
Annunciator - Removal, AMM TASK 22-11-32-000-801.

- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- (c) Do a check for 28V DC between pin 14 of the connector D2435 at the P1 panel and the structure ground (WDM 22-14-11).

- (d) If there is not 28V DC, then do these steps:

- 1) Do a wiring check between these pins of connector D2435 at the P1 panel and connector D41807P at the left load control center (P18 Panel) (WDM 22-14-11):

D2435	D41807P
pin 14	pin 3

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.

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- b) Re-install the captain's autoflight status annunciator, N170. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - c) Do the Repair Confirmation at the end of this task.
- e) If there is 28V DC (± 4), then continue.
- (5) Do this check of the wiring between the FCC-A and the captain's autoflight status annunciator:
 - a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - b) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D2435 at the P1 panel (WDM 22-14-11):

D10135B	D2435
pin G5	pin 9

- c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the captain's autoflight status annunciator, N170. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this check of the A/T P/RST warning light on the first officer's autoflight status annunciator:
 - a) Push and hold the TEST switch in the position 1.
 - b) Make sure that the A/T P/RST warning light comes on (amber steady).
 - c) Release the TEST switch to the center position.
 - d) Make sure that the A/T P/RST warning light goes off.
 - e) Push and hold the TEST switch in the position 2.
 - f) Make sure that the A/T P/RST warning light comes on (red steady).
 - g) Release the TEST switch to the center position.
 - h) Make sure that the A/T P/RST warning light goes off.
 - i) If the A/T P/RST warning light does not operate correctly, then do these steps:
 - 1) Replace the A/T P/RST warning light.
 - 2) Do the Repair Confirmation at the end of this task.
 - j) If the A/T P/RST warning light operates correctly, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - a) If the maintenance messages shows, then continue.
- (3) Replace the first officer's autoflight status annunciator, N171.

These are the tasks:

Annunciator - Removal, AMM TASK 22-11-32-000-801,
Annunciator - Installation, AMM TASK 22-11-32-400-801.

 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.

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- (4) Do this check of 28V DC (± 4) for the first officer's autoflight status annunciator:
- (a) Remove the first officer's autoflight status annunciator, N171. To remove it, do this task: Annunciator - Removal, AMM TASK 22-11-32-000-801.
 - (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- (c) Do a check for 28V DC (± 4) between pin 14 of the connector D2439 at the P3 panel and the structure ground (WDM 22-14-11).
 - (d) If there is not 28V DC, then do these steps:
 - 1) Do a wiring check between these pins of connector D2439 at the P3 panel and connector D46061P at the right load control center (P6 Panel) (WDM 22-14-11):
- | | |
|------------------|----------------|
| D2439 | D46061P |
| pin 14 | pin 28 |
- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the first officer's autoflight status annunciator, N171. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - (e) If there is 28V DC, then continue.
- (5) Do this check of the wiring between the FCC-B and the first officer's autoflight status annunciator:
- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D2439 at the P3 panel (WDM 22-14-11):

D10137B	D2439
pin G5	pin 9

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the first officer's autoflight status annunciator, N171. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.

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- (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

814. FCC Mach Trim Warning Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1C-J03)
- (b) FCC-B (J1C-J03)
- (2) FCC-A (J1C-J03): FCC-A does not receive the Mach trim warn wrap signal during the ground test.
- (3) FCC-B (J1C-J03): FCC-B does not receive the Mach trim warn wrap signal during the ground test.

B. Possible Causes

- (1) Mach trim fail light
- (2) Flight controls panel (P5-3)
- (3) Flight control computer A (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (4) Wiring problem

C. Related Data

- (1) (SSM 22-18-11)
- (2) (WDM 22-18-11)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the MACH TRIM test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this check of the MACH TRIM FAIL warning light on the flight controls panel (P5-3):
 - (a) Push and hold the MACH TRIM FAIL warning light.
 - (b) Make sure that the MACH TRIM FAIL warning light comes on.
 - (c) Release the MACH TRIM FAIL warning light.
 - (d) Make sure that the MACH TRIM FAIL warning light goes off.
 - (e) If the MACH TRIM FAIL warning light does not operate correctly, then do these steps:
 - 1) Replace the MACH TRIM FAIL warning light.

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- 2) Do the Repair Confirmation at the end of this task.
- (f) If the MACH TRIM FAIL warning light operates correctly, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) Replace the flight controls panel.

These are the tasks:

Flight Controls Panel Removal, AMM TASK 27-09-45-000-801,
Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the flight controls panel (P5-3). To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D630 at the P5-3 panel (WDM 22-18-11):

D10135C	D630
pin J3	pin 2
 - (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the flight controls panel (P5-3). To re-install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (5) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the flight controls panel (P5-3). To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D624 at the P5-3 panel (WDM 22-18-11):

D10137C	D624
pin J3	pin 36
 - (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- 3) Re-install the flight controls panel (P5-3). To re-install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
- 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the MACH TRIM test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

815. FCC Input or Output Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) FCC-A (J1A-K11, J11)
 - (b) FCC-A (J1A-G11, F11)
 - (c) FCC-A (J1A-H11)
 - (d) FCC-A (J1B-K11, J11)
 - (e) FCC-A (J1B-G11, F11)
 - (f) FCC-A (J1B-E11)
 - (g) FCC-B (J1A-K11, J11)
 - (h) FCC-B (J1A-G11, F11)
 - (i) FCC-B (J1A-H11)
 - (j) FCC-B (J1B-K11, J11)
 - (k) FCC-B (J1B-G11, F11)
 - (l) FCC-B (J1B-E11)
- (2) FCC-A (J1A-K11, J11), FCC-A (J1A-G11, F11), FCC-A (J1A-H11), FCC-A (J1B-K11, J11), FCC-A (J1B-G11, F11), FCC-A (J1B-E11): FCC-A has input or output problem during the ground test.
- (3) FCC-B (J1A-K11, J11), FCC-B (J1A-G11, F11), FCC-B (J1A-H11), FCC-B (J1B-K11, J11), FCC-B (J1B-G11, F11), FCC-B (J1B-E11): FCC-B has input or output problem during the ground test.

B. Possible Causes

- (1) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (2) Wiring problem

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C. Related Data

- (1) (SSM 22-11-31)
- (2) (SSM 22-12-31)
- (3) (SSM 22-12-41)
- (4) (WDM 22-11-31)
- (5) (WDM 22-12-31)
- (6) (WDM 22-12-41)

D. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - 1) CHANNEL A AND B
 - 2) RUN SELECT LIBRARY TESTS
 - 3) DUAL STAB

NOTE: You can use the NEXT PAGE or PREV PAGE key to change page if it is necessary.

 - 4) EXECUTE
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (c) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D10137B at the E1-4 shelf (WDM 22-11-11), (WDM 22-11-31), (WDM 22-12-41):

D10135A	D10137B
pin H11	pin H11

D10135A	D10137B
pin G11	pin G11
pin F11	pin F11

D10135A	D10137B
pin K11	pin K11
pin J11	pin J11

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- (d) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D10137A at the E1-4 shelf (WDM 22-11-11), (WDM 22-11-31), (WDM 22-12-31):

D10135B	D10137A
pin E11	pin E11

D10135B	D10137A
pin G11	pin G11
pin F11	pin F11

D10135B	D10137A
pin K11	pin K11
pin J11	pin J11

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
- (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D10135B at the E1-1 shelf (WDM 22-11-11), (WDM 22-11-31), (WDM 22-12-31):

D10137A	D10135B
pin H11	pin H11

D10137A	D10135B
pin G11	pin G11
pin F11	pin F11

D10137A	D10135B
pin K11	pin K11
pin J11	pin J11

- (d) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D10135A at the E1-1 shelf (WDM 22-11-11), (WDM 22-11-31), (WDM 22-12-41):

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D10137B	D10135A
pin E11	pin E11

D10137B	D10135A
pin G11	pin G11
pin F11	pin F11

D10137B	D10135A
pin K11	pin K11
pin J11	pin J11

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
- (a) Make these selections on the CDU:
- 1) CHANNEL A AND B
 - 2) RUN SELECT LIBRARY TESTS
 - 3) DUAL STAB
- NOTE: You can use the NEXT PAGE or PREV PAGE key to change page if it is necessary.
- 4) EXECUTE
- (b) If maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

816. FCC Stab Trim Up Wrap Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
- (a) FCC-A (J1C-G02)
- (b) FCC-B (J1C-G02)
- (2) FCC-A (J1C-G02): FCC-A does not receive the stab trim up wrap signal during the ground test.
- (3) FCC-B (J1C-G02): FCC-B does not receive the stab trim up wrap signal during the ground test.

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B. Possible Causes

- (1) Stabilizer trim motor, M1659
- (2) Stab nose up limit switch, S144
- (3) Stab trim cutout relay, R384
- (4) Column switching module, M1201
- (5) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (6) Wiring problem

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this task: FCC Stabilizer Trim UP Problem - Fault Isolation, 22-15 TASK 819.
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

817. FCC Stab Trim Down Wrap Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1C-K03)
- (b) FCC-B (J1C-K03)

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- (2) FCC-A (J1C-K03): FCC-A does not receive the stab trim down wrap signal during the ground test.
- (3) FCC-B (J1C-K03): FCC-B does not receive the stab trim down wrap signal during the ground test.

B. Possible Causes

- (1) Stabilizer trim motor, M1659
- (2) Stab nose down limit switch, S145
- (3) Stab trim cutout relay, R384
- (4) Column switching module, M1201
- (5) Flight control computer (FCA), M1875 (FCC-A) or M1876 (FCC-B)
- (6) Wiring problem

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Do this task: FCC, Stab Trim Down Problem - Fault Isolation, 22-15 TASK 818.
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

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818. FCC Stab Trim Clutch Wrap Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the applicable FIM instructions.

- (a) FCC-A (J1C-H03)
 - (b) FCC-B (J1C-H03)
- (2) FCC-A (J1C-H03): FCC-A does not receive the stab trim clutch wrap signal during the ground test.
- (3) FCC-B (J1C-H03): FCC-B does not receive the stab trim clutch wrap signal during the ground test.

B. Possible Causes

- (1) Column switching module, M1201
- (2) Stabilizer trim motor, M1659
- (3) Autopilot cutout switch, S149
- (4) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (5) Wiring problem

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, continue with the initial evaluation.

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the STAB SENS test.
 - (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring between the FCC-A and the column switching module:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Remove the column switching module, M1201. To remove it, do this task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
- (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2257 at STAB 206, WL 200, RBL 15 (WDM 22-13-11):

D10135C	D2257
pin H03	pin 19

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring
 - 2) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message is on channel B, then do this check of the wiring between the FCC-B and the column switching module:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the column switching module, M1201. To remove it, do this task: Column Cutout Switch Removal, AMM TASK 27-41-51-000-801.
 - (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2257 at STAB 206, WL 200, RBL 15 (WDM 22-13-11):

D10137C	D2257
pin H03	pin 19

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring
 - 2) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) Do this check of the wiring between the column switching module and the stab trim motor:
 - (a) Disconnect the connector D381 from the stabilizer trim motor, M1659.

NOTE: You can get access to the stabilizer trim motor through the Access Door to Aft Unpressurized Compartment, 311AL..

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- (b) Make sure that the A/P cutout switch on the control stand (panel 8) is in the NORMAL position.
- (c) Do a wiring check between these pins of connector D2257 at the STA 206, WL 200, RBL 15 and connector D381 at STA 1075, WL 232, RBL 4 (WDM 22-13-11)

D2257	D381
pin 23	pin 4

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring
 - 2) Re-install the column switching module, M1201. To install it, do this task: Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.
 - 3) Re-connect the connector D381.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D381.
- (5) Replace the column switching module, M1201.

These are the tasks:
Column Cutout Switch Removal, AMM TASK 27-41-51-000-801,
Column Cutout Switch Installation, AMM TASK 27-41-51-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (6) Replace the stabilizer trim motor, M1659.

These are the tasks:
Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801,
Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (7) Replace the A/P cutout switch, S149.

These are the tasks:
Stabilizer Trim Cutout Switch Removal, AMM TASK 27-41-91-000-801,
Stabilizer Trim Cutout Switch Installation, AMM TASK 27-41-91-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the STAB SENS test.

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- (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

819. FCC-A, Mach Trim Select Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
(a) 22-A0173 FCC-A (J1C-G03)
(2) This maintenance message detects this problem:
(a) The FCC-A does not detect the mach trim select line.

B. Possible Causes

- (1) FCC-A, M1875
(2) Wiring

C. Related Data

- (1) SSM 22-18-11
(2) WDM 22-18-11

D. Initial Evaluation

- (1) Do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.
(a) If the maintenance message does not show, then there was an intermittent fault.
(b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the FCC-A, M1875. These are the tasks:
• Flight Control Computer Removal, AMM TASK 22-11-33-000-801
• Flight Control Computer Installation, AMM TASK 22-11-33-400-801
(a) Do the Repair Confirmation at the end of this task.
(2) Do this check of the wiring (WDM 22-18-11):
(a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
(b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
(c) Do a wiring check as follows:

FCC-A	IFSAU
D10135C	D2209A
pin C3	pin 41
Ground	pin 57

- 1) If you find a problem with the wiring, then do these steps:
a) Repair the wiring.

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- b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- c) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- d) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>
 - d) EXECUTE
 - (c) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

820. FCC-B, Mach Trim Select Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-A0214 FCC-B (J1C-G03)
- (2) This maintenance message detects this problem:
 - (a) The FCC-B does not detect the mach trim select line.

B. Possible Causes

- (1) FCC-B, M1876
- (2) IFSAU, M1474
- (3) Wiring

C. Related Data

- (1) SSM 22-18-11
- (2) WDM 22-18-11

D. Initial Evaluation

- (1) Do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

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- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring (WDM 22-18-11):
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Do a wiring check as follows:

FCC-B	IFSAU
D10137C	D2209B
pin C3	pin 41
pin G3	pin 55

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>

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- d) EXECUTE
- (c) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

821. Mach Trim Brake Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11192 MT DISCRETES
 - (b) 22-11195 MT DISCRETES
- (2) This maintenance message detects these problems:
 - (a) The FCC-A does not detect the mach trim brake line.
 - (b) The FCC-B does not detect the mach trim brake line.

B. Possible Causes

- (1) FCC-A(B), M1875 (M1876)
- (2) IFSAU, M1474
- (3) Wiring

C. Related Data

- (1) SSM 22-18-11
- (2) WDM 22-18-11

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this check of the wiring for the channel A (B) (WDM 22-18-11):
 - (a) Remove FCC-A (B), M1875 (M1876) from the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Do a wiring check between these pins of connector at the FCC-A (B), M1875 (M1876) and connector at the IFSAU, M1474 as follows:

CHANNEL A

FCC-A, M1875

D10135C

pin F3

IFSAU, M1474

D2209A

pin 46

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CHANNEL B

FCC-B, M1876

D10137C

pin F3 pin 46

IFSAU, M1474

D2209B

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) Do this check of the wiring (WDM 22-18-11):
- (a) Disconnect connector D545 from the Mach Trim Actuator, M414.
NOTE: You can get access to the Mach Trim Actuator through the Tailcone Access Door, 318BR.
 - (b) Do a wiring check between these pins of connector at the Mach Trim Actuator, M414 and connector at the IFSAU, M1474 as follows:

MATCH TRIM ACTUATOR,

M414

D545

pin 13 pin 62

IFSAU, M1474

D2209A

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - c) Re-connect connector D545 to the Mach Trim Actuator, M414.
 - 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 and continue:
 - a) Re-connect connector D545 to the Mach Trim Actuator, M414.
 - b) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- (3) Replace the applicable FCC-A (B), M1875 (M1876). These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the IFSAU, M1474. These are the tasks:

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- Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (b) If RERUN does not show on the CDU Display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>
 - d) EXECUTE
 - (c) If the maintenance message does not show, then you corrected the problem.
 - (d) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

822. Mach Trim Drive Motor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) FCC-A (J1C-B01, A01)
 - (b) FCC-B (J1C-B01, A01)
- (2) This maintenance message detects these problems:
- (a) The FCC-A does not detect the mach trim drive motor line.
 - (b) The FCC-B does not detect the mach trim drive motor line.

B. Possible Causes

- (1) FCC-A, M1875
- (2) FCC-B, M1876
- (3) IFSAU, M1474
- (4) Wiring problem

C. Related Data

- (1) (SSM 22-18-11)
- (2) (WDM 22-18-11)

D. Initial Evaluation

- (1) The DFCS BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the LSK adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.

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- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the applicable FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (a) Do the Repair Confirmation at the end of this task.

- 1) If the Repair Confirmation is not satisfactory, then continue.

- (2) If the maintenance message is on channel A, then do this check of the wiring:

- (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connector D545 from the mach trim actuator, M414.

NOTE: You can get access to the mach trim actuator through the Tailcone Access Door, 318BR..

- (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D545 in the tailcone:

D545	D10135C
pin 6	pin B1
pin 3	pin A1

- (d) If you find a problem with the wiring, then do these steps:

- 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.

- 2) Do a wiring check between these pins of connector D545 at the mach trim actuator and connector D2209A at the IFSAU:

D545	D2209A
pin 6	pin 58
pin 3	pin 59

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- d) Re-connect connector D545.
- e) Do the Repair Confirmation at the end of this task.

- (e) If you do not find a problem with the wiring, then do these steps;

- 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.

- 2) Do a wiring check between these pins of connector D10135C at the FCC and connector D2209A at the IFSAU:

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D10135C

pin B1
pin A1

D2209A

pin 42
pin 43

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Re-connect connector D545.
 - e) Do the Repair Confirmation at the end of this task.
- 4) If you do not find a problem with the wiring, then continue.
 - a) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Re-connect connector D545.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove FCC-B, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D545 from the mach trim actuator, M414.
NOTE: You can get access to the mach trim actuator through the Tailcone Access Door, 318BR..
 - (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D545 in the tailcone:

D545

pin 6
pin 3

D10137C

pin B1
pin A1

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - 2) Do a wiring check between these pins of connector D545 at the mach trim actuator and connector D2209A at the IFSAU:

D545

pin 6
pin 3

D2209A

pin 58
pin 59

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.

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- d) Re-connect connector D545.
- e) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then do these steps;
 - 1) Remove the IFSAU, M1474. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - 2) Do a wiring check between these pins of connector D10137C at the FCC and connector D2209B at the IFSAU:

D10137C	D2209B
pin B1	pin 42
pin A1	pin 43
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Re-connect connector D545.
 - e) Do the Repair Confirmation at the end of this task.
- 4) If you do not find a problem with the wiring, then continue.
 - a) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Re-connect connector D545.
- (4) Install a new IFSAU. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>
 - d) EXECUTE
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

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825. FCC R/A < 200 ft Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FCC-A (J1A-G03)
 - (b) FCC-B (J1A-G03)
- (2) FCC-A (J1A-G03): FCC-A does not receive the R/A < 200 ft wrap signal during the ground test.
- (3) FCC-B (J1A-G03): FCC-B does not receive the R/A < 200 ft wrap signal during the ground test.

B. Possible Causes

- (1) Proximity switch electronic unit (PSEU), M2061
- (2) Flight control computer (FCC), M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

C. Related Data

- (1) (WDM 22-11-75)
- (2) (WDM 32-64-21)

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the PSEU, M2061.

These are the tasks:

Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801,
Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) If the maintenance message is on channel A, do this check of the wiring:
 - (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the PSEU, M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D10982 at the PSEU (WDM 32-64-21):

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D10135A

pin G3

D10982

pin 43

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (4) If the maintenance message is on channel B, do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the PSEU, M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D10984 at the PSEU (WDM 32-64-21):

D10137A

pin G3

D10984

pin 43

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

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828. FCC Stab Trim Opposite to AP Elevator Command Problem - Fault Isolation

A. Description

- (1) Do this procedure when the DFCS shows one or more of maintenance messages:
 - (a) 22-11615, FCC-A
 - (b) 22-11616, FCC-B
- (2) This message shows when the specified FCC detects that the stabilizer trim and autopilot elevator command do not agree.
 - (a) The monitor data can show the words: TRIM OPP ELV CMD.

B. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

 - (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

C. Fault Isolation Procedure

- (1) Do the group number 60.32 Speed/Stab Trim surface test, (BITE Library Test, AMM TASK 22-11-00-740-806).
 - (a) If the result shows one or more maintenance messages, then:
 - 1) Do the corrective action, (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801).
 - 2) If no problem was found, then continue.
- (2) Do the group number 60.35 Dual Stab surface test, (BITE Library Test, AMM TASK 22-11-00-740-806).
 - (a) If the result shows one or more maintenance messages, then:
 - 1) Do the corrective action, (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801).

———— **END OF TASK** ————

SIA ALL

829. Mach Trim Actuator Command Wrap Around Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11191 MT CMD MON: The Flight Control Computer A (FCC-A), M1875 detects a command wrap-around fault on the Mach Trim Drive Motor line (at connector D10135C pins A1, B1).
 - (b) 22-11194 MT CMD MON: The Flight Control Computer B (FCC-B), M1876 detects a command wrap-around fault on the Mach Trim Drive Motor line (at connector D10137C pins A1, B1).

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B. Possible Causes

- (1) Wiring
- (2) Mach Trim Actuator, M414
- (3) IFSAU, M1474
- (4) FCC-A (B), M1875 (M1876)

C. Related Data

- (1) SSM 22-18-11
- (2) WDM 22-18-11

D. Initial Evaluation

- (1) Do the DFCS Built-In-Test Equipment (BITE) Mach Trim Library test 60.33. Full details of the DFCS Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the maintenance message(s) does not show, then there was an intermittent problem.
 - (b) If the maintenance message(s) shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do the FCC Swap check. This is the task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Do a check of the wiring between the Mach Trim Actuator, M414, and the IFSAU, M1474, and the FCC-A (B), M1875 (M1876)(WDM 22-18-11):
 - (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (c) Disconnect connector D545 from the Mach Trim Actuator, M414. This is the task: Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801.
 - (d) Do a wiring check for good continuity as follows:

**INTEG FLT SYS
ACCESS UNIT,
M1474
D2209A**
pin 58
pin 59

**MACH TRIM
ACTUATOR,
M414
D545**
pin 6
pin 3

FCC-A

**INTEG FLT SYS
ACCESS UNIT,
M1474
D2209A**
pin 42
pin 43

**FCC-A, M1875
D10135C**
pin B1
pin A1

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FCC-B

**INTEG FLT SYS
ACCESS UNIT,
M1474**

**FCC-B, M1876
D10137C**

D2209B
pin 42 pin B1
pin 43 pin A1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the IFSAU, M1474. This is the task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - d) Re-connect connector D545 to the Mach Trim Actuator, M414.
 - 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 FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Re-connect connector D545 to the Mach Trim Actuator, M414.
- (3) Replace the IFSAU, M1474. These are the tasks:
 - Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801
 - Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the Mach Trim Actuator, M414. These are the tasks:
 - Mach Trim Actuator Removal, AMM TASK 22-11-24-000-801
 - Mach Trim Actuator Installation, AMM TASK 22-11-24-400-801
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do the DFCS BITE Mach Trim Library test 60.33. Full details of the DFCS Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. SMYD Computer Output Problem - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11403 SMYDC FLAPS INV
 - 1) Flight Control Computer (FCC)-A receives invalid data from the Stall Management Yaw Damper (SMYD) Computer-1.
- (b) 22-11404 SMYDC FLAPS INV
 - 1) FCC-B receives invalid data from the SMYD Computer-2.
- (c) 22-11397 SMYDC DATA INV (J1A-H04,G04)
 - 1) FCC-A receives invalid data from the SMYD Computer-1.
- (d) 22-11398 SMYDC DATA INV (J1A-H04,G04)
 - 1) FCC-B receives invalid data from the SMYD Computer-2.

SIA ALL

B. Possible Causes

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- (1) Air Data Inertial Reference Unit (ADIRU)

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- (2) SMYD Computer-1 (2), M1747 (M1748)
- (3) Flap Position Transmitted, T428 (T427)
- (4) FCC-A, M1875
- (5) FCC-B, M1876
- (6) Wiring

C. Related Data

- (1) WDM 27-32-11
- (2) WDM 27-32-12
- (3) WDM 27-32-21
- (4) WDM 27-32-22
- (5) SSM 22-11-52

D. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the 22 SMYDC test.

NOTE: When the DFCS BITE Test fails, RERUN shows on the Control Display Unit (CDU) Display after you push the Line Select Key (LSK) adjacent to TEST DATA.

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If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (c) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (d) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

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- (1) If only the maintenance message 22-11397 and/or 22-11398 shows, then do these steps.
 - (a) Align the ADIRU. This is the task: Air Data Inertial Reference System - Alignment from the ISDU, AMM TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, AMM TASK 34-21-00-820-801.
 - (b) RERUN the Library Test.
 - 1) Do the Repair Confirmation at the end of this task:

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- (2) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find SMYD maintenance messages, go the applicable Fault Isolation Manual (FIM) Tasks for the maintenance messages that show.
 - 1) Do the Repair Confirmation at the end of this task:
 - (b) If you do not find SMYD maintenance messages, then continue.
- (3) Swap SMYD 1, M1747 and SMYD 2, M1748, then do these steps:
 - (a) Exit Digital Flight Control System (DFCS) Built-In-Test Equipment (BITE) completely, then re-enter DFCS BITE.
 - (b) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the 22 SMYDC test.
 - (c) If the fault moves to the other SMYD, then replace these SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do the Repair Confirmation at the end of this task.
- (4) Adjust the Flap Position Transmitted, T428 (T427). This is the task: Flap Position Transmitter Adjustment and Test, AMM TASK 27-58-01-820-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (6) Do this check of the wiring:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the applicable SMYD Computer-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (c) Examine the wiring between the FCC-A (B) at the E1-1 (E1-4) Shelf and the SMYD Computer-1 (2) at the E3-2 Shelf as follows (WDM 27-32-12, WDM 27-32-22).

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CHANNEL A FAULT

FCC-A	SMYDC-1
D10135A	D3683A
pin H4	pin 95
pin G4	pin 94

CHANNEL B FAULT

FCC-B	SMYDC-2
D10137A	D3685A
pin H4	pin 95
pin G4	pin 94

- 1) If you find a problem with the wiring, do these steps:
 - a) Repair the wiring.
 - b) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the applicable SMYD Computer-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (7) Do this check of the wiring:
 - (a) Remove the Left (Right) Angle of Attack (AOA) Sensor, T433 (T437). To remove the sensor, do this task: Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801.
 - (b) Examine the connector pins and sockets for damage and unwanted objects.
 - (c) Remove the applicable SMYD Computer-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (d) Examine the wiring between the SMYD Computer-1 (2) at the E3-2 Shelf and the Left (Right) AOA Sensor, T433 (T437) and as follows (WDM 27-32-11, WDM 27-32-21).

L AOA Sensor	SMYDC-1
D365	D3683B
pin 1	pin 55
pin 2	ground
pin 3	pin 72
pin 4	pin 71
pin 5	pin 58

R AOA Sensor	SMYDC-2
D287	D3685B
pin 1	pin 55
pin 2	ground
pin 3	pin 71
pin 4	pin 72
pin 5	pin 58

- 1) If you find a problem with the wiring, do these steps:

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- a) Repair the wiring.
 - b) Re-install the Left (Right) AOA Sensor, T433 (T437). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - c) Re-install the applicable SMYD Computer-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem with the wiring, then continue:
- a) Re-install the applicable SMYD Computer-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (8) Replace the Left (Right) AOA, T433 (T437). These are the tasks:
- Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801
 - Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (9) Replace the applicable SMYD Computer-1 (2), M1747 (M1748). These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) On the CDU, make these selections: <CHANNEL A AND B.
 - <CHANNEL A AND B
 - SMYDC>
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

802. FCC Battery Bus Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

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For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

(a) PWR HOLDUP (J1C-54,58)

1) FCC-A (B) does not detect 28V DC, or Ground from the DC Battery Bus.

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B. Possible Causes

- (1) FCC-A, M1875
- (2) FCC-B, M1876
- (3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

D. Related Data

- (1) WDM 22-14-11
- (2) SSM 22-14-11

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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(1) Do this check for power at FCC-A or FCC-B:

(a) If the maintenance message is on channel A, then do these steps;

- 1) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- 4) Do a check for 28 VDC between pin 54 of connector D10135C and structure ground:

(b) If the maintenance message is on channel B, then do these steps;

- 1) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) 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>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- 4) Do a check for 28 VDC between pin 54 of connector D10137C and structure ground:

(c) If there is 28 VDC at the pins, then do these steps:

- 1) Install a new FCC. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Do the Repair Confirmation at the end of this task.

(d) If there is not 28 VDC at the pin, then continue.

(2) If the fail message is on channel A, then do these steps;

(a) Disconnect connector D41807P from the P18-1 circuit breaker panel.

(b) Do a check for 28 VDC power at pin 3 of D41807J.

(c) If you do not find 28 VDC at pin 3, then do these steps:

- 1) Replace the following circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- 2) Re-connect connector D41807P to the P18-1 circuit breaker panel.
- 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Do the repair confirmation at the end of this task.

(d) If you find 28 VDC at pin 3 of D41807J, then continue.

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- (e) Do a continuity check between these pins of connector D41807P at the P18-1 panel and connector D10135C for FCC-A (WDM 22-14-11):

D41807P	D10135C
pin 3	pin 54

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- 3) Re-connect connector D41807P to the P18-1 circuit breaker panel.
- 4) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 5) Do the Repair Confirmation at the end of this task.

- (3) If the fail message is on channel B, then do these steps;

- (a) Disconnect connector D46061P from the P18-1 circuit breaker panel.
- (b) Do a check for 28 VDC power at pin 28 of D46061P.
- (c) If you do not find 28 VDC at pin 28, then do these steps:
 - 1) Replace the following circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

- 2) Re-connect connector D46061P to the P6 circuit breaker panel.
 - 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you find 28 VDC at pin 28 of D46061P, then continue.
- (e) Do a continuity check between these pins of connector D46061J at the P18-1 panel and connector D10137C for FCC-B (WDM 22-14-11):

D46061P	D10137C
pin 28	pin 54

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 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>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)

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- 3) Re-connect connector D46061P to the P6 circuit breaker panel.
 - 4) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (4) If the fail message is on channel A, then do these steps;
- (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a check for ground at pin 58 of connector D10135C (WDM 22-11-11)
 - (c) If you do not find a ground at pin 58, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the repair confirmation at the end of this task.
- (5) If the fail message is on channel B, then do these steps;
- (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a check for ground at pin 58 of connector D10137C (WDM 22-11-11)
 - (c) If you do not find a ground at pin 58, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the repair confirmation at the end of this task.

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G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) On the CDU, make these selections: <CHANNEL A AND B.
 - <CHANNEL A AND B
 - <FCC
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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803. FCC, BPCU Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) BUS PWR CONT UNIT (J1C-A05)
 - (b) BUS PWR CONT UNIT (J1C-B05)
 - (c) BUS PWR CONT UNIT (J1B-H14)
- (2) The FCC-A (B) does not detect the Bus Power Control Unit (BPCU).

B. Possible Causes

- (1) BPCU, G15
- (2) Wiring Problem
- (3) FCC-A (B) , M1875 (M1876)
- (4) EXTERNAL POWER CONTACTOR Circuit Breaker, C937
- (5) AUXILIARY POWER BREAKER, C803
- (6) GENERATOR BREAKER 1 Circuit Breaker, C801

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00803	AUXILIARY POWER BREAKER
---	---	C00801	GENERATOR BREAKER 1

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00937	EXTERNAL POWER CONTACTOR
---	---	C00802	GENERATOR BREAKER 2

D. Related Data

- (1) WDM 22-11-11
- (2) SSM 22-11-11

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801 or DFCS BITE Test.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU after you push the LSK adjacent to TEST DATA. If necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Replace the BPCU. These are the tasks:
 - BPCU Removal, AMM TASK 24-41-21-000-801
 - BPCU Installation, AMM TASK 24-41-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (2) If the maintenance message is on Channel A, then do these steps:
 - (a) Remove FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the BPCU, G15. This is the task: BPCU Removal, AMM TASK 24-41-21-000-801.
 - (c) Do a wiring check between FCC-A at the E1-1 shelf, and BPCU at the E4-2 shelf as follows (WDM 22-11-11):

FCC-A	BPCU
D10135B	D10898B
pin H14	pin 65

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the BPCU, G15. This is the task: BPCU Installation, AMM TASK 24-41-21-400-801.
 - c) Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, re-install the BPCU, G15, then continue. This is the task: BPCU Installation, AMM TASK 24-41-21-400-801.
 - (d) If External Power is used to do the BITE Procedure, do this task: EPC FAULT - Fault Isolation, 24-41 TASK 804.
 - 1) Do the Repair Confirmation at the end of this task.
 - (e) If APU Power is used to do the BITE Procedure, do this task: GCB/APB FAULT For APU GCU - Fault Isolation, 24-21 TASK 809.
 - 1) Do the Repair Confirmation at the end of this task.
 - (f) If Generator Power is used to do the BITE Procedure, do this task: GCB/APB FAULT For GCU 1 - Fault Isolation, 24-21 TASK 807.
 - 1) Do the Repair Confirmation at the end of this task.
 - (g) Install a new FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 1) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message is on Channel B, then do these steps:
 - (a) Remove FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the BPCU, G15. This is the task: BPCU Removal, AMM TASK 24-41-21-000-801.

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- (c) Do a wiring check between FCC-B at the E1-4 shelf, and BPCU at the E4-2 shelf as follows (WDM 22-11-11):

FCC-B	BPCU
D10137B	D10898B
pin H14	pin 52

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the BPCU, G15. This is the task: BPCU Installation, AMM TASK 24-41-21-400-801.
 - c) Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, re-install the BPCU, G15, then continue. This is the task: BPCU Installation, AMM TASK 24-41-21-400-801.
- (d) If External Power is used to do the BITE Procedure, do this task: EPC FAULT - Fault Isolation, 24-41 TASK 804.
- 1) Do the Repair Confirmation at the end of this task.
- (e) If APU Power is used to do the BITE Procedure, do this task: GCB/APB FAULT For APU GCU - Fault Isolation, 24-21 TASK 809.
- 1) Do the Repair Confirmation at the end of this task.
- (f) If Generator Power is used to do the BITE Procedure, do this task: GCB/APB FAULT For GCU 2 - Fault Isolation, 24-21 TASK 808.
- 1) Do the Repair Confirmation at the end of this task.
- (g) Install a new FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
- (2) If RERUN still shows on the CDU, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
- (3) If RERUN does not show on the CDU, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <FCC
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message still shows, continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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804. Auto Flight Status Annunciator Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) AUTO FLT STAT ANN-CPT
 - (b) AUTO FLT STAT ANN-CPT (J1A-E05)
 - (c) AUTO FLT STAT ANN-CPT (J1B-B07)
 - (d) AUTO FLT STAT ANN-CPT (J1B-D07)
 - (e) AUTO FLT STAT ANN-F/O
 - (f) AUTO FLT STAT ANN-F/O (J1A-E05)
 - (g) AUTO FLT STAT ANN-F/O (J1B-B07)
 - (h) AUTO FLT STAT ANN-F/O (J1B-D07)
 - (i) FCC-A (J1A-E05)
 - (j) FCC-B (J1A-E05)
- (2) FCC-A: The flight control computer A (FCC-A) does not detect the captain's autoflight status annunciator (ASA) during the ground test.
- (3) FCC-B: The flight control computer B (FCC-B) does not detect the first officer's autoflight status annunciator (ASA) during the ground test.

B. Possible Causes

- (1) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (2) Autoflight status annunciator (ASA), N170 (captain's) or N171 (first officer's)
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-14-11)
- (2) (WDM 22-14-11)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Install a new ASA, N170 or N171. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (2) Replace the applicable FCC, M1875 or M1876.

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These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the captain's ASA, N170. To remove it, do this task: Annunciator - Removal, AMM TASK 22-11-32-000-801.
 - (c) Do a wiring check between these pins shown on the CDU at FCC-A connector D10135A or D10135B and connector D2435 (WDM 22-14-11):

NOTE: If no pins are shown on the CDU, then check all the pins shown below.

D10135A	D2435
pin E5	pin 7
pin E5	pin 8

D10135B	D2435
pin D7	pin 11
pin G5	pin 9
pin B7	pin 12

- (d) If you find a problem with the wiring, then do this step:
 - 1) Repair the wiring.
- (e) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (f) Re-install the captain's ASA, N170. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
- (g) Do the Repair Confirmation at the end of this task.
- (4) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the first officer's ASA, N171. To remove it, do this task: Annunciator - Removal, AMM TASK 22-11-32-000-801.
 - (c) Do a wiring check between these pins shown on the CDU at the FCC-B connector D10137A and connector D2439:

NOTE: If no pins are shown on the CDU, then check all the pins shown below.

D10137A	D2439
pin E5	pin 7
pin E5	pin 8

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D10137B	D2439
pin D7	pin 11
pin G5	pin 9
pin B7	pin 12

- (d) If you find a problem with the wiring, then do this step:
 - 1) Repair the wiring.
- (e) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (f) Re-install the first officer's ASA, N171. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
- (g) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <FCC
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

808. CDS/DEU-1 Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) CDS/DEU-1 (J1A-A2)
 - (b) CDS/DEU-1 (J1A-A6)
 - (c) CDS/DEU-1 (J1A-B2)
 - (d) CDS/DEU-1 (J1A-B6)
 - (e) CDS/DEU-1 (J1B-A2)
 - (f) CDS/DEU-1 (J1B-B2)
- (2) This maintenance message detects these problems:

NOTE: The pins listed on the CDU indicate which fault you have.

 - (a) FCC-A: The flight control computer A (FCC-A) does not detect the display electronics unit-1 (DEU-1).

NOTE: Pins J1B-B2 and J1B-A2

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- (b) FCC-B: The flight control computer B (FCC-B) does not detect the display electronics unit-1 (DEU-1).
NOTE: Pins J1A-B2 and J1A-A2
- (c) FCC-A: The display electronics unit-1 (DEU-1) does not receive commands from the flight control computer A (FCC-A).
NOTE: Pins J1A-B6 and J1A-A6
- (d) FCC-B: The display electronics unit-1 (DEU-1) does not receive commands from the flight control computer B (FCC-B).
NOTE: Pins J1A-B6 and J1A-A6

B. Possible Causes

- (1) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (2) Display electronics unit (DEU-1), M1808
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-11-51)
- (2) (SSM 22-11-52)
- (3) (WDM 22-11-51)
- (4) (WDM 31-62-15)
- (5) (WDM 31-62-25)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.
NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.
 - (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) If an FCC related CDS maintenance message shows, then go to the applicable fault isolation task for the maintenance message.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If an FCC related CDS maintenance message does not show, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove DEU-1, M1808. To remove it, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.

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- (c) For input pins J1B-B02 and J1B-A02;
- 1) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D3973D at the E3-1 shelf (WDM 31-62-15):

D10135B	D3973D
pin A2	pin B15
pin B2	pin A15

- (d) For output pins J1A-B06 and J1B-A06;
- 1) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D3973A at the E3-1 shelf (WDM 31-62-15):

D10135A	D3973A
pin A6	pin D12
pin B6	pin C12

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install DEU-1, M1808. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

- (f) If you do not find a problem with the wiring, then continue.
- 1) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (4) If the maintenance message is on channel B, then do this check of the wiring:
- (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove DEU-1, M1808. To remove it, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.

- (c) For input pins J1B-B02 AND J1B-A02;
- 1) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D3973D at the E3-1 shelf (WDM 31-62-15):

D10137A	D3973D
pin A2	pin B15
pin B2	pin A15

- (d) For output pins J1A-B06 AND J1B-A06;
- 1) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D3973D at the E3-1 shelf (WDM 31-62-15):

D10137A	D3973A
pin A6	pin D12
pin B6	pin C12

- (e) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install DEU-1, M1808. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Install a new DEU-1, M1808. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (6) Replace the applicable FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <CDS
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

809. CDS/DEU-2 Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) CDS/DEU-2 (J1A-A2)
- (b) CDS/DEU-2 (J1A-A6)
- (c) CDS/DEU-2 (J1A-B2)
- (d) CDS/DEU-2 (J1A-B6)
- (e) CDS/DEU-2 (J1B-A2)

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- (f) CDS/DEU-2 (J1B-B2)
- (2) This maintenance message detects these problems:
NOTE: The pins listed on the CDU indicate which fault you have.
 - (a) FCC-A: The flight control computer A (FCC-A) does not detect the display electronics unit-2 (DEU-2).
NOTE: Pins J1A-B2 and J1A-A2
 - (b) FCC-B: The flight control computer B (FCC-B) does not detect the display electronics unit-2 (DEU-2).
NOTE: Pins J1B-B2 and J1B-A2
 - (c) FCC-A: The display electronics unit-2 (DEU-2) does not receive commands from the flight control computer A (FCC-A).
NOTE: Pins J1A-B6 and J1A-A6
 - (d) FCC-B: The display electronics unit-2 (DEU-2) does not receive commands from the flight control computer B (FCC-B).
NOTE: Pins J1A-B6 and J1A-A6

B. Possible Causes

- (1) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (2) Display electronics unit (DEU-2), M1809
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-11-51)
- (2) (SSM 22-11-52)
- (3) (WDM 22-11-51)
- (4) (WDM 31-62-15)
- (5) (WDM 31-62-25)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.

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NOTE: If the library test 61 shows TEST FAILED for channel B only and only maintenance message 22-11115 shows on the CDU display, then ignore this failure. This is a nuisance fault.

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- (b) If the maintenance message does not show, then there was an intermittent fault.

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E. Fault Isolation Procedure

- (1) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) If an FCC related CDS maintenance message shows, then go to the applicable fault isolation task for the maintenance message.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If an FCC related CDS maintenance message does not show, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (3) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove DEU-2, M1809. To remove it, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.
 - (c) For input pins J1A-B02 and J1A-A02;
 - 1) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D3975D at the E3-1 shelf (WDM 31-62-25):

D10135A		D3975D
pin A2	.....	pin B15
pin B2	.....	pin A15
 - (d) For output pins J1A-B06 and J1B-A06;
 - 1) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D3975A at the E3-1 shelf (WDM 31-62-15):

D10135A		D3975A
pin A6	.....	pin D12
pin B6	.....	pin C12
 - (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install DEU-2, M1809. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove DEU-2, M1809. To remove it, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.

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(c) For input pins J1B-B02 AND J1B-A02;

- 1) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D3975D at the E3-1 shelf (WDM 31-62-15):

D10137B	D3975D
pin A2	pin B15
pin B2	pin A15

(d) For output pins J1A-B06 AND J1B-A06;

- 1) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D3975D at the E3-1 shelf (WDM 31-62-15):

D10137A	D3975D
pin A6	pin D12
pin B6	pin C12

(e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install DEU-2, M1809. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.
- 4) Do the Repair Confirmation at the end of this task.

(f) If you do not find a problem with the wiring, then continue.

- 1) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

(5) Install a new DEU-2, M1809. To install it, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

(a) Do the Repair Confirmation at the end of this task.

(b) If the Repair Confirmation is not satisfactory, then continue.

(6) Replace the applicable FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

(a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

(1) Do these steps:

(a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.

- 1) If the maintenance message does not show, then you corrected the fault.

(b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.

- 1) Make these selections on the CDU:

- a) <CHANNEL A AND B
- b) <CDS

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- (c) If the maintenance message does not show, then you corrected the fault.

END OF TASK

810. ADM Pitot Pressure Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) ADM TOTAL PRESS-1
 - (b) ADM TOTAL PRESS-2
- (2) Maintenance message ADM TOTAL PRESS-1 detects this problem:
 - (a) FCC-A receives invalid data from the air data module (ADM) - left pitot pressure.
- (3) Maintenance message ADM TOTAL PRESS-2 detects this problem:
 - (a) FCC-B receives invalid data from the air data module (ADM) - left pitot pressure.

B. Possible Causes

- (1) ADM - pitot pressure, M1750 (left) or M1753 (right)
- (2) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Related Data

- (1) (SSM 22-11-52)
- (2) (SSM 34-21-12)
- (3) (WDM 34-21-12)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If an ADIRU maintenance message shows, then go to the applicable fault isolation task for the maintenance message.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
 - (b) If an ADIRU maintenance message does not show, then continue.
- (2) If the maintenance message is on channel A, then do this exchange check ADM TOTAL PRESS-1:
 - (a) Put a tag that reads "SUSPECT" on the ADM TOTAL PRESS-1, M1750.
 - (b) Put a tag that reads "OK" on the ADM TOTAL PRESS-2, M1753.
 - (c) Exchange the locations of the ADM TOTAL PRESS-1, M1750 and the ADM TOTAL PRESS-2, M1753.

These are the tasks:

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Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,
Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: Make sure you do the installation test for each ADM.

- (d) Do the Repair Confirmation at the end of the this task.
- (e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM TOTAL PRESS-1, M1750.

- 1) If it is your airline's policy, return the ADM TOTAL PRESS Modules to their original locations.

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,
Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: The ADM tagged "OK" goes in the ADM TOTAL PRESS-2, M1753 rack location. The ADM tagged "SUSPECT" goes in the ADM TOTAL PRESS-1, M1750 rack location.

- 2) Remove the tags from the ADMs.

- (f) If the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-1, and the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-2, then do these steps:

- 1) Replace the ADM tagged "SUSPECT".

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,
Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: If it is your airline's policy, you must return the ADM tagged "OK" to its original location.

- 2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.
- 3) Remove the tags from the ADMs.

- (g) If the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-1, and the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-2, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

- 1) If it is your airline's policy, return the ADMs to their original locations.

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,
Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: The ADM tagged "OK" goes in the ADM TOTAL PRESS-2, M1753 rack location. The FCC tagged "SUSPECT" goes in the ADM TOTAL PRESS-1, M1750 rack location.

- 2) Remove the tags from the ADMs.
- 3) Continue with the fault isolation procedure for the applicable maintenance message.

- (3) If the maintenance message is on channel B, then do this exchange check ADM TOTAL PRESS-2:

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- (a) Put a tag that reads "SUSPECT" on the ADM TOTAL PRESS-2, M1753.
- (b) Put a tag that reads "OK" on the ADM TOTAL PRESS-1, M1750.
- (c) Exchange the locations of the ADM TOTAL PRESS-1, M1750 and the ADM TOTAL PRESS-2, M1753.

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,

Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: Make sure you do the installation test for each ADM.

- (d) Do the Repair Confirmation at the end of the this task.
- (e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM TOTAL PRESS-2, M1753.

- 1) If it is your airline's policy, return the ADM TOTAL PRESS Modules to their original locations.

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,

Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: The ADM tagged "OK" goes in the ADM TOTAL PRESS-1, M1750 rack location. The ADM tagged "SUSPECT" goes in the ADM TOTAL PRESS-2, M1753 rack location.

- 2) Remove the tags from the ADMs.
- (f) If the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-2, and the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-1, then do these steps:

- 1) Replace the ADM tagged "SUSPECT".

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,

Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: If it is your airline's policy, you must return the ADM tagged "OK" to its original location.

- 2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.
- 3) Remove the tags from the ADMs.
- (g) If the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-2, and the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-1, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

- 1) If it is your airline's policy, return the ADMs to their original locations.

These are the tasks:

Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801,

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Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.

NOTE: The ADM tagged "OK" goes in the ADM TOTAL PRESS-2, M1753 rack location. The FCC tagged "SUSPECT" goes in the ADM TOTAL PRESS-1, M1750 rack location.

- 2) Remove the tags from the ADMs.
- 3) Continue with the fault isolation procedure for the applicable maintenance message.
- (4) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (5) For maintenance message ADM TOTAL PRESS-1, do this check of the wiring:
 - (a) Remove the ADM TOTAL PRESS-1, M1750. To remove it, do this task: Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801.
 - (b) Remove the left ADIRU, M1749. To remove it, do this task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check between these pins shown at the ADM connector D3689, and ADIRU connector D3687A:

D3689	D3687A
pin 7	pin D10
pin 8	pin E10

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the left ADIRU, M1749. To install it, do this task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM TOTAL PRESS-1, M1750. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install the left ADIRU, M1749. To install it, do this task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM TOTAL PRESS-1, M1750. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (6) For maintenance message ADM TOTAL PRESS-2, do this check of the wiring:
 - (a) Remove the ADM TOTAL PRESS-2, M1753. To remove it, do this task: Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801.
 - (b) Remove the right ADIRU, M1752. To remove it, do this task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check between these pins shown at the ADM connector D3695, and ADIRU connector D3693A:

D3695	D3693A
pin 7	pin D10
pin 8	pin E10

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- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the right ADIRU, M1752. To install it, do this task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM TOTAL PRESS-2, M1753. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then do these steps:
- 1) Re-install the right ADIRU, M1752. To install it, do this task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM TOTAL PRESS-2, M1753. To install it, do this task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
- 1) If the maintenance message does not show, then you corrected the fault.
- (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
- 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <ADIRU
- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

811. Air Data Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

Table 201 Air Data Problem Faults

MAINT MSG No.	MESSAGE TEXT	SUSPECT LRU(S)	FAULT DESCRIPTION
22-11007	STATIC PRESS IN	• ADM STATIC PRESS-1	FCC(s) receive the invalid data from the Air Data Module (ADM) - Left Static Pressure.
22-11008	STATIC PRESS INV	• ADM STATIC PRESS-2	FCC(s) receive the invalid data from the ADM - Right Static Pressure.
22-11019	STATIC PRESS DATA INV	• ADIRU(ADC)-1 • ADM STATIC PRESS-1	FCC(s) detect MACH signal invalid, Static pressure invalid, or True airspeed invalid from the ADIRU Air Data Computer (ADC)-1.
22-11020	STATIC PRESS DATA INV	• ADIRU(ADC)-2 • ADM STATIC PRESS-2	FCC(s) detect MACH signal invalid, Static pressure invalid, or True airspeed invalid from the ADIRU (ADC)-2.

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Table 201 Air Data Problem Faults (Continued)

MAINT MSG No.	MESSAGE TEXT	SUSPECT LRU(S)	FAULT DESCRIPTION
22-11021	BARO ALT INV	• ADM STATIC PRESS-1 • EFIS CONT PANL-CPT CDS/DEU-1	FCC(s) detect Baro corrected altitude invalid from the ADIRU (ADC)-1.
22-11022	BARO ALT INV	• ADM STATIC PRESS-2 • EFIS CONT PANL-CPT CDS/DEU-2	FCC(s) detect Baro corrected altitude invalid from the ADIRU (ADC)-2.
22-11032	MACH INV/OUT OF RANGE	• ADIRU(ADC)-1 • ADM STATIC PRESS-1 • ADM TOTAL PRESS-1	FCC(s) detect MACH signal invalid.
22-11033	MACH INV/OUT OF RANGE	• ADIRU(ADC)-2 • ADM STATIC PRESS-2 • ADM TOTAL PRESS-2	FCC(s) detect MACH signal invalid.
22-11733	TAS INV	• ADIRU (ADC)-1 • ADM TOTAL PRESS-1 • ADM STATIC PRESS-1	FCC(s) receive invalid True Airspeed (TAS) data from the ADIRU (ADC)-1. ^{*[1]}
22-11734	TAS INV	• ADIRU (ADC)-2 • ADM TOTAL PRESS-2 • ADM STATIC PRESS-2	FCC(s) receive invalid TAS data from the ADIRU (ADC)-2. ^{*[2]}
22-11737	TAS DIFF	• ADM TOTAL PRESS-1 • ADM TOTAL PRESS-2 • ADM STATIC PRESS-1 • ADM STATIC PRESS-2	FCC(s) receives the TAS data with a disagreement between the ADIRU (ADC)-1 and -2.
22-11738	COMPUTED A/S DIFF	• ADM TOTAL PRESS-1 • ADM TOTAL PRESS-2 • ADM STATIC PRESS-1 • ADM STATIC PRESS-2	FCC(s) receives Computed Airspeed (CAS) data with a disagreement between the ADIRU (ADC)-1 and -2.
22-11739	COMPUTED A/S INV	• ADIRU (ADC)-1 • ADM STATIC PRESS-1 • ADM TOTAL PRESS-1	FCC(s) received invalid CAS data from the ADIRU-1.
22-11740	COMPUTED A/S INV	• ADIRU (ADC)-2 • ADM STATIC PRESS-2 • ADM TOTAL PRESS-2	FCC(s) received invalid CAS data from the ADIRU-2.
22-11754	UNCOR BARO ALT INV	• ADIRU(ADC)-1 • ADM STATIC PRESS-1	FCC-A receives the invalid Uncorrected Baro Altitude from the ADIRU (ADC)-1.
22-11755	UNCOR BARO ALT INV	• ADIRU(ADC)-2 • ADM STATIC PRESS-2	FCC-B receives the invalid Uncorrected Baro Altitude from the ADIRU (ADC)-2.

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*[1] If the FCC-A fault history shows maintenance message 22-11209 for the same flight leg, then the most probable causes are:

Total Air Temperature (TAT), M171
ADIRU-1, M1749

*[2] If the FCC-B fault history shows maintenance message 22-11210 for the same flight leg, then the most probable causes are:

TAT, M171
ADIRU-2, M1752

B. Possible Causes

- (1) ADIRU-1 (2), M1749 (M1752)
- (2) ADM - Left (Right) Pitot Pressure, M1750 (M1753)
- (3) ADM - Left (Right) Static Pressure, M1751 (M1754)
- (4) FCC-A (B), M1875 (M1876)
- (5) TAT Probe, M171
- (6) Wiring

C. Related Data

- (1) SSM 22-11-52
- (2) SSM 34-21-12
- (3) WDM 34-21-12
- (4) WDM 34-21-22

D. Initial Evaluation

- (1) The DFCS BITE Procedure (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the LSK adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If an ADIRU maintenance message shows, then go to the applicable FIM Task for the maintenance message.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If an ADIRU maintenance message does not show, then continue.

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- (2) If the maintenance message is on channel A, then do this exchange check ADM TOTAL PRESS-1:
 - (a) Put a tag that reads "SUSPECT" on the ADM Left Pitot Pressure, M1750.
 - (b) Put a tag that reads "OK" on the ADM Right Pitot Pressure, M1753.
 - (c) Exchange the locations of the ADM Left Pitot Pressure, M1750 and the ADM Right Pitot Pressure, M1753. These are the tasks:

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- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
- Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801
- 1) Make sure that you do the installation test for each ADM.

(d) Do the Repair Confirmation at the end of this task.

(e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM Left Pitot Pressure, M1750.

- 1) If it is your airline's policy, return the ADM TOTAL PRESS Modules to their original locations. These are the tasks:

- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
- Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801

NOTE: The ADM tagged "OK" goes in the ADM Right Pitot Pressure, M1753 rack location. The ADM tagged "SUSPECT" goes in the ADM Left Pitot Pressure, M1750 rack location.

- 2) Remove the tags from the ADMs.

(f) If the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-1, and the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-2, then do these steps:

- 1) Replace the ADM tagged "SUSPECT". These are the tasks:

- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
- Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801

NOTE: If it is your airline's policy, you must return the ADM tagged "OK" to its original location.

- 2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.

- 3) Remove the tags from the ADMs.

(g) If the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-1, and the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-2, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

- 1) If it is your airline's policy, return the ADMs to their original locations. These are the tasks:

- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
- Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801

NOTE: The ADM tagged "OK" goes in the ADM Right Pitot Pressure, M1753 rack location. The FCC tagged "SUSPECT" goes in the ADM Left Pitot Pressure, M1750 rack location.

- 2) Remove the tags from the ADMs.

- 3) Continue with the fault isolation procedure for the applicable maintenance message.

(3) If the maintenance message is on channel B, then do this exchange check ADM TOTAL PRESS-2:

- (a) Put a tag that reads "SUSPECT" on the ADM Right Pitot Pressure, M1753.
- (b) Put a tag that reads "OK" on the ADM Left Pitot Pressure, M1750.

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- (c) Exchange the locations of the ADM Left Pitot Pressure, M1750 and the ADM Right Pitot Pressure, M1753. These are the tasks:
- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
 - Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801
- 1) Make sure that you do the installation test for each ADM.
- (d) Do the Repair Confirmation at the end of this task.
- (e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM Right Pitot Pressure, M1753.

- 1) If it is your airline's policy, return the ADM TOTAL PRESS Modules to their original locations. These are the tasks:
- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
 - Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801
- NOTE: The ADM tagged "OK" goes in the ADM Left Pitot Pressure, M1750 rack location. The ADM tagged "SUSPECT" goes in the ADM Right Pitot Pressure, M1753 rack location.
- 2) Remove the tags from the ADMs.
- (f) If the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-2, and the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-1, then do these steps:

- 1) Replace the ADM tagged "SUSPECT". These are the tasks:
- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
 - Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801
- NOTE: If it is your airline's policy, you must return the ADM tagged "OK" to its original location.
- 2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.
- 3) Remove the tags from the ADMs.

- (g) If the Repair Confirmation is not satisfactory for the ADM TOTAL PRESS-2, and the Repair Confirmation is satisfactory for the ADM TOTAL PRESS-1, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

- 1) If it is your airline's policy, return the ADMs to their original locations. These are the tasks:
- Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801
 - Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801
- NOTE: The ADM tagged "OK" goes in the ADM Right Pitot Pressure, M1753 rack location. The FCC tagged "SUSPECT" goes in the ADM Left Pitot Pressure, M1750 rack location.
- 2) Remove the tags from the ADMs.
- 3) Continue with the fault isolation procedure for the applicable maintenance message.

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(4) If the maintenance message is on channel A, then do this exchange check ADM STATIC PRESS-1:

- (a) Put a tag that reads "SUSPECT" on the ADM Left Static Pressure, M1751.
- (b) Put a tag that reads "OK" on the ADM Right Static Pressure, M1754.
- (c) Exchange the locations of the ADM Left Static Pressure, M1751 and the ADM Right Static Pressure, M1754. These are the tasks:

- Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
- Static Air Data Module - Installation, AMM TASK 34-21-04-400-802
- 1) Make sure that you do the installation test for each ADM.

(d) Do the Repair Confirmation at the end of this task.

(e) If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM Left Static Pressure, M1751.

- 1) If it is your airline's policy, return the ADM STATIC PRESS Modules to their original locations. These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: The ADM tagged "OK" goes in the ADM Right Static Pressure, M1754 rack location. The ADM tagged "SUSPECT" goes in the ADM Left Static Pressure, M1751 rack location.

2) Remove the tags from the ADMs.

(f) If the Repair Confirmation is satisfactory for the ADM STATIC PRESS-1, and the Repair Confirmation is not satisfactory for the ADM STATIC PRESS-2, then do these steps:

- 1) Replace the ADM tagged "SUSPECT". These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: If it is your airline's policy, return the ADM tagged "OK" to its original location.

2) Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.

3) Remove the tags from the ADMs.

(g) If the Repair Confirmation is not satisfactory for the ADM STATIC PRESS-1, and the Repair Confirmation is satisfactory for the ADM STATIC PRESS-2, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

- 1) If it is your airline's policy, return the ADMs to their original locations. These are the tasks:

- Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
- Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: The ADM tagged "OK" goes in the ADM Right Static Pressure, M1754 rack location. The FCC tagged "SUSPECT" goes in the ADM Left Static Pressure, M1751 rack location.

2) Remove the tags from the ADMs.

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- 3) Continue with the fault isolation procedure for the applicable maintenance message.
- (5) If the maintenance message is on channel B, then do this exchange check ADM STATIC PRESS-2:
- Put a tag that reads "SUSPECT" on the ADM Right Static Pressure, M1754.
 - Put a tag that reads "OK" on the ADM Left Static Pressure, M1751.
 - Exchange the locations of the ADM Left Static Pressure, M1751 and the ADM Right Static Pressure, M1754. These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: Make sure you do the installation test for each ADM.
 - Do the Repair Confirmation at the end of this task.
 - If the Repair Confirmation is satisfactory for the FCC-A and FCC-B, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the ADM Right Static Pressure, M1754.

 - If it is your airline's policy, return the ADM STATIC PRESS Modules to their original locations. These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: The ADM tagged "OK" goes in the ADM Left Static Pressure, M1751 rack location. The ADM tagged "SUSPECT" goes in the ADM Right Static Pressure, M1754 rack location.
 - Remove the tags from the ADMs.
 - If the Repair Confirmation is satisfactory for the ADM STATIC PRESS-2, and the Repair Confirmation is not satisfactory for the ADM STATIC PRESS-1, then do these steps:
 - Replace the ADM tagged "SUSPECT". These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: If it is your airline's policy, you must return the ADM tagged "OK" to its original location.
 - Do the Repair Confirmation at the end of the fault isolation task for the applicable maintenance message.
 - Remove the tags from the ADMs.
 - If the Repair Confirmation is not satisfactory for the ADM STATIC PRESS-2, and the Repair Confirmation is satisfactory for the ADM STATIC PRESS-1, then continue.

NOTE: The fault is not in the ADM tagged "SUSPECT".

 - If it is your airline's policy, return the ADMs to their original locations. These are the tasks:
 - Static Air Data Module - Removal, AMM TASK 34-21-04-000-802
 - Static Air Data Module - Installation, AMM TASK 34-21-04-400-802

NOTE: The ADM tagged "OK" goes in the ADM Right Static Pressure, M1754 rack location. The FCC tagged "SUSPECT" goes in the ADM Left Static Pressure, M1751 rack location.

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- 2) Remove the tags from the ADMs.
 - 3) Continue with the fault isolation procedure for the applicable maintenance message.
- (6) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance messages shows, then continue.

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- (7) For the SUSPECTED LRU(S) ADM TOTAL PRESS-1, do this check of the wiring (WDM 34-21-12):
- (a) Remove the ADM Left Pitot Pressure, M1750. This is the task: Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801.
 - (b) Remove the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check as follows:

**ADM Left Pitot
Pressure,
M1750
D3689**

**ADIRU-1, M1749
D3687A**

pin 7	.....	pin D10
pin 8	.....	pin E10

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM Left Pitot Pressure, M1750. This is the task: Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM Left Pitot Pressure, M1750. This is the task: Pitot Air Data Module - Installation, AMM TASK 34-21-04-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (8) For the SUSPECTED LRU(S) ADM TOTAL PRESS-2, do this check of the wiring (WDM 34-21-22):
- (a) Remove the ADM Right Pitot Pressure, M1753. This is the task: Pitot Air Data Module - Removal, AMM TASK 34-21-04-000-801.
 - (b) Remove the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check as follows:

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**ADM Right Pitot
Pressure,**

M1753

D3695

pin 7 pin D10

pin 8 pin E10

ADIRU-2, M1752

D3693A

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM Right Pitot Pressure, M1753. This is the task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then do these steps:
- 1) Re-install the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM Right Pitot Pressure, M1753. This is the task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

SIA ALL

- (9) For SUSPECTED LRU(S) the ADM STATIC PRESS-1, do this check of the wiring (WDM 34-21-12):
- (a) Remove the ADM Left Static Pressure, M1751. This is the task: Static Air Data Module - Removal, AMM TASK 34-21-04-000-802.
 - (b) Remove the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check as follows:

**ADM Left Static
Pressure,**

M1751

D3691

pin 7 pin D9

pin 8 pin E9

ADIRU-1, M1749

D3687A

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM Left Static Pressure, M1751. This is the task: Static Air Data Module - Installation, AMM TASK 34-21-04-400-802.
 - 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install the ADIRU-1, M1749. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM Left Static Pressure, M1751. This is the task: Static Air Data Module - Installation, AMM TASK 34-21-04-400-802.
 - 3) Do the Repair Confirmation at the end of this task.
- (10) For the SUSPECTED LRU(S) ADM STATIC PRESS-2, do this check of the wiring (WDM 34-21-22):
 - (a) Remove the ADM Right Static Pressure, M1754. This is the task: Static Air Data Module - Removal, AMM TASK 34-21-04-000-802.
 - (b) Remove the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (c) Do a wiring check as follows:

**ADM STATIC
PRESS-2,**

**M1754
D3695**

pin 7 pin D10
pin 8 pin E10

**ADIRU-2, M1752
D3693A**

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the ADM Right Static Pressure, M1754. This is the task: Static Air Data Module - Installation, AMM TASK 34-21-04-400-802.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install the ADIRU-2, M1752. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 2) Re-install the ADM Right Static Pressure, M1754. This is the task: Static Air Data Module - Installation, AMM TASK 34-21-04-400-802.
 - 3) Do the Repair Confirmation at the end of this task.

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- (11) Do this wiring check (WDM 34-21-12, WDM 34-21-22):
 - (a) Remove the ADIRU-1 (2), M1749 (M1752). This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (b) Remove the TAT Probe, M171. This is the task: Total Air Temperature Probe - Removal, AMM TASK 34-21-06-000-801.
 - (c) Do a wiring check as follows:

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TAT Probe,

M171

ADIRU-1, M1749

D277

D3687A

pin 3 pin H8

pin 4 pin J8

TAT Probe,

M171

ADIRU-2, M1752

D277

D3693A

pin 5 pin H8

pin 2 pin J8

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the ADIRU-1 (2), M1749 (M1752). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-install the TAT Probe, M171. This is the task: Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801.
 - 4) For the applicable Air Data Inertial Reference System (ADIRS), do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - 5) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then re-install the ADIRU-1 (2), M1749 (M1752). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
- (12) Re-install the TAT Probe, M171. This is the task: Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801.
 - (a) Do the Post Installation Test at the end of the task.
 - (b) If the TAT Probe, M171 does not operate as specified in the Aircraft Maintenance Manual (AMM) Task, then replace the TAT Probe, M171. These are the tasks:
 - Total Air Temperature Probe - Removal, AMM TASK 34-21-06-000-801
 - Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801
 - 1) For the applicable ADIRS, do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - 2) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) Do these steps:
 - (a) If the RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - (b) If the RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B

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- b) <ADIRU
- (c) If the maintenance message does not show, then you corrected the problem.

———— **END OF TASK** ————

812. EFIS Control Panel Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) EFIS CONT PANL-CAPT
 - (b) EFIS CONT PANL-F/O
- (2) These maintenance messages detect these problems:
 - (a) The flight control computer (FCC) does not detect the captain's EFIS control panel.
 - (b) The flight control computer (FCC) does not detect the first officer's EFIS control panel.

B. Possible Causes

- (1) EFIS control panel, P7-1 (captain's) or P7-2 (first officer's)
- (2) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-11-52)
- (2) (SSM 31-62-11)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

 - (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) Replace the applicable EFIS control panel, P7-1 or P7-2.

These are the tasks:

EFIS Control Panel Removal, AMM TASK 31-62-12-000-801,
EFIS Control Panel Installation, AMM TASK 31-62-12-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) For maintenance message EFIS CONT PANL-CAPT, do this check of the wiring:
 - (a) Remove DEU-1, M1808. To remove it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - (b) Remove the captains EFIS control panel (EFCP), P7-1. To remove it, do this task: EFIS Control Panel Removal, AMM TASK 31-62-12-000-801.

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- (c) Do a wiring check between these pins shown at the EFCP connector D3993, and DEU connector D3973A:

D3993	D3973A
pin 35	pin J1
pin 36	pin K1

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the captain's EFCP, P7-1. To install it, do this task: EFIS Control Panel Installation, AMM TASK 31-62-12-400-801.
 - 3) Re-install DEU-1, M1808. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then do these steps:
- 1) Re-install the captain's EFCP, P7-1. To install it, do this task: EFIS Control Panel Installation, AMM TASK 31-62-12-400-801.
 - 2) Re-install DEU-1, M1808. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (4) For maintenance message EFIS CONT PANL-F/O, do this check of the wiring:
- (a) Remove DEU-2, M1809. To remove it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
- (b) Remove the F/O's EFIS control panel (EFCP), P7-2. To remove it, do this task: EFIS Control Panel Removal, AMM TASK 31-62-12-000-801.
- (c) Do a wiring check between these pins shown at the EFCP connector D3995, and DEU connector D3975D:

D3995	D3975D
pin 35	pin J1
pin 36	pin K1

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the F/O's EFCP, P7-2. To install it, do this task: EFIS Control Panel Installation, AMM TASK 31-62-12-400-801.
 - 3) Re-install DEU-2, M1809. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you find a problem with the wiring, then do these steps:
- 1) Re-install the F/O's EFCP, P7-1. To install it, do this task: EFIS Control Panel Installation, AMM TASK 31-62-12-400-801.
 - 2) Re-install DEU-2, M1809. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <ADIRU
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

813. FCC, Captain's VHF/NAV Control Panel Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:
 - (a) 22-11091 LOC NOT TUNED - FCC-B does not receive LOC tune signal from VHF/NAV control panel-1.
 - (b) 22-11092 LOC NOT TUNED - FCC-A does not receive LOC tune signal from VHF/NAV control panel-1.
 - (c) 22-11239 LOC NOT TUNED - FCC-A does not receive LOC tune signal from VHF/NAV Control Panel-1, Flight Control Computer A (FCC-A) is the Autopilot in command during flight.

SIA ALL

B. Possible Causes

- (1) Wiring
- (2) Captain's VHF/NAV control panel, P8-25
- (3) FCC-A, (M1875) or Flight Control Computer B (FCC-B) (M1876)

C. Related Data

- (1) SSM 22-11-16
- (2) SSM 22-11-18
- (3) SSM 34-51-41
- (4) WDM 22-11-18
- (5) WDM 34-51-41

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.

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- (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message(s) does not show on the CDU when the test is complete, then there was an intermittent fault.
 - 2) If the maintenance message(s) show on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a wiring check between the Captain's VHF/NAV Control Panel, P8-25 and the FCC-A (B).
 - (a) Remove FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Captain's VHF/NAV control panel, P8-25. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf, and connector D263 at the P8 control stand (WDM 34-51-41):

FCC-A

CAPT VHF/NAV

CP, P8-28

D263

pin 38

FCC-A, M1875

D10135B

pin K14

FCC-B

CAPT VHF/NAV

CP, P8-28

D263

pin 38

FCC-B, M1876

D10137A

pin D1

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Captain's VHF/NAV control panel, P8-25. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 3) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) Install a new Captain's VHF/NAV control panel, P8-25. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do a check of the FCC-A (B). This is the task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Select a selection for the applicable channel.
 - (b) Select the FCC Test.

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- (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If you find other related maintenance messages, then do the Fault Isolation procedures for the maintenance messages that you find.
 - 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
- (2) Use the CDU to do the DFCS BITE Library Test in the steps below. This is the task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message(s) does not show on the CDU when the test is complete, then you have corrected the problem.
 - 2) If the maintenance message(s) show on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

814. FCC, First Officer's VHF/NAV Control Panel Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:
 - (a) 22-11093 LOC NOT TUNED - FCC-A does not receive LOC tune signal from VHF/NAV control panel-2.
 - (b) 22-11094 LOC NOT TUNED - FCC-B does not receive LOC tune signal from VHF/NAV control panel-2.
 - (c) 22-11241 LOC NOT TUNED - FCC-B does not receive LOC tune signal from VHF/NAV Control Panel-2, FCC-B is the Autopilot in command during flight.

SIA ALL

B. Possible Causes

- (1) Wiring problem
- (2) First Officer's VHF/NAV control panel, P8-26
- (3) Flight Control Computer-A (B), M1875 (M1876)

C. Related Data

- (1) SSM 22-11-16
- (2) SSM 22-11-18
- (3) SSM 34-51-41

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- (4) WDM 22-11-18
- (5) WDM 34-51-41

D. Initial Evaluation

- (1) Use the CDU to do the DFCS BITE Library Test in the steps below. Details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message(s) does not show on the CDU when the test is complete, then there was an intermittent fault.
 - 2) If the maintenance message(s) show on the CDU when the test is complete, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the wiring between the First Officer's VHF/NAV Control Panel, P8-26 and the FCC-A (B).
 - (a) Remove FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the First Officer's VHF/NAV Control Panel, P8-26. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf, and connector D265 at the P8 control stand (WDM 34-51-41):

FCC-A

FO VHF/NAV CP,

P8-26

D265

pin 38 pin D1

FCC-A, M1875

D10135A

FCC-B

FO VHF/NAV CP,

P8-26

D265

pin 38 pin K14

FCC-B, M1876

D10137B

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the First Officer's VHF/NAV control panel, P8-26. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 3) Re-install FCC. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) Install a new First Officer's VHF/NAV control panel, P8-26. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do a check of the FCC-A (B). This is the task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Select a selection for the applicable channel.
 - (b) Select the FCC Test.
 - (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If you find other related maintenance messages, then do the Fault Isolation procedures for the maintenance messages that you find.
 - 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
- (2) Use the CDU to do the DFCS BITE Library Test in the steps below. Details of the DFCS BITE Library Tests are in this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECTED LIBRARY TESTS > 24 MMR/ILS > EXECUTE.
 - (c) Follow the instruction on the CDU to find related maintenance message(s). It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
 - 1) If the maintenance message(s) does not show on the CDU when the test is complete, then you have corrected the fault.
 - 2) If the maintenance message(s) show on the CDU when the test is complete, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

815. FCC, Squat Switch Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
 - (a) AIR/GND SW INDICATES AIR MODE (J1A-B03)
- (2) This maintenance message detects these problems:
 - (a) The flight control computer A (FCC-A) does not detect the squat switch.
 - (b) The flight control computer B (FCC-B) does not detect the squat switch.

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B. Possible Causes

- (1) Proximity switch electronics unit (PSEU), M2061
- (2) Wiring problem
- (3) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Related Data

- (1) (SSM 22-11-12)
- (2) (WDM 22-11-12)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) could not be done.

NOTE: When the DFCS BITE was performed the message "CONDITIONS INHIBITING BITE ENTRY FOR FCC-A (or B)" is shown followed by the maintenance message, and the airplane is in ground mode.

E. Fault Isolation Procedure

- (1) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D11142 from the PSEU, M2061.
 - (c) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D11142 at the PSEU (WDM 22-11-12):

D10135A	D11142
pin B3	pin 47

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-connect connector D11142 to the PSEU, M2061.
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D11140 from the PSEU, M2061.
 - (c) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D11140 at the PSEU (WDM 22-11-12):

D10137A	D11140
pin B3	pin 47

- (d) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-install FCC-B, M1877. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-connect connector D11140 to the PSEU, M2061.
- 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Replace the PSEU, M2061.

These are the tasks:

Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801,
Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

 - (a) Do the Repair Confirmation at the end of this task.
 - 1) If the Repair Confirmation is not satisfactory, then continue.
- (4) Replace the applicable FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) Make sure that the MAINT page is shown on the CDU.
 - (b) Push the LSK adjacent to <DFCS.
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

816. FCC, Flight Director Switch Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) MCP (J1A-F01)
 - (b) MCP (J1B-F01)
- (2) This maintenance message detects these problems:

NOTE: The pins listed on the CDU indicate which fault you have.

 - (a) The flight control computer A (FCC-A) does not detect flight director switch A.

NOTE: Pin J1B-F01
 - (b) The flight control computer B (FCC-B) does not detect flight director switch A.

NOTE: Pins J1A-F01

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- (c) The flight control computer A (FCC-A) does not detect flight director switch B.

NOTE: Pin J1A-F01

- (d) The flight control computer B (FCC-B) does not detect flight director switch B.

NOTE: Pins J1B-F01

B. Possible Causes

- (1) Mode control panel (MCP), M198
- (2) Wiring problem
- (3) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Related Data

- (1) (SSM 22-11-11)
- (2) (WDM 22-11-11)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) If the maintenance message is on channel A, then do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MCP, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) For input pin J1B-F01;
 - 1) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D299 at the MCP (WDM 22-11-11):

D10135B	D299
pin F1	pin 23

- (d) For input pin J1A-F01;
 - 1) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D1815 at the MCP (WDM 22-11-11):

D10135A	D1815
pin F1	pin 23

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.

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- 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install the MCP, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MCP, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) For input pin J1B-F01;
 - 1) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D299 at the MCP (WDM 22-11-11):

D10137B	D299
pin F1	pin 23
 - (d) For input pin J1A-F01;
 - 1) Do a wiring check between these pins of connector D10137A at the E1-4 shelf and connector D1815 at the MCP (WDM 22-11-11):

D10137A	D1815
pin F1	pin 23
 - (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the MCP, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (4) Install a new MCP, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - 1) If the Repair Confirmation is not satisfactory, then continue.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.

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- (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
- 1) Push the INIT/REF key on the CDU to exit BITE.
 - 2) Make these selections on the CDU:
 - a) <INDEX
 - b) MAINT>
 - c) <DFCS
 - d) EXTENDED MAINTENANCE
 - e) MCP TESTS
 - f) <CHANNEL A AND B
 - 3) Do the instructions shown on the CDU to complete the test.
- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

817. Mach Trim 28 VDC Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) MACH TRIM 28 VDC (J1C-53)
- (2) The FCC-A or FCC-B does not detect 28 VDC for the mach trim system.

B. Possible Causes

- (1) These are the circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- (2) Wiring problem
- (3) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

D. Related Data

- (1) (SSM 22-18-11)
- (2) (WDM 22-18-11)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- (2) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check for power at FCC-A or FCC-B:

- (a) If the maintenance message is on channel A, then do these steps;

- 1) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- 4) Do a check for 28 VDC power between pin 53 of connector D10135C and structure ground.

- (b) If the maintenance message is on channel B, then do these steps:

- 1) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.

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- 3) 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>
B	2	C01064	AFCS SYS B MACH TRIM DC

- 4) Do a check for 28 VDC power between pin 53 of connector D10137C and structure ground.

- (c) If there is 28 VDC at the pin, then do these steps:

- 1) Install a new FCC. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Do the Repair Confirmation at the end of this task.

- (d) If there is not 28 VDC at the pins, then continue.

- (2) If the maintenance message is on channel A, then do these steps;

- (a) Disconnect connector D41803P from the P18-1 circuit breaker panel.

- (b) Do a check for 28 VDC power at pin 4 of D41803J.

- (c) If you do not find 28 VDC at pin 4, then do these step:

- 1) Replace this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- 2) Re-connect connector D41803P to the P18-1 circuit breaker panel.

- 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 4) Do the Repair Confirmation at the end of this task.

- (d) If you find 28 VDC at pin 4 of D41803J, then continue.

- (e) Do a continuity check between these pins of connector D41803P at the P18-1 panel and connector D10135C for FCC-A:

D41803P	D10135C
pin 4	pin 53

- (f) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00457	AFCS SYS A MACH TRIM DC

- 3) Re-connect connector D41803P to the P18-1 circuit breaker panel.

- 4) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 5) Do the Repair Confirmation at the end of this task.

- (3) If the maintenance message is on channel B, then do these steps;

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- (a) Disconnect connector D46065P from the P6-2 circuit breaker panel.
- (b) Do a check for 28 VDC power at pin 3 of D46065P.
- (c) If you do not find 28 VDC at pin 3, then do these steps:
 - 1) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01064	AFCS SYS B MACH TRIM DC

- 2) Re-connect connector D46065P to the P6 circuit breaker panel.
 - 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you find 28 VDC at pin 28 of D46065P, then continue.
- (e) Do a continuity check between these pins of connector D46065P at the P6 panel and connector D10137C for FCC-B:

D46065P	D10137C
pin 3	pin 53

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 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>
B	2	C01064	AFCS SYS B MACH TRIM DC

- 3) Re-connect connector D46065P to the P6 circuit breaker panel.
 - 4) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>
 - d) EXECUTE
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

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818. FCC, Stab Trim Down Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the applicable FIM instructions.

- (a) COL SW MODULE M1201
 - (b) COL SW MODULE M1201 (J1C-K03)
 - (c) STAB TRIM SERVO
 - (d) STAB TRIM SERVO (J1C-K03)
- (2) These maintenance messages detects these problems:
- NOTE: The pins listed on the Control Display Unit (CDU) indicate which fault you have.
- (a) The Flight Control Computer (FCC)-A, M1875 can not trim the stabilizer down.
 - (b) The Flight Control Computer (FCC)-B, M1876 can not trim the stabilizer down.

B. Possible Causes

- (1) Stab Trim Servo Motor, M1659
- (2) Stab Trim Cutout Relay, R384
- (3) Stab Limit Switch, S145
- (4) Column Switching Module, M1201
- (5) FCC-A (B), M1875 (M1876)
- (6) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) SSM 22-13-11
- (2) WDM 22-13-11

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E. Initial Evaluation

- (1) The DFCS BITE Procedure (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU Display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

NOTE: If EDFCS-BITE library test 32 fails, the operator should select the LSK associated with "TEST DATA". If only subtests S035 and/or S135 fail and the data field displays a value between 1.00 and 1.5, the test should be considered a PASS. If the value is outside these limits, troubleshoot per the Fault Isolation Procedure below.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Reset this circuit breaker:

NOTE: The internal STM logic will reset when you reset this circuit breaker.

- (a) Open this circuit breaker for at least 10 seconds:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.
- (2) Do this check of the Stabilizer Position Sensor:
- (a) Make these selections on the CDU:
 - 1) Push the INIT/REF Key on the CDU to exit BITE.
 - 2) <INDEX
 - 3) MAINT>
 - 4) <DFCS
 - 5) <LRU REPLACEMENT TESTS
 - 6) <CHANNEL A AND B
 - 7) Push the NEXT PAGE Key.
 - 8) <STAB SENS
 - (b) Do the instructions on the CDU to complete the test.
 - (c) If a maintenance message shows on the CDU, then go to the applicable Fault Isolation Task for the maintenance message.
 - 1) Do the Repair Confirmation at the end of this task.
 - (d) If a maintenance message does not show on the CDU, then continue.
- (3) If the maintenance message is on channel A, then do this check of the wiring (WDM 22-13-11):

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- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

- (c) Disconnect connector D381 from the Stab Trim Servo Motor, M1659.

- (d) Do a continuity check between these pins of connector D10135C at the E1-1 Shelf and connector D381 at the Stab Trim Servo Motor, M1659 as follows:

FCC-A	SERVO MOTOR
D10135C	D381
pin K3	pin 6

- 1) If there is continuity, then do these steps:

- a) Replace the Stab Trim Servo Motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
- b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- c) Do the Repair Confirmation at the end of this task.
- d) If the Repair Confirmation is not satisfactory, then do these steps:
 - <1> Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <2> Do the Repair Confirmation at the end of this task.

- 2) If there is no continuity, then continue:

- a) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (4) If the maintenance message is on channel B, then do this check of the wiring (WDM 22-13-11):

- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

- (c) Disconnect connector D381 from the Stab Trim Servo Motor, M1659.

- (d) Do a continuity check between these pins of connector D10137C at the E1-4 Shelf and connector D381 at the Stab Trim Servo Motor, M1659 as follows:

FCC-B	SERVO MOTOR
D10137C	D381
pin K3	pin 6

- 1) If there is continuity, then do these steps:

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- a) Replace the Stab Trim Servo Motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - b) Re-install the FCC-B, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - d) If the Repair Confirmation is not satisfactory, then do these steps:
 - <1> Replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <2> Do the Repair Confirmation at the end of this task.
- 2) If there is no continuity, then continue:
- a) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Do this check of the Stab Trim Cutout Relay, R384 and Trim Limit Switch, S145 (WDM 22-13-11):
- (a) Make sure that the Stab Trim Cutout Switch on the Panel, P8 is in the NORMAL position.
 - (b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for an open circuit between pins 6 and 7 of connector D381.
 - 1) If there is continuity between pins 6 and 7, then do these steps:
 - a) Replace the Stab Trim Cutout Relay, R384.
 - b) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If there is an open circuit between pins 6 and 7, then continue.
- (d) Put the Stab Trim Cutout Switch on the Panel, P8 in the CUTOUT position.
- (e) Do a check for an open circuit between pins 6 and 7 of connector D381.
 - 1) If there is an open circuit between pins 6 and 7, then do these steps:
 - a) Remove the Right Lower Side Panel on the Control Stand, P8.
 - b) Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
 - c) Do a wiring check between these pins at connector D381 at the Stab Trim Servo Motor, M1659 and connector D2485 at the Stab Trim Cutout Relay, R384 as follows:

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SERVO MOTOR

D381

pin 6 pin A2

CUTOUT RLY

D2485

- <1> If there is continuity, then do these steps:
- <a> Replace the Stab Trim Cutout Relay, R384.
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - <c> Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then continue.
- d) Disconnect connector D4083P from the E1-1 Shelf.
- e) Do a wiring check between these pins at connector D381 at the Column Switching Module, M1201 and connector D4083P at the E1-1 shelf as follows:

COLUMN SWITCHING

MODULE

D381

pin 6 pin A4

E1-1 SHELF

D4083P

- <1> If there is continuity, then do these steps:
- <a> Repair the wiring between the E1-1 Shelf and the Stab Trim Cutout Relay, R384.
 - Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
 - <c> Re-install the Right Lower Side Panel on the Control Stand, P8.
 - <d> Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - <e> Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then do these steps:
- <a> Replace the Stab Nose Down Limit Switch, S145. These are the tasks:
 - Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - <c> Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
 - <d> Re-install the Right Lower Side Panel on the Control Stand, P8.
 - <e> Do the Repair Confirmation at the end of this task.
 - I. If the maintenance message still shows, correct the wiring problem at wire W3381-0004-20 or W3381-0012-20.

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- 2) If there is continuity between pins 6 and 7, then continue.
 - a) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
- (6) Do this check at the Column Switching Module, M1201 (WDM 22-13-11):
 - (a) Remove the Right Lower Side Panel on the Control Stand, P8.
 - (b) Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
 - (c) Disconnect connector D2257 at the Column Switching Module, M1201 (Column Cutout Switch Removal, AMM TASK 27-41-51-000-801).
 - (d) Do a wiring check between these pins at connector D2257 at the Column Switching Module, M1201 and connector D2485 at the Stab Trim Cutout Relay, R384 as follows:

**COLUMN
SWITCHING
MODULE**

CUTOUT RLY

D2257

D2485

pin 13 pin D3

- 1) If you do not find a problem with the wiring, then do these steps:
 - a) Repair the wiring between the Column Switching Module, M1201 and FCC-A, M1875.
 - b) Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
 - c) Re-install the Right Lower Side Panel on the Control Stand, P8.
 - d) Re-connect connector D2257 to the Column Switching Module, M1201 (Column Cutout Switch Removal, AMM TASK 27-41-51-000-801).
 - e) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem with the wiring, then continue.
- (e) Do a wiring check between these pins at connector D2257 at the Column Switching Module, M1201 and connector D2485 at the Stab Trim Cutout Relay, R384 as follows:

**COLUMN
SWITCHING
MODULE**

CUTOUT RLY

D2257

D2485

pin 12 pin A3

- 1) If you do not find a problem with the wiring, then replace the Column Switching Module, M1201. These are the tasks:
 - Column Cutout Switch Removal, AMM TASK 27-41-51-000-801
 - Column Cutout Switch Installation, AMM TASK 27-41-51-400-801
- 2) If you find problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2257 to the Column Switching Module, M1201 (Column Cutout Switch Removal, AMM TASK 27-41-51-000-801).
- (f) Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
- (g) Re-install the Right Lower Side Panel on the Control Stand, P8.
- (h) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Make sure this access panel is closed:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door
- (2) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
- (3) If RERUN does not show on the CDU Display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - (b) If the maintenance message does not show, then you corrected the problem.
 - (c) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

819. FCC Stabilizer Trim UP Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

 - For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C.
 - For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
 - (a) COL SW MODULE M1201
 - (b) COL SW MODULE M1201 (J1C-G02)
 - (c) STAB TRIM SERVO
 - (d) STAB TRIM SERVO (J1C-G02)
- (2) These maintenance messages detect these problems:

NOTE: The pins shown on the Control Display Unit (CDU) indicate which fault you have.

 - (a) The Flight Control Computer (FCC)-A can not trim the stabilizer UP.
 - (b) The Flight Control Computer (FCC)-B can not trim the stabilizer UP.

B. Possible Causes

- (1) Stab Trim Servo Motor, M1659
- (2) Stab Trim Limit Switch, S145
- (3) Stab Nose Up Limit Switch, S144
- (4) Stab Trim Cutout Relay, R384
- (5) Column Switching Module, M1201

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- (6) FCC-A (B), M1875 (M1876)
- (7) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

D. Related Data

- (1) WDM 22-13-11
- (2) SSM 22-13-11

E. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Open, wait at least 10 seconds and then close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

NOTE: The internal STM Logic will reset when you reset the circuit breaker.

- (a) Do the Repair Confirmation at the end of the task.
- (2) Do this check of the Stabilizer Position Sensor:
 - (a) Make these selections on the CDU:
 - 1) Push the INIT/REF Key on the CDU to exit BITE.
 - 2) <INDEX
 - 3) MAINT>
 - 4) <DFCS
 - 5) <LRU REPLACEMENT TESTS
 - 6) <CHANNEL A AND B
 - 7) Push the NEXT PAGE Key
 - 8) <STAB SENS

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- (b) Do the instructions on the CDU to complete the test.
- (c) If maintenance messages show on the CDU, then refer to the table at the end of the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801 (or 22-MAINT MSG INDEX) to find the applicable FIM Tasks for the messages that show.
- 1) Do the Repair Confirmation at the end of this task.
- (d) If maintenance messages do not show on the CDU, then continue.
- (3) If the maintenance message is on channel A, then do this check of the wiring (WDM 22-13-11):
- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|-----------------------------|
| 311BL | Stabilizer Trim Access Door |
- (c) Disconnect connector D381 from the Stab Trim Servo Motor, M1659.
- (d) Do a continuity check between the FCC-A connector at the E1-1 Shelf and the Stab Trim Servo Motor, M1659 connector as follows:
- | FCC-A | SERVO MOTOR |
|------------------|--------------------|
| D10135C | D381 |
| pin G2 | pin 5 |
- 1) If you find continuity, then do these steps:
- a) Replace the Stab Trim Servo Motor, M1659. These are the tasks
- Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
- b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- c) Do the Repair Confirmation at the end of this task.
- <1> If the Repair Confirmation is not satisfactory, replace FCC-A, M1875. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- <2> Do the Repair Confirmation at the end of this task.
- 2) If you do not find continuity, then continue.
- a) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message is on channel B, then do this check of the wiring (WDM 22-13-11):
- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|-----------------------------|
| 311BL | Stabilizer Trim Access Door |
- (c) Disconnect connector D381 from the Stab Trim Servo Motor, M1659.

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- (d) Do a continuity check between the FCC-B connector at the E1-4 Shelf and the Stab Trim Servo Motor, M1659 connector as follows:

FCC-B	SERVO MOTOR
D10137C	D381
pin G2	pin 5

- 1) If you find continuity, then do these steps:
 - a) Replace the Stab Trim Servo Motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - b) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - <1> If the Repair Confirmation is not satisfactory, then replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - <a> Do the Repair Confirmation at the end of this task.
 - 2) If you do not find continuity, then continue.
 - a) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Do this check of the Stab Trim Cutout Relay, R384 and Stab Trim Limit Switch, S145 (WDM 22-13-11):
- (a) Make sure that the Stab Trim Cutout Switch on the Panel, P8 is in the NORMAL position.
 - (b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01048	AFCS SYS A ENGAGE INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00716	AFCS SYS B ENGAGE INTLK

- (c) Do a check for an open circuit between pins 5 and 7 of connector D381.
 - 1) If there is continuity between pins 5 and 7, then do these steps:
 - a) Replace the Stab Trim Cutout Relay, R384.
 - b) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If there is an open circuit between pins 5 and 7, then continue.
- (d) Put the Stab Trim Cutout Switch on the Panel, P8 in the CUTOUT position.
- (e) Do a check for an open circuit between pins 5 and 7 of connector D381.
 - 1) If there is an open circuit between pins 5 and 7, then do these steps:

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- a) Remove the Right Lower Side Panel on the Control Stand, P8.
- b) Disconnect connector D2485.
- c) Do a continuity check between the Stab Trim Servo Motor, M1659 connector and the Stab Trim Cutout Relay, R384 connector as follows:

SERVO MOTOR	CUTOUT RLY
D381	D2485
pin 5	pin D2

- <1> If there is continuity, then do these steps:
 - <a> Replace the Stab Trim Cutout Relay, R384.
 - Re-connect connector D381 to the Servo Motor, M1659.
 - <c> Re-connect connector D2485.
 - <d> Re-install the Right Lower Side Panel on the Control Stand, P8
 - <e> Do the Repair Confirmation at the end of this task.

<2> If there is no continuity, then continue.

- d) Re-connect connector D2485.
- e) Re-install the Right Lower Side Panel on the Control Stand, P8
- f) Disconnect connector D4083P from the E1-1 Shelf.
- g) Examine the wiring between the Stab Trim Servo Motor, M1659 connector and the E1-1 Shelf as follows:

SERVO MOTOR	E1-1 SHELF
D381	D4083P
pin 5	pin A5

- <1> If there is continuity, then do these steps:
 - <a> Repair the wiring between the E1-1 Shelf and the Stab Trim Cutout Relay, R384.
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - <c> Do the Repair Confirmation at the end of this task.
- <2> If there is no continuity, then do these steps:
 - <a> Replace the Stab Nose Up Limit Switch, S144. These are the tasks:
 - Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
 - Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
 - <c> Do the Repair Confirmation at the end of this task.
 - I. If the maintenance message still shows, repair the wiring problem at wire W3381-0005-20 or W3381-0010-20.

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- 2) If there is continuity between pins 5 and 7, then continue:
 - a) Re-connect connector D381 to the Stab Trim Servo Motor, M1659.
- (6) Do this check of the Column Switching Module, M1201 (WDM 22-13-11):
 - (a) Disconnect connector D2485 from the Stab Trim Cutout Relay, R384.
 - (b) Disconnect connector D2257 at the Column Switching Module, M1201 (Column Cutout Switch Removal, AMM TASK 27-41-51-000-801).
 - (c) Examine the wiring between the Column Switching Module, M1201 connector and the Stab Trim Cutout Relay, R384 connector as follows:

**COLUMN
SWITCHING
MODULE**

D2257

pin 15

CUTOUT RLY

D2485

pin D3

- 1) If you do not find a problem with the wiring, then do these steps:
 - a) Repair the wiring between the Column Switching Module, M1201 and FCC-A, M1875.
 - b) Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
 - c) Re-connect connector D2257 at the Column Switching Module, M1201 (Column Cutout Switch Installation, AMM TASK 27-41-51-400-801).
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you find a problem with the wiring, then continue.
- (d) Examine the wiring between the Column Switching Module, M1201 and the Stab Trim Cutout Relay, R384 connector as follows:

**COLUMN
SWITCHING
MODULE**

D2257

pin 13

CUTOUT RLY

D2485

pin D3

- 1) If you do not find a problem with the wiring, then replace the Column Switching Module, M1201. These are the tasks:
 - Column Cutout Switch Removal, AMM TASK 27-41-51-000-801
 - Column Cutout Switch Installation, AMM TASK 27-41-51-400-801
- 2) If you find problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2257 at the Column Switching Module, M1201.
- (e) Re-connect connector D2485 to the Stab Trim Cutout Relay, R384.
- (f) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Make sure this access panel is closed:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door
- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If RERUN does not show on the CDU Display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - <CHANNEL A AND B
 - <RUN SELECT LIBRARY TESTS
 - SPEED/STAB TRIM 32>
 - a) If the maintenance message does not show, then you corrected the problem.
 - b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

820. FCC, Remote Electronic Unit Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
- (a) REMOTE ELECTRONIC UNIT (J1C-K02)
- (2) This maintenance message detects these problems:
 - (a) The flight control computer A (FCC-A) does not detect the remote electronic unit (REU).
 - (b) The flight control computer B (FCC-B) does not detect the remote electronic unit (REU).

B. Possible Causes

- (1) Remote electronic unit (REU), M1353
- (2) Wiring problem
- (3) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Related Data

- (1) (SSM 22-14-11)
- (2) (WDM 22-14-11)

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D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the REU, M1353.

These are the tasks:

Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801,

Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.

- (a) Do the Repair Confirmation at the end of this task.

- 1) If the Repair Confirmation is not satisfactory, then continue.

- (2) If the maintenance message is on channel A, then do this check of the wiring:

- (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Remove the REU, M1353. To remove it, do this task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.

- (c) Do a wiring check between these pins of connector D10135C at the E1-1 shelf and connector D2501A at the E4-1 shelf (WDM 22-11-12):

D2501A

D10135C

pin F10 pin K2

- (d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.

- 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- 3) Re-install the REU, M1353. To install it, do this task: Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.

- 4) Do the Repair Confirmation at the end of this task.

- (e) If you do not find a problem with the wiring, then continue.

- 1) Re-install the REU, M1353. To install it, do this task: Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.

- (3) If the maintenance message is on channel B, then do this check of the wiring:

- (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Remove the REU, M1353. To remove it, do this task: Remote Electronics Unit (REU) Removal, AMM TASK 23-51-01-000-801.

- (c) Do a wiring check between these pins of connector D10137C at the E1-4 shelf and connector D2501A at the E4-1 shelf (WDM 22-14-11):

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D2501A

pin F10

D10135C

pin K2

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-B, M1877. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the REU, M1353. To install it, do this task: Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the REU, M1353. To install it, do this task: Remote Electronics Unit (REU) Installation, AMM TASK 23-51-01-000-802.
- (4) Replace the applicable FCC, M1875 or M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) <61 ALT ALERT
 - (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

821. FCC, Stab Trim Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) STAB TRIM SERVO
 - (b) COL SW MODULE M1201
- (2) This maintenance message detects these problems:

NOTE: The pins listed on the CDU indicate which fault you have.

 - (a) The flight control computer A (FCC-A) detects a stabilizer trim problem.
 - (b) The flight control computer B (FCC-B) detects a stabilizer trim problem.

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B. Possible Causes

- (1) Stab trim servo motor, M1659
- (2) Column switching module, M1201
- (3) Stab trim cutout relay, R384
- (4) Stab limit switch, S145
- (5) Wiring problem
- (6) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

C. Related Data

- (1) (SSM 22-13-11)
- (2) (WDM 22-13-11)

D. Initial Evaluation

- (1) The maintenance message shows when power is supplied to the FCC or DFCS BITE Procedure (22-11 TASK 801) was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Reset the following circuit breaker:

NOTE: The internal STM logic will reset when you reset this circuit breaker.

- (a) Open this circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.
 - 2) If the Repair Confirmation is not satisfactory, then continue.
- (2) Do this task: FCC, Stab Trim Down Problem - Fault Isolation, 22-15 TASK 818.
 - (a) If the maintenance message shows, continue.
 - (3) Do this task: FCC Stabilizer Trim UP Problem - Fault Isolation, 22-15 TASK 819.

———— **END OF TASK** ————

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822. FCC Model ID Disagree - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) 737-600 (J1A-B07,C07)
 - (b) 737-700 (J1A-B07,C07)
 - (c) 737-800 (J1A-B07,C07)
 - (d) UNDEFINED AIRPLANE (J1A-B07,C07)
- (2) The FCCs do not agree on the model identification.

B. Possible Causes

- (1) FCC-A, M1875
- (2) FCC-B, M1876
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-11-75)
- (2) (WDM 22-11-75)

D. Initial Evaluation

- (1) The maintenance message shows when power is supplied to the FCC or DFCS BITE Procedure (22-11 TASK 801) was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance message shows, continue.
- (2) Do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Do a continuity check between pins B7 and C7 of connector D10135A at the E1-1 shelf and structure ground (WDM 22-11-75).
 - (c) If you find continuity between pin B7 or C7 and structure ground, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue.
- (3) Do this check of the wiring:

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- (a) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Do a continuity check between pins B7 and C7 of connector D10137A at the E1-1 shelf and structure ground (WDM 22-11-75).
- (c) If you find continuity between pin B7 or C7 and structure ground, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCC-B, M1877. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) Push the INDEX button on the CDU.
 - (b) Push the line select key (LSK) adjacent to <DFCS.
 - 1) If the maintenance message does not show before the CDU prompts you for the test type, then you corrected the fault.

————— **END OF TASK** —————

823. Program Pin Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-11341 PWRUP SOP PARITY

NOTE: INTERFACE PINS: J1A-K08

- 1) FCC-A detects a parity error for program pin setting.

- (b) 22-11342 PWRUP SOP PARITY

NOTE: INTERFACE PINS: J1A-K08

- 1) FCC-B detects a parity error for program pin setting.

- (c) 22-11343 PROGRAM PIN INV

- 1) The FCCs detect program pin settings that do not agree.

- (d) 22-11401 PROG PIN ERR

- 1) FCC-A detects program pin settings that are not compatible with Data Load File.

- (e) 22-11402 PROG PIN ERR

- 1) FCC-BA detects program pin settings that are not compatible with Data Load File.

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- (2) The maintenance message shows when the DFCS BITE Procedure is initiated thru the CDU and the DFCS BITE SELF TEST fails.

NOTE: When the airplane power is turned on and the FCC is powering up, if a program pin setting is incorrect, the Speed Trim Fail Light, Mach Trim Fail Light, F/D Flag and NO AUTOLAND (CAT IIIB) can show as Flight Deck Effects (FDEs).

B. Possible Causes

- (1) FCC-A Switch Module, M1992
- (2) FCC-B Switch Module, M1993
- (3) FCC-A Switch Module, M2539
- (4) FCC-B Switch Module, M2540
- (5) Wiring
- (6) FCC-A, M1875
- (7) FCC-B, M1876

C. Related Data

- (1) SSM 22-11-75
- (2) WDM 22-11-75

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) If the maintenance message does not show during the DFCS BITE ENTRY SELF TEST, then there was an intermittent fault.
 - (b) If the maintenance message shows during the DFCS BITE ENTRY SELF TEST, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) On the DFCS BITE SELF TEST failure screen, push the LSK adjacent to CONTINUE on the CDU.
- (2) Review the DFCS BITE TEST OPTIONS MISCOMPARED data shown on the CDU.
- (3) Do these steps:
 - (a) Use the wiring diagram (WDM 22-11-75) to determine which pin or pins are incorrect.

NOTE: The pin or pins should match the pins indicated in the maintenance message.
 - (b) Loosen the screws on the applicable Switch Module (M1992, M1993, M2539, M2540) to get access to the switches.
 - (c) If the switches are not in the correct position, then do these steps.
 - 1) Put the switches in the correct position.
 - 2) Re-install the switch cover.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If the switches are in the correct position, then continue.
 - (e) Re-install the switch cover.
 - (f) Remove FCC-A, M1875 and FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (g) Disconnect the applicable wires from the applicable Switch Module (M1992, M1993, M2539, M2540) and do a continuity check between the FCC-A (B) pins shown on the DFCS BITE OPTION MISCOMPARED CDU screen and the applicable wires at the switch (WDM 22-11-75).
- (h) If there is a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install FCCs. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 3) Re-connect the wire to the Switch Module (M1992, M1993, M2539, M2540).
 - 4) Do the Repair Confirmation at the end of this task.
- (i) If you do not find a problem with the wiring, then continue.
 - 1) Replace the applicable Switch Module (M1992, M1993, M2539, M2540).
 - 2) Re-install FCCs. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (4) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Make sure to exit the DFCS BITE completely, then re-enter the DFCS BITE.
 - (b) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Cycle power to both FCC-A and FCC-B. Allow approximately 1 minute for the FCCs to fully power ON.
- (2) On the CDU, push the INDEX button.
- (3) Push the LSK adjacent to <DFCS>.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

824. FCC Synchronization Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) SYNCHRONIZATION
- (2) There is a problem with the test synch lines between the FCCs.

B. Possible Causes

- (1) FCC-A, M1875
- (2) FCC-B, M1876
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-11-11)
- (2) (WDM 22-11-11)

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D. Initial Evaluation

- (1) The maintenance message shows when power is supplied to the FCC or DFCS BITE Procedure (22-11 TASK 801) was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
(b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Do this check of the wiring:

- (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
(b) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
(c) Do a check of the connectors and sockets for bent or broken pins, dirt and damage.
(d) Do a wiring check between pin E11 of connector D10135A at the E1-1 shelf and pin E11 of connector D10137B at the E1-4 shelf (WDM 22-11-11):

D10135A	D10137B
pin E11	pin E11

- (e) If you find a problem with the wiring, do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCCs, M1875 and M1876. To install them, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
- (g) Do a wiring check between pin E11 of connector D10135B at the E1-1 shelf and pin E11 of connector D10137A at the E1-4 shelf (WDM 22-11-11):

D10135B	D10137A
pin E11	pin E11

- (h) If you find a problem with the wiring, do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCCs, M1875 and M1876. To install them, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

- (2) Replace FCC-A, M1875.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

- (a) Do the Repair Confirmation at the end of this task.

- (3) Replace FCC-B, M1876.

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These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

(a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

(1) Do these steps:

(a) Push the INDEX button on the CDU.

(b) Push the Line Select Key (LSK) adjacent to <DFCS.

1) If the maintenance message does not show before the CDU prompts you for the test type, then you corrected the fault.

————— **END OF TASK** —————

825. FCC Cross Channel Communication Problem - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) CROSS CHANNEL TEST FAIL

(b) FCC-A (J1B-B10,A10)

(c) FCC-A (J1B-E10,D10)

(d) FCC-B (J1B-B10,A10)

(e) FCC-B (J1B-E10,D10)

(2) There is a problem with the cross channel bus lines between the FCCs.

B. Possible Causes

(1) FCC-A, M1875

(2) FCC-B, M1876

(3) Wiring problem

C. Related Data

(1) (SSM 22-11-11)

(2) (SSM 22-11-51)

(3) (WDM 22-11-11)

(4) (WDM 22-11-51)

D. Initial Evaluation

(1) The maintenance message shows when power is supplied to the FCC or DFCS BITE Procedure (22-11 TASK 801) was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

(a) If the maintenance message shows, then do the Fault Isolation Procedure below.

(b) If the maintenance message does not show, then there was an intermittent fault.

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E. Fault Isolation Procedure

- (1) Do this check of the wiring:
 - (a) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Do a check of the connectors and sockets for bent or broken pins, dirt and damage.
 - (d) Do a wiring check between these pins of the FCC-A connectors at the E1-1 shelf and the FCC-B connectors at the E1-4 shelf for the applicable maintenance message (WDM 22-11-11 and WDM 22-11-51):

MAINT MESSAGE		
	FCC-A	FCC-B
CROSS CHANNEL	D10315A	D10137B
	pin H11	pin H11
TEST FAIL	D10135B	D10137A
	pin H11	pin H11
FCC-A (J1B-B10, A10)	D10135A	D10137B
	pin A10	pin A10
	pin B10	pin B10
FCC-A (J1B-E10, D10)	D10135A	D10137B
	pin D10	pin D10
	pin E10	pin E10
FCC-B (J1B-B10, A10)	D10135B	D10137A
	pin A10	pin A10
	pin B10	pin B10
FCC-B (J1B-E10, D10)	D10135B	D10137A
	pin D10	pin D10
	pin E10	pin E10

- (e) If you find a problem with the wiring, do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCCs, M1875 and M1876. To install them, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
- (2) Replace FCC-A, M1875.

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These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

(a) Do the Repair Confirmation at the end of this task.

(3) Replace FCC-B, M1876.

These are the tasks:

Flight Control Computer Removal, AMM TASK 22-11-33-000-801,

Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

(a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

(1) Do these steps:

(a) Push the INDEX button on the CDU.

(b) Push the Line Select Key (LSK) adjacent to <DFCS.

1) If the maintenance message does not show before the CDU prompts you for the test type, then you corrected the fault.

————— **END OF TASK** —————

826. SMYD Computer Data Problem - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 22-11081 NO SMYDC DATA:

1) FCC-A receives no data from SMYD-1

(b) 22-11082 NO SMYDC DATA:

1) FCC-B receives no data from SMYD-2

B. Possible Causes

(1) SMYD-1 (2), M1747 (M1748)

(2) FCC-A (B), M1875 (M1876)

(3) ADIRU, M1749 (M1752)

(4) Left (Right) Flap Position Transmitted, T427 (T428)

(5) Circuit Breaker, C1205 (C1207)

(6) Wiring

C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

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D. Related Data

- (1) WDM 27-32-11
- (2) WDM 27-32-12
- (3) WDM 27-32-21
- (4) WDM 27-32-22

E. Initial Evaluation

- (1) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - (b) Select CHANNEL A (B) > RUN SELECT LIBRARY TESTS > 22 SMYDC > EXECUTE.
 - (c) Follow the instructions on the CDU to find maintenance messages 22-11081 and 22-11082. It is possible that you will have to do more than one test to find it (Autotest, Interactive Test, or Surface Test).
- (2) If the maintenance messages do not show on the CDU when the test is complete, then there was an intermittent fault.
- (3) If the maintenance messages show on the CDU when the test is complete, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) For the ADIRU, M1749 (M1752), do this tasks: Air Data Inertial Reference System - Alignment from the ISDU, AMM TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, AMM TASK 34-21-00-820-801.
 - (a) RERUN the Library Test.
 - 1) Do the Repair Confirmation at the end of this task.
- (2) For the SMYD-1 (2), M1747 (M1748), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find SMYD maintenance messages, go the applicable FIM Tasks for the maintenance messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
- (3) Swap the SMYD 1, M1747, and SMYD 2, M1748, then do these steps:
 - (a) Exit DFCS BITE completely, then re-enter DFCS BITE.
 - (b) Do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Select INIT REF > INDEX > MAINT > DFCS > EXTENDED MAINTENANCE > BITE LIBRARY TESTS.
 - 2) Select CHANNEL A (B) > RUN SELECT LIBRARY TESTS > 22 SMYDC > EXECUTE.
 - (c) If the fault moves with faulty SMYD, then replace faulty SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do the Repair Confirmation at the end of this task.

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- (4) Adjust the Left (Right) flap position transmitter, T427 (T428). This is the task: Flap Position Transmitter Adjustment and Test, AMM TASK 27-58-01-820-801.

NOTE: For the maintenance message 22-11081 adjust the Right flap position transmitter, T428. For the maintenance message 22-11082 adjust the Left flap position transmitter, T427.

- (a) Do the Repair Confirmation at the end of this task.
- (5) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) If the maintenance messages show, then continue.
- (6) Do this check of the wiring:
- (a) Remove the applicable SMYD-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- (b) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (c) Examine the wiring between the SMYD-1 (2), M1747 (M1748), and FCC-A (B), M1875 (M1876) (WDM 27-32-12, WDM 27-32-22):

CHANNEL A

SMYD-1, M1747	FCC-A, M1875
D3683A	D10135A
pin 95	pin H4
pin 94	pin G4

CHANNEL B

SMYD-2, M1748	FCC-B, M1876
D3685A	D10137A
pin 95	pin H4
pin 94	pin G4

- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Re-install the applicable SMYD-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 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 and continue:
- a) Re-install the applicable SMYD-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- b) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (7) Do this check of the voltage at the Right flap position transmitter:
- NOTE: For the maintenance message 22-11081 occurrence.
- (a) Disconnect connector D229 from the Right flap position transmitter, T428.

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- (b) Do a check for voltage between pin 4 and pin 5 of connector D229 (WDM 27-32-11). The correct voltage is 28 VAC.
- (c) If the correct voltage is not present, then do this check of the wiring:
- 1) 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>
E	6	C01205	SMYD-1 SNSR EXC AC

- 2) Examine the wiring between connector D229 and circuit breaker C1205 (WDM 27-32-11):

T428	P18-2
D229	C1205
pin 4	term = L

- 3) Make sure that pin 5 of D229 has continuity to ground.
 - a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D229 to the Right flap position transmitter, T428.
 - <3> 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>
E	6	C01205	SMYD-1 SNSR EXC AC

- <4> Do the Repair Confirmation at the end of this task.

- b) If you do not find a problem with the wiring, then do these steps:
 - <1> Re-connect connector D229 to the Right flap position transmitter, T428.
 - <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>
E	6	C01205	SMYD-1 SNSR EXC AC

- <3> Replace the SMYD-1 SNSR EXC AC circuit breaker, C1205.
 - <4> Do the Repair Confirmation at the end of this task.

- (d) If the correct voltage is present, then continue.
- (8) Do this check of the voltage at the Left flap position transmitter:

NOTE: For the maintenance message 22-11082 occurrence.

 - (a) Disconnect connector D275 from the Left flap position transmitter, T427.
 - (b) Do a check for voltage between pin 4 and pin 5 of connector D275 (WDM 27-32-21). The correct voltage is 28 VAC.
 - (c) If the correct voltage is not present, then do this check of the wiring:



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

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

- 2) Examine the wiring between connector D275 and circuit breaker C1207 (WDM 27-32-21):

T427	P6-1
D275	C1207
pin 4	term = L

- 3) Make sure that pin 5 of D275 has continuity to ground.

- a) If you find a problem with the wiring, then do these steps:

- <1> Repair the wiring.
- <2> Re-connect connector D275 to the Left flap position transmitter, T427.
- <3> Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

- <4> Do the Repair Confirmation at the end of this task.

- b) If you do not find a problem with the wiring, then do these steps:

- <1> Re-connect connector D275 to the Left flap position transmitter, T427.
- <2> Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

- <3> Replace the SMYD-2 SNSR EXC AC circuit breaker, C1207.

- <4> Do the Repair Confirmation at the end of this task.

- (d) If the correct voltage is present, then continue.

- (9) Do this check of the wiring:

- (a) Remove the applicable SMYD-1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.

- (b) Examine the wiring between the Right (Left) flap position transmitted, T428 (T427), and SMYD-1 (2), M1747 (M1748) (WDM 27-32-11, WDM 27-32-21):

T428	SMYD-1, M1747
D229	D3683B
pin 6	pin 99
pin 7	pin 97
pin 8	pin 98

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T427	SMYD-2, M1748
D275	D3685B
pin 6	pin 99
pin 7	pin 97
pin 8	pin 98

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D229 (D275) to the Right (Left) flap position transmitted, T428 (T427).
 - c) Re-install the applicable SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 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 step and continue:
 - a) Re-install the applicable SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (10) Replace the Right (Left) flap position transmitted, T428 (T427). These are the tasks:
- NOTE: For the maintenance message 22-11081 replace the Right flap position transmitter, T428. For the maintenance message 22-11082 replace the Left flap position transmitter, T427.
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801.
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - (a) On the CDU, make these selections:<CHANNEL A AND B.
 - <CHANNEL A AND B
 - SMYDC>
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

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801. Airplane Has Pitch Oscillation - Fault Isolation

A. Description

- (1) This task is for these Observed Faults:
 - (a) Airplane has pitch oscillation (porpoises) with the Autopilot engaged.
- (2) The stabilizer trim wheel cycles nose-up and nose-down continuously with the Autopilot engaged.

B. Possible Causes

- (1) Autopilot Elevator Actuator worn linkages or lever assembly looseness/freeplay
- (2) Autopilot Elevator and Stabilizer Component Rigging
- (3) Autopilot Elevator Actuator A (B), M1020 (M1022)
- (4) Flight Control Computer (FCC)-A (B), M1875 (M1876)

C. Fault Isolation Procedure

- (1) Do this task: Autopilot Elevator Actuator Linkage Inspection, AMM TASK 22-11-26-200-802.
 - (a) If the observed fault symptom does not occur on the subsequent flight, then you corrected the fault.
 - (b) If the observed fault symptom occurs again on the subsequent flight, then continue.
- (2) Do a check of the Autopilot Elevator and Stabilizer Component Rigging. These are the tasks:
 - Elevator Rigging Test, AMM TASK 22-11-00-820-802
 - Stabilizer Rigging Test, AMM TASK 22-11-00-820-805
 - (a) If the observed fault symptom does not occur on the subsequent flight, then you corrected the fault.
 - (b) If the observed fault symptom occurs again on the subsequent flight, then continue.
- (3) Do a check of the Autopilot Elevator Actuator functionality. This is the task: Autopilot Elevator Actuator Test, AMM TASK 22-11-26-710-801.
 - (a) If the observed fault symptom does not occur on the subsequent flight, then you corrected the fault.
 - (b) If the observed fault symptom occurs again on the subsequent flight, then continue.
- (4) Replace the Autopilot Elevator Actuator, M1020 (M1022). These are the tasks:
 - Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801
 - Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801
 - (a) If the observed fault symptom does not occur on the subsequent flight, then you corrected the fault.
 - (b) If the observed fault symptom occurs again on the subsequent flight, then continue.
- (5) Replace the Flight Control Computer, M1875 (M1876). These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) If the observed fault symptom does not occur on the subsequent flight, then you corrected the fault.

————— **END OF TASK** —————

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802. Control Columns Moved when Autopilot Engaged - Fault Isolation

A. Description

- (1) The control columns move when pilot engages the autopilot.

B. Possible Causes

- (1) Elevator position sensor rigging problem.
- (2) Stabilizer position sensor rigging problem.
- (3) Autopilot Elevator Actuator problem.

C. Initial Evaluation

- (1) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.
- (2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.
- (3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Do this manual test:
 - (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
 - (b) Make sure that the CMD A or CMD B autopilot engage switch light comes on.
 - (c) Make sure that the control columns do not move when you engage the autopilot.
 - (d) If the control columns move when you engage the autopilot, then do the Fault Isolation Procedure below.
 - (e) If the control columns do not move when you engage the autopilot, then there was an intermittent fault.
 - (f) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
 - (g) Push the captain or first officer autopilot disengage switch again to stop the autopilot disengage warning sound.
- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

D. Fault Isolation Procedure

- (1) Do the adjustment for the elevator position sensor:
 - (a) Do this task: Elevator Position Sensor Adjustment and Test, AMM TASK 22-11-30-820-801.
 - (b) Do this task: Elevator Position Sensor Test, AMM TASK 22-11-30-710-801.

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- (c) Do the Repair Confirmation at the end of this task.
- (d) If the Repair Confirmation is not satisfactory, then continue.
- (2) Do the adjustment for the stabilizer position sensor:
 - (a) Do this task: Stabilizer Position Sensor Adjustment and Test, AMM TASK 22-11-31-820-801.
 - (b) Do this task: Stabilizer Position Sensor Test, AMM TASK 22-11-31-710-801.
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do the adjustment for the autopilot elevator actuator.
 - (a) Do this task: Autopilot Elevator Actuator Adjustment and Test, AMM TASK 22-11-26-820-801
 - (b) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.
- (2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.
- (3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



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- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Do this manual test:
 - (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
 - (b) Make sure that the CMD A or CMD B autopilot engage switch light comes on.
 - (c) Make sure that the control columns do not move when you engage the autopilot.
 - (d) If the control columns do not move when you engage the autopilot, then you corrected the fault.
 - (e) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
 - (f) Push the captain or first officer autopilot disengage switch again to stop the autopilot disengage warning sound.
- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

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803. Control Wheels Moved when Autopilot Engaged - Fault Isolation

A. Description

- (1) The control wheels move when pilot engages the autopilot.

B. Possible Causes

- (1) Aileron position sensor rigging problem.
- (2) Autopilot Aileron Actuator problem.

C. Initial Evaluation

- (1) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.
- (2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.
- (3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THEAILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Do this manual test:
 - (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
 - (b) Make sure that the CMD A or CMD B autopilot engage switch light comes on.
 - (c) Make sure that the control wheels do not move when you engage the autopilot.
 - (d) If the control wheels move when you engage the autopilot, then do the Fault Isolation Procedure below.
 - (e) If the control wheels do not move when you engage the autopilot, then there was an intermittent fault.
 - (f) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
 - (g) Push the captain or first officer autopilot disengage switch again to stop the autopilot disengage warning sound.
- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

D. Fault Isolation Procedure

- (1) Do the adjustment for the aileron position sensor:
 - (a) Do this task: Aileron Position Sensor Adjustment, AMM TASK 22-11-29-820-801.
 - (b) Do this task: Aileron Position Sensor Test, AMM TASK 22-11-29-710-801.
 - (c) Do the Repair Confirmation at the end of this task.
 - (d) If the Repair Confirmation is not satisfactory, then continue.

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- (2) Do the adjustment for the autopilot aileron actuator.
 - (a) Do this task: Autopilot Aileron Actuator Adjustment, AMM TASK 22-11-25-820-801
 - (b) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Make sure that the autopilot stab trim cutout switch, on the control stand, is in the NORMAL position.
- (2) Make sure that the VHF NAV and IRS switches, on the P5 forward overhead panel, are in the NORMAL positions.
- (3) Set the left and right IRS select switches, on the P5 aft overhead panel, to the ALIGN or NAV position.



KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THEAILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply hydraulic power to hydraulic systems A and B. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Do this manual test:
 - (a) Push the CMD A or CMD B autopilot engage switch on the mode control panel to engage the autopilot.
 - (b) Make sure that the CMD A or CMD B autopilot engage switch light comes on.
 - (c) Make sure that the control wheels do not move when you engage the autopilot.
 - (d) If the control wheels do not move when you engage the autopilot, then you corrected the fault.
 - (e) Push the captain or first officer autopilot disengage switch on the control wheel to disengage the autopilot.
 - (f) Push the captain or first officer autopilot disengage switch again to stop the autopilot disengage warning sound.
- (6) Remove hydraulic power from hydraulic systems A and B. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

827. A/B Index Disagreement - Fault Isolation

A. Description

- (1) This task is for this maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (a) A/B Index (J1B-5A)

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B. Possible Causes

- (1) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (2) Wiring problem

C. Related Data

- (1) (SSM 22-11-75)
- (2) (WDM 22-11-75)

D. Initial Evaluation

- (1) The maintenance message shows when power is supplied to the FCC or DFCS BITE Procedure (22-11 TASK 801) was attempted.
 - (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
 - (b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Push the LSK adjacent to CONTINUE on the CDU.
- (2) Replace the FCC-A, M1875.

These are the tasks:
Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Do the Repair Confirmation at the end of this task.
 - (a) If the maintenance message shows, then continue.
- (4) Replace the FCC-B, M1876.

These are the tasks:
Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Do the Repair Confirmation at the end of this task.
 - (a) If the maintenance message shows, then continue.
- (6) Use (WDM 22-11-75) to determine the correct wiring for A Index input for FCC-A and FCC-B.

Connector No.	Pin No.	Signal Name
D10135B	A5	A Index
D10137B	A5	A Index

- (a) If you found a problem with the wiring for FCC-A, then do these steps:
 - 1) Remove FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Repair the wiring.
 - 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 4) Do the Repair Confirmation at the end of this task.
 - a) If the maintenance message shows, then continue.
- (b) If you found a problem with the wiring for FCC-B, then do these steps:

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- 1) Remove FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Repair the wiring.
- 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) Push the INDEX button on the CDU.
 - (b) Push the Line Select Key (LSK) adjacent to <DFCS.
 - 1) If the maintenance message does not show before the CDU prompts you for the test type, then you corrected the fault.

————— **END OF TASK** —————

828. FCC Pitch Sensor Excitation Power Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) FCC-A (J1A-B15,A15)
 - (b) FCC-B (J1A-B15,A15)
- (2) The flight control computer A (FCC-A) or FCC-B detects problem with the pitch sensor excitation power output.

B. Possible Causes

- (1) Flight control computer A (FCC-A), M1875
- (2) Flight control computer B (FCC-B), M1876
- (3) Elevator surface position sensor, M929
- (4) Neutral shift sensor, M958
- (5) Stabilizer position sensor, M1192
- (6) A/P elevator actuator, M1020
- (7) Wiring problem

C. Circuit Breakers

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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D. Related Data

- (1) (SSM 22-12-31)
- (2) (WDM 22-12-31)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) If the maintenance message is on channel A, then do these steps:

- (a) Disconnect the elevator surface position sensor connector, D1711.

NOTE: You can find the elevator surface position sensor (M929) on the aft bulkhead station 1156. There are two connectors for the elevator surface position sensor. The connector D1711 is for the FCC-A.

- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (c) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1711.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (d) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1711, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D1711 at STA 1158, WL 258, RBL 10 (WDM 22-12-31).

D10135A	D1711
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1711.
 - c) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- d) Do the Repair Confirmation at the end of this task.
- (e) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1711, then do these steps:
- 1) Replace the elevator surface position sensor, M929. To replace it, These are the tasks:
Elevator Position Sensor Removal, AMM TASK 22-11-30-000-801,
Elevator Position Sensor Installation, AMM TASK 22-11-30-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (f) If the maintenance message continues to show, then continue.
- (g) Disconnect the neutral shift sensor connector, D1829.
- NOTE:** You can find the neutral shift sensor (M958) on the forward right side of the feel and centering unit. The feel and centering unit is on the aft bulkhead station 1156. There are two connectors for the neutral shift sensor. The connector D1829 is for the FCC-A.
- (h) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1829.
- NOTE:** The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1829, then do these steps:
- NOTE:** You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D1829 at STA 1161, WL 268, LBL 8 (WDM 22-12-31).

D10135A	D1829
pin B15	pin 2
pin A15	pin 1

- (k) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1829.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (l) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1829, then do these steps:
- 1) Replace the neutral shift sensor, M958. To replace it, These are the tasks:

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Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801,
Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801.

- 2) Do the Repair Confirmation at the end of this task.
- (m) If the maintenance message continues to show, then continue.
- (n) Disconnect the stabilizer position sensor connector, D2205.
NOTE: You can find the stabilizer position sensor (M1192) on the aft bulkhead station 1156. There are two connectors for the elevator surface position sensor. The connector D2205 is for the FCC-A.
- (o) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (p) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D2205.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (q) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D2205, then do these steps:
NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
 - 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D2205 at STA 1164, WL 268, LBL 8 (WDM 22-12-31).

D10135A	D2205
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D2205.
 - c) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (r) If there is 14V AC (± 2) between pins 2 and 1 of the connector D2205, then do these steps:
 - 1) Replace the stabilizer position sensor, M1192. To replace it,
These are the tasks:
Stabilizer Position Sensor Removal, AMM TASK 22-11-31-000-801,
Stabilizer Position Sensor Installation, AMM TASK 22-11-31-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (s) If the maintenance message continues to show, then continue.

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- (t) Disconnect the A/P elevator actuator connector, D1681.

NOTE: You can find the A/P elevator actuator (M1020) on the aft bulkhead station 1156.
The connector D1681 is for the FCC-A.

- (u) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (v) Do a check for 14V AC (± 2) between pins 9 and 10 of the connector D1681.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (w) If there is not 14V AC (± 2) between pins 9 and 10 of the connector D1681, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10135A at the E1-1 shelf and connector D1681 at STA 1161, WL 287, LBL 7 (WDM 22-12-31).

D10135A	D1681
pin B15	pin 10
pin A15	pin 9

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect the connector, D1681.
- c) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.

- (x) If there is 14V AC (± 2) between pins 9 and 10 of the connector D1681, then do these steps:

- 1) Replace the A/P elevator actuator, M1020. To replace it,

These are the tasks:

Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801,
Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (3) If the maintenance message is on channel B, then do these steps:

- (a) Disconnect the elevator surface position sensor connector, D1679.

NOTE: You can find the elevator surface position sensor (M929) on the aft bulkhead station 1156. There are two connectors for the elevator surface position sensor.
The connector D1679 is for the FCC-B.

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- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (c) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1679.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (d) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1679, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137A at the E1-1 shelf and connector D1679 at STA 1158, WL 258, RBL 10 (WDM 22-12-41).

D10137A	D1679
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect the connector, D1679.
- c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.

- (e) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1679, then do these steps:

- 1) Replace the elevator surface position sensor, M929. To replace it, These are the tasks:
Elevator Position Sensor Removal, AMM TASK 22-11-30-000-801,
Elevator Position Sensor Installation, AMM TASK 22-11-30-400-801.
- 2) Do the Repair Confirmation at the end of this task.

- (f) If the maintenance message continues to show, then continue.

- (g) Disconnect the neutral shift sensor connector, D1677.

NOTE: You can find the neutral shift sensor (M958) on the forward right side of the feel and centering unit. The feel and centering unit is on the aft bulkhead station 1156. There are two connectors for the neutral shift sensor. The connector D1677 is for the FCC-B.

- (h) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1677.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1677, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137A at the E1-1 shelf and connector D1677 at STA 1161, WL 268, LBL 8 (WDM 22-12-41).

D10137A	D1677
pin B15	pin 2
pin A15	pin 1

- (k) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1677.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

- (l) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1677, then do these steps:

- 1) Replace the neutral shift sensor, M958. To replace it,
These are the tasks:
Elevator Neutral Shift Sensor Removal, AMM TASK 22-11-14-000-801,
Elevator Neutral Shift Sensor Installation, AMM TASK 22-11-14-400-801.

- 2) Do the Repair Confirmation at the end of this task.

- (m) If the maintenance message continues to show, then continue.

- (n) Disconnect the stabilizer position sensor connector, D2207.

NOTE: You can find the stabilizer position sensor (M1192) on the aft bulkhead station 1156. There are two connectors for the elevator surface position sensor. The connector D2207 is for the FCC-B.

- (o) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

- (p) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D2207.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (q) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D2207, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

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- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137A at the E1-1 shelf and connector D2207 at STA 1164, WL 268, LBL 8 (WDM 22-12-41).

D10137A	D2207
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D2207.
 - c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (r) If there is 14V AC (± 2) between pins 2 and 1 of the connector D2207, then do these steps:
 - 1) Replace the stabilizer position sensor, M1192. To replace it, These are the tasks:
Stabilizer Position Sensor Removal, AMM TASK 22-11-31-000-801,
Stabilizer Position Sensor Installation, AMM TASK 22-11-31-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (s) If the maintenance message continues to show, then continue.
- (t) Disconnect the A/P elevator actuator connector, D1687.
NOTE: You can find the A/P elevator actuator (M1022) on the aft bulkhead station 1156.
The connector D1687 is for the FCC-B.
- (u) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	3	C01046	AFCS SYS B FCC DC

- (v) Do a check for 14V AC (± 2) between pins 9 and 10 of the connector D1687.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (w) If there is not 14V AC (± 2) between pins 9 and 10 of the connector D1687, then do these steps:
NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
 - 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10137A at the E1-1 shelf and connector D1687 at STA 1161, WL 287, LBL 7 (WDM 22-12-41).

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D10137A	D1687
pin B15	pin 10
pin A15	pin 9

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1687.
 - c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (x) If there is 14V AC (± 2) between pins 9 and 10 of the connector D1687, then do these steps:
 - 1) Replace the A/P elevator actuator, M1022. To replace it,
These are the tasks:
Autopilot Elevator Actuator - Removal, AMM TASK 22-11-26-000-801,
Autopilot Elevator Actuator - Installation, AMM TASK 22-11-26-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the ROLL SENS test.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

829. FCC Roll Sensor Excitation Power Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.
 - (a) FCC-A (J1B-B15,A15)
 - (b) FCC-B (J1B-B15,A15)
- (2) The flight control computer A (FCC-A) or FCC-B detects problem with the roll sensor excitation power output.

B. Possible Causes

- (1) Flight control computer A (FCC-A), M1875
- (2) Flight control computer B (FCC-B), M1876

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- (3) Aileron position sensor, M937
- (4) Aileron A/P Actuator - A, M943
- (5) Spoiler - 4 position sensor, M931
- (6) Spoiler - 9 position sensor, M930
- (7) A/P Aileron Actuator, M943
- (8) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

D. Related Data

- (1) (SSM 22-11-31)
- (2) (WDM 22-11-31)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the maintenance messages shows, then continue.
- (2) If the maintenance message is on channel A, then do these steps:
 - (a) Disconnect the aileron position sensor connector, D1709.

NOTE: You can find the aileron position sensor (M937) on the left aileron torque tube. There are two connectors for the aileron surface position sensor. The connector D1709 is for the FCC-A.

- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (c) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1709.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

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- (d) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1709, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1709 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10135B	D1709
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1709.
 - c) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (e) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1709, then do these steps:

- 1) Replace the aileron position sensor, M937. To replace it,
These are the tasks:
Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,
Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.

- 2) Do the Repair Confirmation at the end of this task.
- (f) If the maintenance message continues to show, then continue.
- (g) Disconnect the spoiler 4 position sensor connector, D1695.

NOTE: You can find the spoiler 4 position sensor (M931) on the left wing spoiler 4. There are two connectors for the spoiler 4 position sensor. The connector D1695 is for the FCC-A.

- (h) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1695.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1695, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- 2) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1695 at spoiler 4 (WDM 22-11-31).

D10135B	D1695
pin B15	pin 2
pin A15	pin 1

- (k) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1695.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (l) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1695, then do these steps:
- 1) Replace the spoiler 4 position sensor, M931. To replace it,
These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (m) If the maintenance message continues to show, then continue.
- (n) Disconnect the spoiler 9 position sensor connector, D1697.
- NOTE:** You can find the spoiler 9 position sensor (M1192) on the right wing spoiler 9. There are two connectors for the spoiler 9 position sensor. The connector D1697 is for the FCC-A.
- (o) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	2	C01045	AFCS SYS A FCC DC

- (p) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1697.
- NOTE:** The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (q) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1697, then do these steps:
- NOTE:** You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
- 1) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1697 at spoiler 9 (WDM 22-11-31).

D10135B	D1697
pin B15	pin 2
pin A15	pin 1

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- 3) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-connect the connector, D1697.
 - Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Do the Repair Confirmation at the end of this task.
- (r) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1697, then do these steps:
- Replace the spoiler 9 position sensor, M930. To replace it, These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
 - Do the Repair Confirmation at the end of this task.
- (s) If the maintenance message continues to show, then continue.
- (t) Disconnect the A/P aileron actuator connector, D1827.
- NOTE:** You can find the A/P elevator actuator (M943) in the left main landing gear well, outboard of the control units for the aileron. The connector D1827 is for the FCC-A.
- (u) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC

- (v) Do a check for 14V AC (± 2) between pins 9 and 10 of the connector D1827.
- NOTE:** The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (w) If there is not 14V AC (± 2) between pins 9 and 10 of the connector D1827, then do these steps:
- NOTE:** You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
- Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D1827 at STA 669 (WDM 22-11-31).

D10135B	D1827
pin B15	pin 10
pin A15	pin 9

- 3) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-connect the connector, D1827.
 - Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Do the Repair Confirmation at the end of this task.

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- (x) If there is 14V AC (± 2) between pins 9 and 10 of the connector D1827, then do these steps:
- 1) Replace the A/P aileron actuator, M943. To replace it,
These are the tasks:
Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801,
Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message is on channel B, then do these steps:
- (a) Disconnect the aileron position sensor connector, D1707.
NOTE: You can find the aileron position sensor (M937) on the left aileron torque tube.
There are two connectors for the aileron position sensor. The connector D1707 is for the FCC-B.
 - (b) Make sure that this circuit breaker is closed:
F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
 - (c) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1707.
NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
 - (d) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1707, then do these steps:
NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.
 - 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - 2) Do a wiring check between these pins of connector D10137B at the E1-1 shelf and connector D1707 at STA 666, WL 187, LBL 20 (WDM 22-11-31).

D10137B	D1707
pin B15	pin 2
pin A15	pin 1
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector, D1707.
 - c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - (e) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1707, then do these steps:
 - 1) Replace the aileron position sensor, M937. To replace it,
These are the tasks:
Aileron Position Sensor Removal, AMM TASK 22-11-29-000-801,
Aileron Position Sensor Installation, AMM TASK 22-11-29-400-801.

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- 2) Do the Repair Confirmation at the end of this task.
- (f) If the maintenance message continues to show, then continue.
- (g) Disconnect the spoiler 4 position sensor connector, D1699.
- NOTE: You can find the spoiler 4 position sensor (M931) on the left wing spoiler 4. There are two connectors for the spoiler 4 position sensor. The connector D1699 is for the FCC-B.
- (h) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (i) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1699.
- NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.
- (j) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1699, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137B at the E1-1 shelf and connector D1699 at spoiler 4 (WDM 22-11-31).

D10137B	D1699
pin B15	pin 2
pin A15	pin 1

- (k) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector, D1699.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (l) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1699, then do these steps:
- 1) Replace the spoiler 4 position sensor, M931. To replace it,
These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (m) If the maintenance message continues to show, then continue.
- (n) Disconnect the spoiler 9 position sensor connector, D1701.
- NOTE: You can find the spoiler 9 position sensor (M930) on the right wing spoiler 9. There are two connectors for the spoiler 9 position sensor. The connector D1701 is for the FCC-B.

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- (o) Make sure that this circuit breaker is closed:

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (p) Do a check for 14V AC (± 2) between pins 2 and 1 of the connector D1701.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (q) If there is not 14V AC (± 2) between pins 2 and 1 of the connector D1701, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137B at the E1-1 shelf and connector D1701 at spoiler 9 (WDM 22-11-31).

D10137B	D1701
pin B15	pin 2
pin A15	pin 1

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect the connector, D1701.
- c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.

- (r) If there is 14V AC (± 2) between pins 2 and 1 of the connector D1701, then do these steps:

- 1) Replace the spoiler 9 position sensor, M930. To replace it,
These are the tasks:
Spoiler Position Sensor Removal, AMM TASK 22-11-27-000-801,
Spoiler Position Sensor Installation, AMM TASK 22-11-27-400-801.
- 2) Do the Repair Confirmation at the end of this task.

- (s) If the maintenance message continues to show, then continue.

- (t) Disconnect the A/P aileron actuator connector, D1691.

NOTE: You can find the A/P elevator actuator (M1024) in the left main landing gear well, outboard of the control units for the aileron. The connector D1691 is for the FCC-B.

- (u) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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- (v) Do a check for 14V AC (± 2) between pins 9 and 10 of the connector D1691.

NOTE: The 14V AC (± 2) comes from the FCC. If there is a FCC failure, correct the FCC problem first before you do this check.

- (w) If there is not 14V AC (± 2) between pins 9 and 10 of the connector D1691, then do these steps:

NOTE: You only see 7V AC (± 2) if you measure from pin 2 or pin 1 to structure ground.

- 1) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a wiring check between these pins of connector D10137B at the E1-1 shelf and connector D1691 at STA 670 (WDM 22-11-31).

D10137B	D1691
pin B15	pin 10
pin A15	pin 9

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect the connector, D1691.
- c) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- d) Do the Repair Confirmation at the end of this task.

- (x) If there is 14V AC (± 2) between pins 9 and 10 of the connector D1691, then do these steps:

- 1) Replace the A/P aileron actuator, M1024. To replace it,
These are the tasks:
Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801,
Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801.
- 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:

- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
- (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the ROLL SENS test.
- (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

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830. FCC ILS Receiver Tune/Test Inhibit Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (a) FCC-A (J1B-G07)
 - (b) FCC-B (J1B-G07)
- (2) FCC-A (J1B-G07): FCC-A does not receive the wrap around ILS tune/test inhibit discrete output during the ground test.
- (3) FCC-B (J1B-G07): FCC-B does not receive the wrap around ILS tune/test inhibit discrete output during the ground test.

B. Possible Causes

- (1) Flight Control Computer (FCC) - A (B), M1875 (M1876)
- (2) Multi-Mode Receiver (MMR) - 1 (2), M2104 (M2105)
- (3) Navigation Control Panel - L (R) , P8-25 (P8-26)
- (4) Radio Altimeter Transceiver - 1 (2) , M1735 (M1736)
- (5) Wiring problem.

C. Related Data

- (1) WDM 22-11-18
- (2) SSM 22-11-18

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the channels A and B.
 - (b) Make the selection for the FCC test.
 - (c) If the maintenance message shows, then do the applicable Fault Isolation Procedure below.
 - (d) If maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure - Maintenance Message Channel A

- (1) Do this check of the wiring between the FCC-A and the MMR-1, navigation control panel-L, and radio altimeter transceiver-1:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MMR-1, M2104. This is the task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
 - (c) Remove the navigation control panel-L, P8-25. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
 - (d) Remove the radio altimeter transceiver-1, M1735. This is the task: Low Range Radio Altimeter (LRR) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801.
 - (e) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D10719B at the E1-2 shelf (WDM 22-11-18):

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D10135B

pin G7

D10719B

pin F15

- (f) If you find a problem with the wiring, then repair the wiring:
- (g) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D303 at the panel P8 (WDM 22-11-18):

D10135B

pin G7

D303

pin 45

- (h) If you find a problem with the wiring, then repair the wiring:
- (i) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D3667B at the E3-1 shelf (WDM 22-11-18):

D10135B

pin G7

D3667B

pin K6

- (j) If you find a problem with the wiring, then repair the wiring:
 - (k) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (l) Re-install the MMR-1, M2104. This is the task: ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801.
 - (m) Re-install the navigation control panel-L, P8-25. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - (n) Re-install the radio altimeter transceiver-1, M1735. This is the task: Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801.
 - (o) Do the Repair Confirmation at the end of this task.
- (2) Replace the radio altimeter transceiver-1, M1735. These are the tasks:
- Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801
 - Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the MMR-1, M2104. These are the tasks:
- ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the navigation control panel-L, P8-25. These are the tasks:
- Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the FCC-A, M1875. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801

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- (a) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Maintenance Message Channel B

- (1) Do this check of the wiring between the FCC-B and the MMR-2, navigation control panel-R, radio altimeter transceiver-2:

- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the MMR-2, M2105. This is the task: ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801.
- (c) Remove the navigation control panel-R, P8-26. This is the task: Navigation Control Panel Removal, AMM TASK 34-31-52-000-801.
- (d) Remove the radio altimeter transceiver-2, M1736. This is the task: Low Range Radio Altimeter (LRR) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801.
- (e) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D10721B at the E1-4 shelf (WDM 22-11-18):

D10137B	D10721B
pin G7	pin F15

- (f) If you find a problem with the wiring, then repair the wiring:
- (g) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D305 at the panel P8 (WDM 22-11-18):

D10137B	D305
pin G7	pin 45

- (h) If you find a problem with the wiring, then repair the wiring:
- (i) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D3669B at the E3-2 shelf (WDM 22-11-18):

D10137B	D3669B
pin G7	pin K6

- (j) If you find a problem with the wiring, then repair the wiring:
 - (k) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (l) Re-install the MMR-2, M2105. This is the task: ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801.
 - (m) Re-install the navigation control panel-R, P8-26. This is the task: Navigation Control Panel Installation, AMM TASK 34-31-52-400-801.
 - (n) Re-install the radio altimeter transceiver-2, M1736. This is the task: Low Range Radio Altimeter (LRR) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801.
 - (o) Do the Repair Confirmation at the end of this task.
- (2) Replace the radio altimeter transceiver-2, M1736. These are the tasks:
- Low Range Radio Altimeter (LRR) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801
 - Low Range Radio Altimeter (LRR) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801

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- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the MMR-2, M2105. These are the tasks:
 - ILS and Multi-Mode Receiver (MMR) - Removal, AMM TASK 34-31-42-000-801
 - ILS and Multi-Mode Receiver (MMR) - Installation, AMM TASK 34-31-42-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the navigation control panel-R, P8-26. These are the tasks:
 - Navigation Control Panel Removal, AMM TASK 34-31-52-000-801
 - Navigation Control Panel Installation, AMM TASK 34-31-52-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the FCC-B, M1876. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.
 - 2) Make the selection for the FCC test.
 - (c) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

832. Mode Control Panel Bus Select Wrap Around Signal Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.
- (a) FCC-A (J1B-H09)
- (b) FCC-B (J1B-H09)
- (2) The flight control computer A (FCC-A) or FCC-B does not receive mode control panel (MCP) bus select wrap around signal.

B. Possible Causes

- (1) Flight control computer A (FCC-A), M1875
- (2) Flight control computer B (FCC-B), M1876
- (3) Mode Control Panel, M198

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- (4) Wiring problem.

C. Related Data

- (1) (SSM 22-11-11)
(2) (WDM 22-11-11)

D. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
(b) If the maintenance message does not show, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) If the maintenance message is on channel A, then do this check of the wiring:
- (a) Remove the FCC-A, M1875. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the mode control panel, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Do a wiring check between these pins of connector D10135B at the E1-1 shelf and connector D299 at the panel P7 (WDM 22-11-11):

D10135B	D299
pin H9	pin 45

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the mode control panel, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install the FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (2) If the maintenance message is on channel B, then do this check of the wiring:
 - (a) Remove the FCC-B, M1876. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the mode control panel, M198. To remove it, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Do a wiring check between these pins of connector D10137B at the E1-4 shelf and connector D1815 at the panel P7 (WDM 22-11-11):

D10137B	D1815
pin H9	pin 45

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.

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- 2) Re-install the mode control panel, M198. To install it, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 3) Re-install the FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - 5) If the Repair Confirmation is not satisfactory, then continue.
- (3) If the maintenance message is on channel A, then replace the FCC-A, M1875.
- These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) If the maintenance message is on channel B, then replace the FCC-B, M1876.
- These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801,
Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (5) Replace the mode control panel, M198.
- These are the tasks:
- DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801,
DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
- (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

833. FMC Transfer Switch Problems - Fault Isolation

A. Description

- (1) This task is for maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

- (a) FMC TRANSFER SW (J1A-E04,D04)

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- (2) The flight control computer-A (FCC-A) or FCC-B senses data on the FMC input bus that either the FMC-1 or the FMC-2 failed to respond to the commanded position of the FMC source select switch.

B. Possible Causes

- (1) FMCS Transfer Relay 1, R475
- (2) FMCS Transfer Relay 2, R476
- (3) Instrument Switching Module, P5-28
- (4) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	15	C01263	FMCS XFR

D. Related Data

- (1) (SSM 22-11-52)
- (2) (SSM 34-61-12)
- (3) (SSM 34-61-14)
- (4) (WDM 34-61-12)
- (5) (WDM 34-61-14)

E. Initial Evaluation

- (1) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (a) If there is a fault message for the FMC, then do the FIM task for that message.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there is no fault message for the FMC, then continue.
- (2) Do this check of the FMC source select switch:
 - (a) Make sure the FMC source select switch is in the BOTH ON L position.
 - (b) On the CDU, from the FMCS BITE page, push the LSK next to DISCRETES.
 - (c) Push the PAGE key until FMC SOURCE SEL shows.
 - (d) Make sure the position of the switch on the FMC ANALOG DISC display agrees with the switch position.
 - (e) If the switch position does not agree with the display, then do these steps:
 - 1) Replace the Instrument Switching Module, P5-28.

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These are the tasks:

Instrument Switching Module Removal, AMM TASK 31-62-14-000-801,
Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.

- 2) Do the repair confirmation at the end of this task.
- (f) If the switch position agrees with the display, then continue.
- (3) Replace the FMCS Transfer relay 1, R475, or replace the FMCS Transfer relay 2, R476.
 - (a) Do the repair confirmation at the end of this task.
 - (b) If the repair confirmation fails, then continue.
- (4) Examine the wiring between the Instrument Switching Module, P5-28, and the FMCS transfer relays, R475 and R476, as follows:
 - (a) Disconnect connectors D3265 and D3267 from FMCS transfer relay 1, R475.
 - (b) Disconnect connectors D3425 and D3427 from FMCS transfer relay 2, R476.
 - (c) Remove the Instrument Switching Module, P5-28, do this task: Instrument Switching Module Removal, AMM TASK 31-62-14-000-801
 - (d) Do a wiring check between these pins of connector D1817 at the Instrument Switching Module and these connectors at the relays.

D1817	D3267
pin 8	pin T

D1817	D3425
pin 9	pin P

D1817	D3265
pin 10	pin P

D1817	D3427
pin 11	pin T

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Instrument Switching Module, P5-28, do this task: Instrument Switching Module Installation, AMM TASK 31-62-14-400-801.
 - 3) Reconnect connectors D3265 and D3267 to the FMCS transfer relay 1, R475.
 - 4) Reconnect connectors D3425 and D3427 to the FMCS transfer relay 2, R476.
 - 5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make the selection for the channels A and B.

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- 2) Make the selection for the FMC test.
- (c) If the maintenance message does not show, then you corrected the fault.

END OF TASK

834. IFSAU 26 VAC Reference Signal Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C.

- (a) IFSAU (J1C-G05,F05)
- (2) The FCC-A or FCC-B does not detect 26 VAC from the Integrated Flight System Accessory Unit (IFSAU).

B. Possible Causes

- (1) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)
- (2) Integrated Flight System Accessory Unit, M1474
- (3) These circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

D. Related Data

- (1) (SSM 22-11-11)
- (2) (WDM 22-11-11)

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E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (2) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check for power at FCC-A or FCC-B:

- (a) If the maintenance message is on channel A, then do these steps;

- 1) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- 4) Do a check for 26 VAC between pins G5 and F5 of connector D10135C.

- (b) If the maintenance message is on channel B, then do these steps;

- 1) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) 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	2	C01042	AFCS SYS B SNSR EXC AC

- 4) Do a check for 26 VAC between pins G5 and F5 of connector D10137C.

- (c) If there is 26 VAC at the pins, then do these steps:

- 1) Install a new FCC. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Do the Repair Confirmation at the end of this task.

- (d) If there is not 26 VAC at the pins, then continue.

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- (2) Do this check for power at the IFSAU:
- (a) Remove the IFSAU. To remove it, do this task: Integrated Flight System Accessory Unit (IFSAU) Removal, AMM TASK 22-11-37-000-801.
 - (b) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
 - (c) If the fail message is on channel A, then do these steps:
 - 1) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- 2) Do a check for 115 VAC between pins 4 and 6 of the IFSAU connector D2209A.

- (d) If the fail message is on channel B, then do these steps:
- 1) 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	2	C01042	AFCS SYS B SNSR EXC AC

- 2) Do a check for 115 VAC between pins 4 and 6 of the IFSAU connector D2209B.

- (e) If there is 115 VAC at the pin, then do these step:
- 1) Install a new IFSAU. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (f) If there is not 115 VAC at the pins, then continue.
- (3) If the fail message is on channel A, then do these steps:
- (a) Disconnect connector D41801P from the P18-1 circuit breaker panel.
 - (b) Do a check for 115 VAC power between pin 5 of D41801J and structure ground.
 - (c) If you do not find 115 VAC at pin 5, then do these steps:
 - 1) Replace the following circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC

- 2) Re-connect connector D41801P to the P18-1 circuit breaker panel.
 - 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Re-install IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 5) Do the repair confirmation at the end of this task.
- (d) If you find 115 VAC at pin 5 of D41801J, then continue.
- (e) Do a continuity check between these pins of connector D41801P at the P18-1 panel and IFSAU connector D2209A (WDM 22-11-11):

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D41801P

pin 5 pin 4

D2209A

pin 4

- (f) Do a continuity check between these pins of IFSAU connector D2209A and FCC-A connector D10135C (WDM 22-14-11):

D2209A

pin 1 pin G5

D10135C

pin G5

- (g) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D41801P to the P18-1 circuit breaker panel.
 - 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Re-install IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (4) If the fail message is on channel B, then do these steps:
- (a) Disconnect connector D46061P from the P6-2 circuit breaker panel.
 - (b) Do a check for 115 VAC power between pin 7 of D46061J and structure ground.
 - (c) If you do not find 115 VAC at pin 7, then do these steps:
 - 1) Replace this circuit breaker:
- | F/O Electrical System Panel, P6-2 | | | |
|--|-------------------|----------------------|------------------------|
| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| C | 2 | C01042 | AFCS SYS B SNSR EXC AC |
- 2) Re-connect connector D46061P to the P6-2 circuit breaker panel.
 - 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Re-install IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
 - 5) Do the repair confirmation at the end of this task.
- (d) If you find 115 VAC at pin 7 of D46061J, then continue.
- (e) Do a continuity check between these pins of connector D46061P at the P6-2 panel and IFSAU connector D2209B (WDM 22-11-11):

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C01042	AFCS SYS B SNSR EXC AC

- (f) Do a continuity check between these pins of IFSAU connector D2209B and FCC-B connector D10137C (WDM 22-14-11):

D46061P

pin 7 pin 4

D2209B

pin 4

- D2209B** **D10137C**
- pin 1 pin G5

D2209B

pin 1 pin G5

D10137C

pin G5

- (g) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-connect connector D46061P to the P6-2 circuit breaker panel.
- 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Re-install IFSAU, M1474. To install it, do this task: Integrated Flight System Accessory Unit Installation, AMM TASK 22-11-37-400-801.
- 5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <FCC
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

835. Mach Trim 115 VAC Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B. For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C. For the FCC-B: J1A=10137A, J1B=10137B and J1C=10137C.

 - (a) MACH TRIM 115 VAC (J1C-A05,B05)
- (2) The FCC-A or FCC-B does not detect 115 VAC input power for mach trim system.

B. Possible Causes

- (1) These circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

- (2) Wiring problem
- (3) Flight control computer, M1875 (FCC-A) or M1876 (FCC-B)

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

D. Related Data

- (1) (SSM 22-18-11)
(2) (WDM 22-18-11)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

- (2) The Digital Flight Control System (DFCS) BITE Procedure (22-11 TASK 801) or DFCS BITE test was performed.

NOTE: When DFCS BITE test failed, RERUN shows on the CDU display after you push the line select key (LSK) adjacent to TEST DATA. You can push the LSK adjacent to RERUN to do the test again if it is necessary.

- (a) If the maintenance message shows, then do the Fault Isolation Procedure below.
(b) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check for power at FCC-A or FCC-B:

- (a) If the maintenance message is on channel A, then do these steps;

- 1) Remove FCC-A. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- 4) Do a check for 115 VAC power between pins A5 and D5 of connector D10135C.

- (b) If the maintenance message is on channel B, then do these steps:

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- 1) Remove FCC-B. To remove it, do this task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 3) 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	1	C01037	AFCS SYS B MACH TRIM AC

- 4) Do a check for 115 VAC power between pins A5 and D5 of connector D10137C.
- (c) If there is 115 VAC at the pins, then do these steps:
- 1) Install a new FCC. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If there is not 115 VAC at the pins, then continue.
- (2) If the maintenance message is on channel A, then do these steps;
- (a) Disconnect connector D41801P from the P18-1 circuit breaker panel.
 - (b) Do a check for 115 VAC power between pin 6 of D41801J and structure ground.
 - (c) If you do not find 115 VAC at pin 6, then do these steps:
 - 1) Replace the following circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- 2) Re-connect connector D41801P to the P18-1 circuit breaker panel.
 - 3) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you find 115 VAC at pin 6 of D41801J, then continue.
- (e) Do a continuity check between these pins of connector D41801P at the P18-1 panel and connector D10135C for FCC-A:

D41801P	D10135C
pin 6	pin A5

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00456	AFCS SYS A MACH TRIM AC

- 3) Re-connect connector D41801P to the P18-1 circuit breaker panel.
- 4) Re-install FCC-A, M1875. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- 5) Do the Repair Confirmation at the end of this task.
- (3) If the maintenance message is on channel B, then do these steps;
- (a) Disconnect connector D46061P from the P6-2 circuit breaker panel.
 - (b) Do a check for 115 VAC power between pin 4 of D46061P and structure ground.
 - (c) If you do not find 115 VAC at pin 4, then do these steps:
 - 1) Replace the following circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C01037	AFCS SYS B MACH TRIM AC

- 2) Re-connect connector D46061P to the P6-2 circuit breaker panel.
 - 3) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you find 115 VAC at pin 4 of D46061P, then continue.
- (e) Do a continuity check between these pins of connector D46061P at the P6-2 panel and connector D10137C for FCC-B:

D46061P	D10137C
pin 4	pin A5

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 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	1	C01037	AFCS SYS B MACH TRIM AC

- 3) Re-connect connector D46061P to the P6-2 circuit breaker panel.
- 4) Re-install FCC-B, M1876. To install it, do this task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps:
- (a) If RERUN still shows on the CDU display, then push the LSK adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU display, then, do this task: BITE Library Test, AMM TASK 22-11-00-740-806.
 - 1) Make these selections on the CDU:
 - a) <CHANNEL A AND B
 - b) <RUN SELECT LIBRARY TESTS
 - c) MACH TRIM 33>
 - d) EXECUTE

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- (c) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

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801. ISFD Output Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS: J1B-G11,F11

NOTE: SUSPECT LRU(S):

- ISFD
- AFCS RUD CB-2

- (a) 22-11027 NO ISFD DATA

- 1) Flight Control Computer (FCC)(s) receive no data from the Integrated Standby Flight Display (ISFD) (Third Inertial Sensor) Input Bus.

- (b) 22-11381 ISFD DATA INV

- 1) FCC(s) receive invalid data from the ISFD Input Bus.

- (c) ISFD (J1B-G11,F11)

- (2) The FCC receives invalid data or no data from the ISFD.

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- (3) The CAT IIIB Flight Deck Effect (FDE) NO LAND 3 Message can also show on the Engine Display and it will be latched until the maintenance message(s) that set it is(are) corrected, and the latched FDE is reset.

- (a) Do this task: NO LAND 3 FDE Message - Fault Isolation, 22-11 TASK 855.

SIA ALL; AIRPLANES WITH INTEGRATED STANDBY FLIGHT DISPLAY (ISFD)

B. Possible Causes

- (1) ISFD, N226
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 22-11-51
- (2) SSM 22-11-51

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make these selections on the Control Display Unit (CDU):
 - 1) CHANNEL A AND B
 - 2) ISFD
 - (b) If the maintenance message does not show, then there was an intermittent fault.

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- (c) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: Integrated Standby Flight Display BITE Procedure, 34-20 TASK 801.
- (a) If there is a maintenance message, then do the applicable Fault Isolation Manual (FIM) Task for that message.
- 1) Do the Repair Confirmation at the end of this task.
- (b) If there is no maintenance message, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring:
- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (c) Remove the ISFD, N226. This is the task: Integrated Standby Flight Display Removal, AMM TASK 34-24-02-000-801.
- (d) Do a wiring check between the FCC-A at the E1-1 Shelf and the ISFD at the P2-1 Panel (WDM 22-11-51).

FCC-A	ISFD
D10135B	D10853
pin G11	pin P
pin F11	pin R

- (e) Do a wiring check between the FCC-B at the E1-4 Shelf and the ISFD at the P2-1 Panel (WDM 22-11-51).

FCC-B	ISFD
D10137B	D10853
pin G11	pin P
pin F11	pin R

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 4) Re-install the ISFD, N226. This is the task: Integrated Standby Flight Display Installation, AMM TASK 34-24-02-400-801.
- 5) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) Do these steps:
 - (a) If RERUN still shows on the CDU Display, then push the Line Select Key (LSK) adjacent to RERUN.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - 1) Make these selections on the CDU:
 - a) CHANNEL A AND B
 - b) ISDF
 - (c) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

SIA ALL

———— **END OF TASK** ————

802. Manual Trim Inhibit Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS: J1A-J09

NOTE: SUSPECT LRU(S):

- FCC-A
- FCC-B

- (a) 22-11215 MANUAL TRIM INH
 - 1) FCC-A does not receive wrap around for Manual Trim Inhibit Discrete Output.
- (b) 22-11216 MANUAL TRIM INH
 - 1) FCC-B does not receive wrap around for Manual Trim Inhibit Discrete Output.

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B. Possible Causes

- (1) Stabilizer Trim Control Relay, R64
- (2) Radio Noise Suppressor, M110
- (3) FCC-A, M1875
- (4) FCC-B, M1876
- (5) Wiring

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C. Related Data

- (1) WDM 22-13-11
- (2) WDM 27-41-12
- (3) SSM 22-13-11
- (4) SSM 27-41-12

D. Initial Evaluation

- (1) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

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NOTE: If the INTERACTIVE TEST 32 shows TEST FAILED and only maintenance messages 22-11176 and 22-11216 shows on the CDU Display, then ignore this failure. This is a nuisance fault.

SIA ALL

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
- (2) Replace the Radio Noise Suppressor, M110 (WDM 27-41-12). These are the steps:
 - (a) 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>
A	3	C01631	AFCS INTLK 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (b) Replace the Radio Noise Suppressor, M110. It is located in the J4 Junction Box at STA 262, WL 167, BL R025.
- (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>
A	3	C01631	AFCS INTLK 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (d) Do the Repair Confirmation at the end of this task.
- (3) Replace the Stabilizer Trim Control Relay, R64 (WDM 27-41-12). These are the steps:
 - (a) 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>
A	3	C01631	AFCS INTLK 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

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- (b) Replace the Stabilizer Trim Control Relay, R64. It is located in the J4 Junction Box at STA 262, WL 167, BL R025.
- (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>
A	3	C01631	AFCS INTLK 2
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (d) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the wiring:
 - (a) Remove the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Examine the wiring between FCC-A (FCC-B) at the E1-1 (E1-4) Shelf and the Stabilizer Trim Control Relay, R64 located in the J4 Junction Box. (WDM 22-13-11).

FCC-A	STAB TRIM
D10135A	CTRL RLY
	R64
pin J9	pin X1

FCC-B	STAB TRIM
D10137A	CTRL RLY
	R64
pin J9	pin X1

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the STAB SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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804. Rudder Actuator Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1B-K10,J10
- J1A-K09,J1B-K09
- J1A-F11,G11
- J1B-H06,H0

NOTE: Suspect LRUs:

- RUD ACTUATOR

- (a) 22-11233 RUD CLUTCH

- 1) The FCC-A detects a problem with the Rudder Actuator Engage Clutch.

- (b) 22-11234 RUD MOT

- 1) The FCC-A detects a problem with the Rudder Actuator Motor.

- (c) 22-11236 RUD TACH 1 INV

- 1) The FCC-A detects a problem with the Rudder Actuator Tachometer-1.

- (d) 22-11237 RUD CLUTCH

- 1) The FCC-B detects a problem with the Rudder Actuator Engage Clutch.

- (e) 22-11238 RUD MOT

- 1) The FCC-B detects a problem with the Rudder Actuator Motor.

- (f) 22-11240 RUD TACH 1 INV

- 1) The FCC-B detects a problem with the Rudder Actuator Tachometer-1.

- (g) 22-11246 RUD TACH 2 INV

- 1) The FCC-A detects a problem with the Rudder Actuator Tachometer-2.

- (h) 22-11247 RUD TACH 2 INV

- 1) The FCC-B detects a problem with the Rudder Actuator Tachometer-2.

- (i) 22-11243 RUD A/P ACT MON

- 1) The FCC-A detects an error between the Rudder command and the Tachometer.

- (j) 22-11244 RUD A/P ACT MON

- 1) The FCC-B detects an error between the Rudder command and the Tachometer.

- (k) 22-11620 RUD SPIN TEST

- 1) The FCC(s) detect Rudder Servo Spin Test failure.

- (l) 22-11621 RUD MOTION TEST

- 1) The FCC(s) detect Rudder Servo Motion Test failure.

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- (m) 22-11622 RUD TORQUE TEST
 - 1) The FCC(s) detect Rudder Actuator Torque Fight Test failure.
- (n) 22-11665 SINGLE RUD DISENG

NOTE: Suspect LRUs:

 - FCC-A
 - RUD ACTUATOR
 - 1) Single Rudder Channel disengaged during Approach.
- (o) 22-11666 SINGLE RUD DISENG
 - FCC-B
 - RUD ACTUATOR
 - 1) Single Rudder Channel disengaged during Approach.
- (p) 22-11667 SINGLE RUD DISENG
 - FCC-A
 - FCC-B
 - RUD ACTUATOR
 - 1) Both Rudder Channels disengaged during Approach.
- (q) 22-11805 RUD ACT TRQ LIM
 - 1) FCC-A (B) detects Saturated Current Command which indicates Pilot Override or Actuator/Control System jam.

B. Possible Causes

- (1) Rudder Actuator, M2446

NOTE: The Rudder Actuator is also referred to as the Rudder Rollout Guidance Actuator.
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 22-11-81
- (2) SSM 22-11-81

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - Make the selection for the Channels A and B.
 - Make the selection for the YAW SENS TEST
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the maintenance message shows, then continue.

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- (2) Replace the Rudder Rollout Guidance Actuator, M2446. These are the tasks:
- Rudder Rollout Guidance Actuator - Removal, AMM TASK 22-11-22-000-801
 - Rudder Rollout Guidance Actuator - Installation, AMM TASK 22-11-22-400-801
- (a) Do the Repair Confirmation at the end of this task:
- (3) If the maintenance message is on Channel A, then do this check of the wiring:
- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the Rudder Actuator, M2446. This is the task: Rudder Rollout Guidance Actuator - Removal, AMM TASK 22-11-22-000-801.
- (c) Examine the wiring between the FCC-A and the Rudder Actuator as follows (WDM 22-11-81).

FCC-A	RUD ACT
D10135A	D11617
pin F11	pin 6
pin G11	pin 1
pin K9	pin 18

D10135B	D11617
pin K9	pin 13
pin H6	pin 11
pin H7	pin 24
pin K10	pin 15
pin J10	pin 21

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Rudder Actuator, M2446. This is the task: Rudder Rollout Guidance Actuator - Installation, AMM TASK 22-11-22-400-801.
 - 3) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message is on Channel B, then do this check of the wiring:
- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Examine the wiring between the FCC-B and the Rudder Actuator as follows (WDM 34-21-13).

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FCC-B	RUD ACT
D10137A	D11619
pin F11	pin 6
pin G11	pin 1
pin K9	pin 18
D10137B	D1161
pin K9	pin 13
pin H6	pin 11
pin H7	pin 24
pin K10	pin 15
pin J10	pin 21

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Rudder Actuator, M2446. This is the task: Rudder Rollout Guidance Actuator - Installation, AMM TASK 22-11-22-400-801.
 - 3) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the YAW SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

805. Autopilot Rudder Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Suspect LRUs:

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- RUD POS SEN
- RUD ACTUATOR
- (a) 22-11242 RUD POS MON
NOTE: Associated Interface Pins: J1A-G09,G10,H09
 - 1) The FCC-A (B) detects a problem with the Rudder Position Sensor.
- (b) 22-11245 RUD SPM MON
 - 1) The FCC-A (B) detects a disagreement between the Rudder Tachometer and Rudder Position Sensor.
- (c) 22-11694 RUD POS DISAGREE
 - 1) The FCC-A detects a disagreement between Rudder Position Sensor 1 and 2.
- (d) 22-11695 RUD CMD/POS DISAGREE
 - 1) The FCC-A detects a disagreement between Rudder Command and Rudder Positio

B. Possible Causes

- (1) Autopilot Rudder Actuator Position Sensor, M2445
- (2) FCC-A, M1875
- (3) FCC-B, M1876
- (4) Wiring

C. Related Data

- (1) WDM 22-11-81
- (2) SSM 22-11-81

D. Initial Evaluation

- (1) Do this task: LRU Replacement Test, 22-11 TASK 802.
 - Make the selection for the Channels A and B.
 - Make the selection for the YAW SENS TEST
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the maintenance message shows, then continue.
- (2) Replace the Autopilot Rudder Actuator Position Sensor, M2445. These are the tasks:
 - Autopilot Rudder Position Sensor Removal, AMM TASK 22-11-23-000-801
 - Autopilot Rudder Position Sensor Installation, AMM TASK 22-11-23-400-801
- (a) Do the Repair Confirmation at the end of this task:
- (3) If the maintenance message is on Channel A, then do this check of the wiring:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Autopilot Rudder Actuator Position Sensor, M2445. This is the task: Autopilot Rudder Position Sensor Removal, AMM TASK 22-11-23-000-801.

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- (c) Examine the wiring between the FCC-A and Autopilot Rudder Actuator Position Sensor as follows (WDM 22-11-81).

FCC-A	A/P RUD POS
D10135A	SNSR
	D11613
pin A15	pin 1
pin B15	pin 2
pin H9	pin 3
pin G9	pin 4
pin G10	pin 5

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Autopilot Rudder Actuator Position Sensor, M2445. This is the task: Autopilot Rudder Position Sensor Installation, AMM TASK 22-11-23-400-801.
 - 3) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (4) If the maintenance message is on Channel B, then do this check of the wiring:
- (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Examine the wiring between the FCC-B and Autopilot Rudder Actuator Position Sensor as follows (WDM 22-11-81).

FCC-B	A/P RUD POS
D10137A	SNSR
	D11615
pin A15	pin 1
pin B15	pin 2
pin H9	pin 3
pin G9	pin 4
pin G10	pin 5

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the Autopilot Rudder Actuator Position Sensor, M2445. This is the task: Autopilot Rudder Position Sensor Installation, AMM TASK 22-11-23-400-801.
 - 3) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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F. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the YAW SENS TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

SIA ALL; AIRPLANES WITH ROLLOUT CONTROL AND CAT IIIB

806. FCC has a Rudder Power Input Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated INTERFACE PINS: J1C-55

NOTE: SUSPECT LRU(S):

- AFCS RUD CB-1
- AFCS RUD CB-2

- (a) 22-11231 RUD 28 VDC PWR INV
 - 1) FCC-A detects no 28V DC on Rudder DC Power Input.
- (b) 22-11232 RUD 28 VDC PWR INV
 - 1) FCC-B detects no 28V DC on Rudder DC Power Input.

B. Possible Causes

- (1) Wiring
- (2) AFCS SYS A RUDDER DC Circuit Breaker, C1629
- (3) AFCS SYS B RUDDER DC Circuit Breaker, C1630
- (4) FCC-A, M1875
- (5) FCC-B, M1876

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01630	AFCS SYS B RUDDER DC

D. Related Data

- (1) WDM 22-11-11
(2) SSM 22-11-11

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01630	AFCS SYS B RUDDER DC

- (2) Do the Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.

NOTE: When the DFCS BITE Test fails, RERUN shows on the CDU Display after you push the LSK adjacent to TEST DATA.

If it is necessary, you can push the LSK adjacent to RERUN to do the test again.

- (a) If the maintenance message does not show, then there was an intermittent fault.
(b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) If the maintenance message is on Channel A, then do these steps:
- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
- 1) Repair as necessary.
- (c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

- (d) Do a check for 28V DC Rudder DC Power at pin 55 of connector D10135C.

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- 1) If you find 28 VDC, install a new FCC. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you do not find 28V DC, then continue.
- (e) Disconnect connector D41803P from the Load Control Center - Left (LCC-L) Panel, P18.
- (f) Do a check for 28V DC Power at pin 18 of D41803J.
 - 1) If you do not find 28 VDC at pin 18, then do these steps:
 - a) Replace this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

- <1> Re-connect connector D41803P to the LCC-L Panel, P18.
- <2> Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- <3> Do the Repair Confirmation at the end of this task.

- 2) If you find 28V DC at pin 18 of D41803J, then do these steps:
 - a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

- b) Examine the wiring between the LCC-L Panel, P18 and FCC-A as follows (WDM 22-11-11):

P18 PANEL	FCC-A
D41803P	D10135C
pin 18	pin 55

- c) If you find a problem with the wiring, do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D41803P to the LCC - L Panel, P18.
 - <3> Re-install FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <4> Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01629	AFCS SYS A RUDDER DC

- <5> Do the Repair Confirmation at the end of this task.

- (2) If the maintenance message is on Channel B, then do these steps:
 - (a) Remove the FCC-B, M1876. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
 - 1) Repair as necessary.
- (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>
D	3	C01630	AFCS SYS B RUDDER DC

- (d) Do a check for 28V DC Rudder DC Power at pin 55 of connector D10137C.
 - 1) If you find 28 VDC, install a new FCC-B. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find 28V DC, then continue.
- (e) Disconnect connector D46065P from the Load Control Center - Right (LCC-R) Panel, P6.
- (f) Do a check for 28V DC Power at pin 4 of D46065J.
 - 1) If you do not find 28 VDC at pin 4, then do these steps:
 - a) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01630	AFCS SYS B RUDDER DC

- <1> Re-connect connector D46065P to the LCC-R Panel, P6.
 - <2> Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <3> Do the Repair Confirmation at the end of this task.
 - 2) If you find 28V DC at pin 4 of D46065J, then do these steps:
 - a) 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>
D	3	C01630	AFCS SYS B RUDDER DC

- b) Examine the wiring between the LCC-R Panel, P6 and FCC-B as follows (WDM 22-11-11):

P6 PANEL	FCC-B
D41803P	D10137C
pin 4	pin 55

- c) If you find a problem with the wiring, do these steps:
 - <1> Repair the wiring.
 - <2> Re-connect connector D46065P to the P6 Panel.
 - <3> Re-install FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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<4> 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>
D	3	C01630	AFCS SYS B RUDDER DC

<5> Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then, do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection <CHANNEL A AND B
 - (b) Make the selection for the <FCC TEST.
 - 1) If the maintenance message does not show, then you corrected the problem.
 - 2) If the maintenance message still shows, then you continue the Fault Isolation Procedure at the subsequent step.

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————— **END OF TASK** —————

807. Latched Flight Deck Effect in Fault History - Fault Isolation

A. Description

- (1) This task is for these latched FDE messages:
 - (a) NO ALND LCH
 - (b) NLND3 LCH
 - (c) SPDTRM LCH
- (2) There was an FDE that caused a latched message to occur during flight.

B. Possible Causes

- (1) The Digital Flight Control System (DFCS) failed or one of the inputs to the DFCS caused the Autoland capability to be degraded.

C. Fault Isolation Procedure

- (1) Do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Refer to the table at the end of the BITE Task to find the applicable FIM Tasks for the messages that show.

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- (2) After you correct the maintenance messages, do this task: Reset Latches Procedure, AMM TASK 22-11-00-700-802.

————— **END OF TASK** —————

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808. ISFD Data Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-11039 - ADIRU/ISFD DATA ERR
 - (b) 22-11040 - ADIRU/ISFD DATA ERR
 - (c) 22-11440 - ISFD DATA ERR
- (2) The FCC(s) detect data comparison error between the Air Data Inertial Reference Unit (ADIRU) (Inertial Reference Unit (IRU))-1 (2) and ISFD.
- (3) The FCC(s) vote out data from the ISFD.

B. Possible Causes

- (1) ISFD, N226
- (2) Static Port problem
- (3) Left (Right) ADIRU, M1749 (M1752)

C. Initial Evaluation

- (1) Use the CDU to do this check of the pitch and roll of the ISFD:

NOTE: Do the check of the pitch and roll for these channels:

- Maintenance message 22-11039 - for the CHANNEL A
- Maintenance message 22-11040 - for CHANNEL B
- Maintenance message 22-11440 - for both CHANNEL A and CHANNEL B

- (a) Make these selections on the CDU:

- INIT REF
- <INDEX
- MAINT>
- <DFCS
- <EXTENDED MAINTENANCE
- <ISFD ALIGN
- <CHANNEL A or <CHANNEL B as applicable

- (b) Compare the PITCH ANGLE indication of the ISFD to the PITCH ANGLE indication of the ADIRU (IRU) - LCL.

1) The correct pitch angle of the ISFD is +/- 0.5 degrees of the ADIRU (IRU) - LCL.

- (c) Compare the ROLL ANGLE indication of the ISFD to the ROLL ANGLE indication of the ADIRU (IRU) - LCL.

1) The correct roll angle of the ISFD is +/- 0.5 degrees of the ADIRU (IRU) - LCL.

- (d) If the pitch angle and the roll angle of the ISFD are correct, then there was an intermittent fault.

- (e) If the pitch angle or the roll angle of the ISFD is not correct, then do the Fault Isolation Procedure below.

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D. Fault Isolation Procedure

- (1) Do the Integrated Standby Flight Display - Operational Test, AMM TASK 34-24-02-710-801.
 - (a) If the ISFD does not operate as specified in the Aircraft Maintenance Manual (AMM) task, then replace the ISFD, N226. These are the tasks:
 - Integrated Standby Flight Display Removal, AMM TASK 34-24-02-000-801
 - Integrated Standby Flight Display Installation, AMM TASK 34-24-02-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the ISFD operates as specified in the AMM task, then continue.
- (2) Do the Static Port - Detailed Inspection, AMM TASK 34-11-02-200-803.
 - (a) If you find a problem with the static port, then do the repairs as specified in the AMM task.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the static port, then continue.
- (3) For the applicable ADIRU (IRU), do these tasks:
 - Inertial Reference - System Test, AMM TASK 34-21-00-730-801
 - Air Data Reference - System Test, AMM TASK 34-21-00-730-802
 - (a) If you find a problem during the tests, then do these steps:
 - 1) Replace the applicable Left (Right) ADIRU, M1749 (M1752). These are the tasks:
 - Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
 - Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801
 - 2) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Use the CDU to do this check of the pitch and roll of the ISFD:

NOTE: Do the check of the pitch and roll for these channels:

 - Maintenance message 22-11039 - for the CHANNEL A
 - Maintenance message 22-11040 - for CHANNEL B
 - Maintenance message 22-11440 - for both CHANNEL A and CHANNEL B
- (a) Make these selections on the CDU:
 - INIT REF
 - <INDEX
 - MAINT>
 - <DFCS
 - <EXTENDED MAINTENANCE
 - <ISFD ALIGN
 - <CHANNEL A or <CHANNEL B as applicable
- (b) Compare the PITCH ANGLE indication of the ISFD to the PITCH ANGLE indication of the ADIRU (IRU) - LCL.
 - 1) The correct pitch angle of the ISFD is +/- 0.5 degrees of the ADIRU (IRU) - LCL.
- (c) Compare the ROLL ANGLE indication of the ISFD to the ROLL ANGLE indication of the ADIRU (IRU) - LCL.
 - 1) The correct roll angle of the ISFD is +/- 0.5 degrees of the ADIRU (IRU) - LCL.

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- (d) If the pitch angle and the roll angle of the ISFD are correct, then you corrected the problem.
- (e) If the pitch angle or the roll angle of the ISFD is not correct, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. Stall Management Yaw Damper Fault - Fault Isolation

A. Description

- (1) This task is for these Maintenance Messages:
 - (a) 22-21001 SMYD YD FAULT (SMYD 1)
 - (b) 22-22001 SMYD YD FAULT (SMYD 2)
 - (c) 22-21008 X-CH INVALID (SMYD 1)
 - (d) 22-22008 X-CH INVALID (SMYD 2)
- (2) There is a possible internal fault to the Stall Management Yaw Damper (SMYD) 1 (2).
- (3) The YAW DAMPER Switch may disengage to the OFF position when a Yaw Damper internal or cross-channel fault has been detected.

B. Possible Causes

- (1) Airplane intermittent power input problem
- (2) Trailing Edge (TE) FLAP Switch, S245
- (3) P5-3 Flight Control Module
- (4) SMYD 1 (2), M1747 (M1748)
- (5) Wiring

C. Initial Evaluation

- (1) Completely cycle power to both SMYD 1 and SMYD 2. Open and then close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

- (2) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent airplane power problem.
 - (b) If the maintenance message shows in EXISTING FAULTS, then temporarily swap SMYD 1 and SMYD 2 and re-run the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

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- 1) If the maintenance message now shows in the other SMYD channel, then the fault has followed the SMYD. Replace the applicable SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 2) Re-run the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - a) If the test operates correctly, then you corrected the fault.
 - b) If the maintenance message continues to show in EXISTING FAULTS, then restore SMYD 1 and SMYD 2 to their original positions and do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Cycle the Flaps from UP to NOT UP position.
 - (a) Do the BITE: EXISTING FAULTS test on the SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the Maintenance Message does not show, then you corrected the problem.
 - a) Check the TE FLAP Switch, S245, connector D14362 for corrosion.
 - <1> If corrosion is present, clean or replace the connector then do the steps for Repair Confirmation at the end of this task.
 - <2> If corrosion is not present then re-connect the connector and continue.
 - b) Replace the TE FLAP Switch, S245. These are the tasks:
 - Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
 - Flap Limit Switch Installation, AMM TASK 27-51-63-400-801
 - <1> Do the Repair Confirmation at the end of this task.
 - 2) If the problem still exists, then continue.
 - (2) Replace the P5-3 Flight Control Module. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (3) Do this wiring check (WDM 22-23-11, WDM 22-23-12):
 - (a) Remove the P5-3 Flight Control Module. This is the task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (b) Disconnect connectors D624 and D630 from the P5-3 Flight Control Module.
 - (c) Remove SMYD 1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (d) Disconnect connector D291 from the rudder Power Control Unit (PCU), M175.
 - (e) Disconnect connector D40006J in the Main Wheel Well.
 - (f) Disconnect connector D14362 in the Main Wheel Well.

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FCM, P5-3	SMYD 1, M1747
D630	D3683A
pin 12	pin 12
pin 27	pin 12
pin 4	pin 88
pin 19	pin 106
pin 26	pin 93

FCM, P5-3	SMYD 1, M1747
D630	D3685A
pin 12	pin 12
pin 27	pin 12
pin 26	pin 93

RUDDER PCU, M175	SMYD 1, M1747
D291	D3683B
pin 12	pin 30
pin 11	pin 16
pin 4	pin 29
pin 10	pin 13
pin 7	pin 40
pin 6	pin 41

D291	D3683A
pin 1	pin 39

D291	GD1104
pin 2	Ground

SMYD 1, M1747	TE FLAP UP LIMIT SW, S245
D3683A	D14362
pin 35	pin E

SMYD 2, M1748	TE FLAP UP LIMIT SW, S245
D3685A	D14362
pin 35	pin E

SMYD 1, M1747	MAIN WHEEL WELL
D3683A	D40006J
pin 35	pin 1

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SMYD 2, M1748	MAIN WHEEL
D3685A	WELL
pin 35	D40006J
	pin 1

SMYD 2, M1748	SMYD 1, M1747
D3685A	D3683A
pin 53	pin 58
pin 54	pin 57
pin 58	pin 53
pin 57	pin 54

SHELF, E1-1	SMYD 1, M1747
D10064	D3683A
pin 23	pin 58
pin 22	pin 57
pin 13	pin 53
pin 12	pin 54

SHELF, E1-1	SMYD 2, M1748
D10064	D3683A
pin 23	pin 53
pin 22	pin 54
pin 13	pin 58
pin 12	pin 57

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D291 to the Rudder PCU, M175.
 - c) Re-connect connector D40006J in the Main Wheel Well.
 - d) Re-connect connector D14362 in the Main Wheel Well.
 - e) Re-install the SMYD1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - f) Re-install the P5-3 Flight Control Module. This is the task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - g) 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 connector D291 to the Rudder PCU, M175.
 - b) Re-connect connector D40006J in the Main Wheel Well.
 - c) Re-connect connector D14362 in the Main Wheel Well.
 - d) Re-install the SMYD1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - e) Re-install the P5-3 Flight Control Module. This is the task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

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- (4) If the Maintenance Message 22-21001 or 22-21008 shows, then replace SMYD 1, M1747. These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) If the Maintenance Message 22-22001 or 22-22008 shows, then replace SMYD 2, M1742. These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do the BITE: EXISTING FAULTS test on the SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the Maintenance Message does not show, then you corrected the problem.
- (b) If the problem still exists, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

802. SMYD has 28 VAC Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 22-21002 YD 28VAC no power (SMYD 1)
- (b) 22-22002 YD 28VAC no power (SMYD 2)
- (2) The SMYD does not detect 28 VAC from the XFR BUS 1.

B. Possible Causes

- (1) These circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

- (2) Wiring problem
- (3) Stall manager yaw damper, M1747 (SMYD 1) or M1748 (SMYD 2)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

D. Related Data

- (1) (SSM 22-23-12)
- (2) (SSM 27-24-11)
- (3) (SSM 31-31-14)
- (4) (WDM 22-23-12)
- (5) (WDM 27-24-11)
- (6) (WDM 31-31-14)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

- (2) If the maintenance messages above are not shown in the SMYD BITE:EXISTING FAULTS, then there was an intermittent fault.
- (3) If the maintenance messages above are shown in the SMYD BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for power at the stall manager yaw damper computer:
 - (a) For maintenance message 22-21002, do these steps:
 - 1) Remove SMYD 1. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.
 - 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

- (b) For maintenance message 22-22002, do these steps:
 - 1) Remove SMYD 2. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - 2) Do a check of the connector and sockets for bent or broken pins, dirt and damage.

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- 3) 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>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

- (c) Do a check for 28 VAC at these pins:

Maintenance Message	Connector	Pin	WDM
22-21002 (SMYD 1)	D3683B	13	(WDM 22-23-12)
22-22002 (SMYD 2)	D3685B	13	(WDM 31-31-14)

- (d) If 28 VAC is found at pin 13, then replace the applicable SMYD. To replace it, do this task:
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (e) If 28 VAC is not found at pin 13, then continue.
- (2) For maintenance message 22-21002, do this check of the wiring:
- (a) Disconnect connector D41805P from the P18-1 circuit breaker panel.
- (b) Do a check for 28 VAC power at pin 5 of D41805J:
- 1) If you do not find 28 VAC at pin 5, then replace this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

- 2) If you find 28 VAC at pin 5 of D41805J, then continue.
- (c) Do a continuity check between these pins:

D41805P (P18-1)	D3683B (SMYD 1)
pin 5	pin B13

- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Re-connect connector D41805P to the P18-1 circuit breaker panel.
- c) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- d) If the maintenance message does not show on SMYD 1, you corrected the fault.
- 2) If you do not find a problem with the wiring, then do these steps:
- a) Re-connect connector D41805P to the P18-1 circuit breaker panel.
- b) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- c) If the maintenance message does not show on SMYD 1, then you corrected the fault.
- (3) For maintenance message 22-22002, do this check of the wiring:
- (a) Disconnect connector D41805P from the P18-1 circuit breaker panel.
- (b) Check the connector and sockets for bent or broken pins, dirt and damage.

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- (c) Do a check for 28 VAC power at pin 6 of D41805J:
- 1) If you do not find 28 VAC at pin 6, then replace this circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

- 2) If you find 28 VAC at pin 6 of D41805J, then continue.
- (d) Do a continuity check between these pins:

D41805P (P18-1)	D3685B (SMYD 2)
pin 6	pin B13

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D41805P to the P18-1 circuit breaker panel.
 - c) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 2) If you do not find a problem with the wiring, then do these steps:
 - a) Re-connect connector D41805P to the P18-1 circuit breaker panel.
 - b) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) If the maintenance message does not show on SMYD 2, then you corrected the fault.

————— **END OF TASK** —————

803. SMYD has 28VDC Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 22-21003 YD 28VDC no power (SMYD 1)
 - (b) 22-22003 YD 28VDC no power (SMYD 2)
- (2) The SMYD does not detect 28 VDC from the DC BUS 1.

B. Possible Causes

- (1) These circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

- (2) Wiring problem
- (3) Stall manager yaw damper, M1747 (SMYD 1) or M1748 (SMYD 2)

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

D. Related Data

- (1) (SSM 22-23-11)
(2) (WDM 22-23-11)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

- (2) If the maintenance messages above are not shown in the SMYD BITE:EXISTING FAULTS, then there was an intermittent fault.
(3) If the maintenance messages above are shown in the SMYD BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these steps to check for power at the stall manager yaw damper computer:

- (a) For maintenance message 22-21003, do these steps:

- 1) Remove SMYD 1. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- 2) Check the connector and sockets for bent or broken pins, dirt and damage.
- 3) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

- (b) For maintenance message 22-22002, do these steps:

- 1) Remove SMYD 2. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- 2) Check the connector and sockets for bent or broken pins, dirt and damage.
- 3) 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>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

- (c) Do this check for 28 VDC at the pin shown below:

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Maintenance Message	Connector	Pin	WDM
22-21003 (SMYD 1)	D3683A	102	(WDM 22-23-11)
22-22003 (SMYD 2)	D3685A	102	(WDM 22-23-11)

- (d) If 28 VDC is found at the pin, then replace the applicable SMYD.

These are the tasks:

Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.

- (e) If 28 VDC is not found at the pin, then continue.

- (2) For maintenance message 22-21003, do this check of the wiring:

- (a) Disconnect connector D41803P from the P18-1 circuit breaker panel.

- (b) Do a check for 28 VDC power at pin 7 of D41803J.

- 1) If you do not find 28 VDC at pin 7, then replace this circuit breaker:

CAPT Electrical System Panel, P18-1

Row	Col	Number	Name
D	7	C00286	YAW DAMPER 1 DC

- 2) If you find 28 VDC at pin 7 of D41803J, then continue.

- (c) Do a continuity check between these pins:

D41803P (P18-1)	D3683A (SMYD 1)
pin 7	pin 102

- (d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect connector D41803P to the P18-1 circuit breaker panel.
- 3) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 4) If the maintenance message does not show on SMYD 1, then you corrected the fault.

- (e) If you do not find a problem with the wiring, then do these steps:

- 1) Re-connect connector D41805P to the P18-1 circuit breaker panel.
- 2) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 3) If the maintenance message does not show on SMYD 1, you corrected the fault.

- (3) For maintenance message 22-22003, do this check of the wiring:

- (a) Disconnect connector D40218P from the P18-1 circuit breaker panel.

- (b) Do a check for 28 VDC power at pin 25 of D40218P at the P6 panel.

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- 1) If you do not find 28 VDC at pin 25, then replace this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC

- 2) If you find 28 VDC at pin 25 of D40218P, then continue.

- (c) Do a continuity check between these pins:

D40218J (P6)	D3685A (SMYD 2)
pin 25	pin 102

- (d) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect connector D40218J to the P6 circuit breaker panel.
- 3) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 4) If the maintenance message does not show on SMYD 2, then you corrected the fault.

- (e) If you do not find a problem with the wiring, then do these steps:

- 1) Re-connect connector D40218J to the P6 circuit breaker panel.
- 2) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 3) If the maintenance message does not show on SMYD 2, then you corrected the fault.

————— **END OF TASK** —————

804. Rudder PCU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-21004 YD LVDT error (SMYD 1)
- (2) There is a fault in the rudder power control unit (PCU).

B. Possible Causes

- (1) Rudder PCU, M175
- (2) Wiring problem

C. Related Data

- (1) (SSM 22-23-12)
- (2) (WDM 22-23-12)

D. Initial Evaluation

- (1) If the maintenance message does not show in SMYD 1 BITE:EXISTING FAULTS, then there was an intermittent fault.
- (2) If the maintenance message shows in SMYD 1 BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

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E. Fault Isolation Procedure

- (1) Replace the rudder PCU, M175.

These are the tasks:

Main Rudder Power Control Unit Removal, AMM TASK 27-21-91-000-803-002,

Main Rudder Power Control Unit Installation, AMM TASK 27-21-91-400-803-002.

- (a) Do the SMYD 1 BITE:EXISTING FAULTS test. To do BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

- 1) If the maintenance message does not show, then there was an intermittent fault.
- 2) If the maintenance message shows, then continue.

- (2) Do this check of the wiring:

- (a) Remove SMYD 1. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.

- (b) Disconnect connector D291 from the rudder PCU, M175.

- (c) Check the connectors and sockets for bent or broken pins, dirt and damage.

- (d) Do a wiring check between these pins:

D291 (Rudder PCU)	D3683B (SMYD 1)
pin 12	pin B30
pin 11	pin B16
pin 4	pin B29
pin 10	pin B13
pin 7	pin B40
pin 6	pin B41

D291 (Rudder PCU)	D3683A (SMYD 1)
pin 1	pin A39

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect connector D291 to the rudder PCU, M175.
- 3) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 4) If the maintenance message does not show on SMYD 1, then you corrected the fault.

- (f) If you do not find a problem with the wiring, then do these steps:

- 1) Re-connect connector D291 to the rudder PCU, M175.
- 2) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 3) If the maintenance message does not show on SMYD 1, then you corrected the fault.

———— **END OF TASK** ————

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805. Standby Rudder PCU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-22004 YD LVDT error (SMYD 2)
- (2) There is a fault in the standby rudder power control unit (PCU).

B. Possible Causes

- (1) Standby rudder PCU, M1831
- (2) Wiring problem

C. Related Data

- (1) (SSM 27-24-11)
- (2) (WDM 27-24-11)

D. Initial Evaluation

- (1) If the maintenance message does not show in SMYD 2 BITE:EXISTING FAULTS, then there was an intermittent fault.
- (2) If the maintenance message shows in SMYD 2 BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the standby rudder PCU, M1831.

These are the tasks:

Standby Rudder Power Control Unit Removal, AMM TASK 27-21-24-000-801,

Standby Rudder Power Control Unit Installation, AMM TASK 27-21-24-400-801.

- (a) Do the BITE TEST:EXISTING FAULTS on SMYD 2, M1748. To do BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring:
 - (a) Remove SMYD 2. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D10013 from the standby rudder PCU, M1831.
 - 1) Do a wiring check between these pins:

D10013 (St Rud PCU)	D3685B (SMYD 2)
pin 12	pin B30
pin 11	pin B16
pin 4	pin B29
pin 10	pin B13
pin 7	pin B40
pin 6	pin B41

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**D10013 (St Rud
PCU)**
pin 1

**D3685A (SMYD
2)**
pin A39

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D10013 to the rudder PCU, M1831.
 - c) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - d) If the maintenance message does not show on SMYD 2, then you corrected the fault.
- 3) If you do not find a problem with the wiring, then do these steps:
 - a) Re-connect connector D10013 to the standby rudder PCU, M1831.
 - b) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) If the maintenance message does not show on SMYD 2, then you corrected the fault.

————— **END OF TASK** —————

806. Flap Discrete error - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-21005 flap sig disagree (SMYD 1)
 - (b) 22-22005 flap sig disagree (SMYD 2)
- (2) The flap indication inputs disagree.

B. Possible Causes

- (1) TE flap switch, S245
- (2) Flap position transmitter, T428 (SMYD1), or T427 (SMYD2)
- (3) Wiring problem

C. Related Data

- (1) (SSM 22-23-12)
- (2) (SSM 27-32-11)
- (3) (WDM 22-23-12)
- (4) (WDM 27-32-11)

D. Initial Evaluation

- (1) If the maintenance message does not show in the SMYD 1 or 2 BITE:EXISTING FAULTS, then there was an intermittent fault.
- (2) If the maintenance message shows in the SMYD 1 or 2 BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

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E. Fault Isolation Procedure

- (1) Do this BITE test of the TE flap limit switch:
 - (a) For maintenance message 22-21005: push the MENU button on SMYD 1 to access the main menu.
NOTE: EXISTING FAULTS? will be shown on the display. If not, push the menu button until it is shown.
 - (b) For maintenance message 22-22005, push the MENU button on SMYD 2 to access the main menu.
NOTE: EXISTING FAULTS? will be shown on the display. If not, push the menu button until it is shown.
 - (c) Push the down arrow until GROUND TEST? is shown.
 - (d) Push the YES button.
 - (e) Push the NO button.
 - (f) Push the YES button to do the DISCRETE INPUTS? test.
 - (g) Push the down arrow until FLAP UP shows on the display.
 - (h) If the flap position shown under FLAP UP does not agree with the flap position, then do these steps:
 - 1) Replace the TE flap limit switch, S245.
 - 2) Do the EXISTING FAULTS? test again. To do the test, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - a) If the maintenance message does not show, then you corrected the fault.
 - b) If the maintenance message shows, then continue.
- (2) Do this check of the wiring:

D3683A (SMYD

1)	D40006J
pin 35	pin 1

D3685A (SMYD

2)	D40006J
pin 35	pin 1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install SMYD 1, M1747 or SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-connect connector D40006J in the main wheel well.

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- d) If the maintenance message does not show on SMYD 1 or SMYD 2, then you corrected the fault.
- 2) If you do not find a problem with the wiring, then do these steps:
 - a) Re-install SMYD 1, M1747 or SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Re-connect connector D40006J in the main wheel well.
 - c) If the maintenance message does not show on SMYD 1 or SMYD 2 then you corrected the fault.
 - d) If the maintenance message still shows, then continue.
- (3) Do this BITE test of the flap position transmitter:
 - (a) Push the MENU button on SMYD 1 or SMYD 2 to access the main menu.

NOTE: EXISTING FAULTS? will be shown on the display. If not, push the menu button until it is shown.
 - (b) Push the down arrow until GROUND TEST? is shown.
 - (c) Push the YES button.
 - (d) Push the NO button until ANALOG INPUTS? shows on the display.
 - (e) Push the YES button to do the ANALOG INPUTS? test.
 - (f) Push the down arrow until FLAP DET or FLAP INVALID shows on the display.
 - (g) If FLAP INVALID shows on the display, do these steps:
 - 1) Replace the flap position transmitter, T428 for SMYD 1 or T427 for SMYD 2I.
 - 2) Do the EXISTING FAULTS? test again. To do the test, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - a) If the maintenance message does not show, then you corrected the fault.
 - b) If the maintenance message shows, then continue.
- (4) For maintenance message 22-21005, SMYD 1, do this check of the wiring:
 - (a) Remove SMYD 1, M1747. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D229 from the flap position transmitter, T428.
 - (c) Check the connectors and sockets for bent or broken pins, dirt and damage.
 - (d) Check for 28VAC at pin 4 of D229.
 - (e) Check for continuity to ground at pin 5 of D229.
 - (f) Do a continuity check between these pins:

D3683B (SMYD

1)

D229 (T428)

pin 97	.....	pin 7
pin 98	.....	pin 8
pin 99	.....	pin 6

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.

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- b) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-connect connector D229 in the main wheel well.
 - d) If the maintenance message does not show on SMYD 1, then you corrected the fault.
- 2) If you do not find a problem with the wiring, then do these steps:
- a) Re-install SMYD 1, M1747. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Re-connect connector D229 in the main wheel well.
 - c) If the maintenance message does not show on SMYD 1 then you corrected the fault.
- (5) For maintenance message 22-22005, SMYD 2, do this check of the wiring:
- (a) Remove SMYD 2, M1748. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D275 from the flap position transmitter, T427.
 - (c) Check the connectors and sockets for bent or broken pins, dirt and damage.
 - (d) Check for 28VAC at pin 4 of D275.
 - (e) Check for continuity to ground at pin 5 of D275.
 - (f) Do a continuity check between these pins:

D3685B (SMYD

2)

D275 (T427)

pin 97	pin 7
pin 98	pin 8
pin 99	pin 6

- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-connect connector D275 in the main wheel well.
 - d) If the maintenance message does not show on SMYD 2, then you corrected the fault.
- 2) If you do not find a problem with the wiring, then do these steps:
- a) Re-install SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Re-connect connector D275 in the main wheel well.
 - c) If the maintenance message does not show on SMYD 2 then you corrected the fault.

———— **END OF TASK** ————

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807. No data From X-Channel Bus - Fault Isolation

A. Description

(1) This task is for this maintenance message:

- (a) 22-21007 no X-CH data (SMYD 1)
- (b) 22-22007 no X-CH data (SMYD 2)

NOTE: Loss of SMYD cross-channel data results in the loss of one of the 2 redundant sources of air data driving the WTRIS function (second source of air data is supplied by the "other" SMYD). So, if you lose cross-channel data, you lose WTRIS.

(2) There is no x-channel data.

B. Possible Causes

- (1) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)
- (2) Wiring problem

C. Related Data

- (1) (SSM 22-23-11)
- (2) (WDM 22-23-11)

D. Initial Evaluation

- (1) If the maintenance message do not show in the SMYD 1 or 2 BITE:EXISTING FAULTS, then there was an intermittent fault.
- (2) If the maintenance message shows in the SMYD 1 or 2 BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

(1) For maintenance message 22-21007, do these steps:

- (a) Replace SMYD 2, M1748.

These are the tasks:

Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.

- (b) Do the SMYD 1 BITE TEST:EXISTING FAULTS. To do BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

- 1) If the maintenance message does not show, then you corrected the fault.
- 2) If the maintenance message shows, then continue.

(2) For maintenance message 22-22007, do these steps:

- (a) Replace SMYD 1 M1747.

These are the tasks:

Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.

- (b) Do the SMYD 2 BITE TEST:EXISTING FAULTS. To do BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

- 1) If the maintenance message does not show, then you corrected the fault.
- 2) If the maintenance message shows, then continue.

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- (3) Do this check of the wiring:
- (a) Remove SMYD 1 and SMYD 2. To remove them, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Check the SMYD connectors and sockets for bent or broken pins, dirt and damage.
 - (c) Do a continuity check between these pins:

D3683B (SMYD 1)	D3685B (SMYD 2)
pin 94	pin 53
pin 53	pin 94

D3683B (SMYD 1)	D3685A (SMYD 2)
pin 86	pin 25

D3683A (SMYD 1)	D3685B (SMYD 2)
pin 25	pin 86

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install SMYD 1, M1747 and SMYD 2, M1748. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) If the maintenance message does not show on SMYD 1 or SMYD 2, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install SMYD 1, M1747 and SMYD 2, M1748. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) If the maintenance message does not show on SMYD 1 or SMYD 2, then you corrected the fault.

————— **END OF TASK** —————

808. SMYD X-Channel Bus Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-21009 X-CH cmd disagree
 - (b) 22-22009 X-CH cmd disagree
- (2) There is a cross channel disagreement or test time out.

B. Possible Causes

- (1) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)
- (2) Wiring problem

C. Related Data

- (1) (SSM 22-23-11)
- (2) (WDM 22-23-11)

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D. Initial Evaluation

- (1) If the maintenance message does not show in SMYD 1 or 2 BITE:EXISTING FAULTS, then there was an intermittent fault.
- (2) If the maintenance message shows in SMYD 1 or 2 BITE:EXISTING FAULTS, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) For maintenance message 22-21009, do these steps:
 - (a) Replace SMYD 2, M1748.
These are the tasks:
Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (b) Do the SMYD 1 BITE TEST:EXISTING FAULTS. To do the BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
 - (c) Replace SMYD 1, M1747.
These are the tasks:
Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (d) Do the SMYD 1 BITE TEST:EXISTING FAULTS. To do the BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) For maintenance message 22-22009, do these steps:
 - (a) Replace SMYD 1, M1747.
These are the tasks:
Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (b) Do the SMYD 2 BITE TEST:EXISTING FAULTS. To do the BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
 - (c) Replace SMYD 2, M1748.
These are the tasks:
Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801,
Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (d) Do the SMYD 2 BITE TEST:EXISTING FAULTS. To do the BITE, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring:

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- (a) Remove SMYD 1 and SMYD 2. To remove them, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- (b) Check the connectors and sockets for bent or broken pins, dirt and damage.
- (c) Do a continuity check between these pins:

D3685A (SMYD 2)	D3683A (SMYD 1)
pin 61	pin 51

D10064	D3683A (SMYD 1)
pin 30	pin 51

D10064	D3685A (SMYD 2)
pin 30	pin 61

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install SMYD 1, M1747 and SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) If the maintenance message does not show on SMYD 1 or SMYD 2, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then do these steps:
 - 1) Re-install SMYD 1, M1747 and SMYD 2, M1748. To install it, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) If the maintenance message does not show on SMYD 1 or SMYD 2, then you corrected the fault.

———— **END OF TASK** ————

809. SMYD 1, Yaw Damper Servo Loop- Fault Isolation

A. Description

- (1) This task is for this Maintenance Message: 22-21006 YD Servo Loop (SMYD 1).
- (2) There is a problem in the Servo Loop between SMYD 1, M1747 and the Rudder PCU, M175.

B. Possible Causes

- (1) Wiring
- (2) Rudder PCU Electro-Hydraulic Servo Valve (EHSV)
- (3) Rudder PCU Solenoid Valve
- (4) Rudder PCU, M175
- (5) SMYD 1, M1747

C. Circuit Breakers

- (1) These are the Circuit Breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

D. Related Data

- (1) WDM 22-23-11
- (2) WDM 22-23-12
- (3) SSM 22-23-11
- (4) SSM 22-23-12

E. Initial Evaluation

- (1) Do this task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803.
 - (a) If the SMYD Servo Test passes and Maintenance Message 22-21006 does not show on the SMYD BITE panel, then there was an intermittent problem.
 - (b) If the SMYD Servo Test fails and Maintenance Message 22-21006 is shown on the SMYD BITE panel, then do the Fault Isolation Procedure.

F. Fault Isolation Procedure

- (1) Do this check of the wiring: (WDM 22-23-11, WDM 22-23-12):
 - (a) Remove the SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect the connector D291 from the Rudder PCU, M175.
 - (c) Do a continuity check between these pins:

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RUDDER PCU	SMYD 1
D291	D3683B
pin 12	pin 30
pin 11	pin 16
pin 4	pin 29
pin 10	pin 13
pin 7	pin 40
pin 6	pin 41

D291	D3683A
pin 1	pin 39

D291	GD1104
pin 2	Ground

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring as necessary (SWPM 20-10-13).
 - 2) Re-connect the connector D291 to the Rudder PCU, M175.
 - 3) Re-install the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 4) Do the Repair Confirmation at the end of this step.
- (2) Do this check of the Rudder PCU EHSV resistance (WDM 22-23-12):
- (a) Remove the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Connect the connector D291 to the Rudder PCU, M175.
 - (c) Do a resistance check between pins 40 and 41 of connector D3683B.
 - (d) If the resistance is not 450-550 ohms at 77°F (25°C), then replace the Rudder PCU EHSV. These are the tasks:
 - Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal, AMM TASK 22-23-21-000-801
 - Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation, AMM TASK 22-23-21-400-801
 - (e) Re-install the SMYD 1 M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (f) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the Rudder PCU Solenoid Valve resistance (WDM 22-23-11, WDM 22-23-12):
- (a) Remove the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect the connector D291 from the Rudder PCU, M175.
 - (c) Do a resistance check between pins 1 and 2 of the Rudder PCU, M175 J1 receptacle.
 - (d) If the resistance is not 72.0-76.0 ohms, then replace the Rudder PCU Solenoid Valve. These are the tasks:
 - Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal, AMM TASK 22-23-21-000-801

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- Main Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation, AMM TASK 22-23-21-400-801
- (e) Re-connect the connector D291 into the Rudder PCU, M175.
- (f) Re-install the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (g) Do the Repair Confirmation at the end of this task.
- (4) Replace the Rudder PCU, M175. These are the tasks:
 - Main Rudder Power Control Unit Removal, AMM TASK 27-21-91-000-803-002
 - Main Rudder Power Control Unit Installation, AMM TASK 27-21-91-400-803-002
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the SMYD 1, M1747. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803..
 - (a) If the BITE test passes, then you corrected the problem.
 - (b) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

810. SMYD 2, Yaw Damper Servo Loop - Fault Isolation

A. Description

- (1) This task is for this Maintenance Message: 22-22006 YD Servo Loop (SMYD 2).
- (2) There is a problem in the Servo Loop between SMYD 2, M1748 and the Standby Rudder PCU, M1831.

B. Possible Causes

- (1) Wiring
- (2) Standby Rudder PCU EHSV
- (3) Standby Rudder PCU Solenoid Valve
- (4) Standby Rudder PCU, M1831
- (5) SMYD 2, M1748

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
D	16	C00788	FLIGHT CONTROL TRIM IND RUD
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

D. Related Data

- (1) WDM 27-24-11
- (2) SSM 27-24-11

E. Initial Evaluation

- (1) Temporarily swap SMYD 1 with SMYD 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (2) Do the SMYD 2 Servo Test only. This is the task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803.
 - (a) If the SMYD 2 Servo Test passes and the maintenance message does not show, then do the these steps:
 - 1) Push the ON/OFF Switch to turn the SMYD 2 BITE Display off.
 - 2) Do the SMYD 1 Servo Test only. This is the task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803.
 - a) If the SMYD 1 Servo Test passes and no maintenance message is shown, then there was an intermittent problem.
 - b) If the SMYD 1 Servo Test fails and maintenance message 22-21006 is shown on the SMYD 1 BITE Panel, then replace SMYD 1. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (b) If the SMYD 2 Servo Test fails and Maintenance Message 22-22006 is shown on the SMYD 2 BITE Panel, then restore both SMYD 1 and SMYD 2 to their original positions and do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do this check of the wiring (WDM 27-24-11):
 - (a) Remove the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D10013 from the Standby Rudder PCU, M1831.
 - (c) Do a continuity check as follows:

STBY RUDDER

PCU

D10013

pin 12	.....	pin 30
pin 11	.....	pin 16
pin 4	.....	pin 29
pin 10	.....	pin 13
pin 7	.....	pin 40
pin 6	.....	pin 41
pin 5	.....	pin 40
pin 8	.....	pin 41

SMYD 2

D3685B

D10013

pin 1		pin 39

D3685A

D10013

pin 2		GD11104-DC

D10013

pin 9		GD3203-AC

D3685B

pin 1		GD3203-AC

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring as necessary (SWPM 20-10-13).
 - b) Re-connect connector D10013 to the Standby Rudder PCU, M1831.
 - c) Re-install the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring then do this step and continue:
 - a) Re-connect connector D10013 to the Standby Rudder PCU, M1831.
- (2) Do this check of the Standby Rudder PCU EHSV resistance (WDM 27-24-11):
 - (a) Measure the resistance between these pins of connector at the SMYD 2, M1748 as follows:



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**STALL
MANAGEMENT
YAW DAMPER
COMPUTER 2,
M1748
D3685B**

pin 40 pin 41

**STALL
MANAGEMENT
YAW DAMPER
COMPUTER 2,
M1748
D3685B**

- 1) If the resistance is not 450-550 Ω at 77°F (25°C), then do these steps:
 - a) Replace the Standby Rudder PCU EHSV. These are the tasks:
 - Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal, AMM TASK 22-23-11-000-801
 - Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation, AMM TASK 22-23-11-400-801
 - b) Re-install the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Do the Repair Confirmation at the end of this task.
- 2) If the resistance is 450-550 Ω at 77°F (25.0°C), then do this step and continue:
 - a) Re-install the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (3) Do this check of the Standby Rudder PCU Solenoid Valve resistance (WDM 27-24-11):
 - (a) Disconnect connector D10013 from the Standby Rudder PCU, M1831.
 - (b) Measure the resistance between these pins of connector on the Standby Rudder PCU, M1831 as follows:

	STANDBY RUDDER POWER CONTROL UNIT, M1831	STANDBY RUDDER POWER CONTROL UNIT, M1831	
SOLENOID VALVE MANUFACTURED BY PARKER	J1	J1	
	pin 1	pin 2	72 - 76 Ω
SOLENOID VALVE MANUFACTURED BY EATON	J1	J1	
	pin 1	pin 2	79 - 115 Ω

- 1) If the resistance is not in the specified range, then do these steps:
 - a) Replace the Standby Rudder PCU Solenoid Valve. These are the tasks:
 - Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Removal, AMM TASK 22-23-11-000-801
 - Standby Rudder PCU Solenoid and Electrohydraulic Servo Valves - Installation, AMM TASK 22-23-11-400-801

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- b) Re-connect connector D10013 to the Standby Rudder PCU, M1831.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If the resistance is in the specified range, then do this step and continue:
 - a) Re-connect connector D10013 to the Standby Rudder PCU, M1831.
- (4) Do a general visual inspection of the Standby Rudder PCU. This is the task: Standby Rudder Power Control Unit (with Hydraulic Power on) General Visual Inspection, AMM TASK 27-21-24-210-801.
 - (a) Make sure there are no hydraulic leaks from the Standby Rudder PCU.
 - (b) If hydraulics leaks are found, then repair the hydraulic leaks and do the Repair Confirmation at the end of this task.
 - (c) If no hydraulic leaks are found, then continue.
- (5) Do a check of the Standby Rudder PCU mechanical rigging. This is the task: Standby Rudder Power Control Unit Deadband Test, AMM TASK 27-21-00-700-818-002.
 - (a) If the results are not satisfactory, then do the indicated corrective actions and then do the Repair Confirmation at the end of this task.
 - (b) If the results are satisfactory, then continue.
- (6) Replace the Standby Rudder PCU, M1831. These are the tasks:
 - Standby Rudder Power Control Unit Removal, AMM TASK 27-21-24-000-801
 - Standby Rudder Power Control Unit Installation, AMM TASK 27-21-24-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the SMYD 2 Servo Test only. This is the task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803.
 - (a) If the BITE Test passes, then you corrected the problem.
 - (b) If the problem still exists, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. Autothrottle BITE Procedure

A. General

- (1) You do the Autothrottle (A/T) BITE Tests from the Control Display Unit (CDU). These are the items on the A/T BITE TEST Menu that you can use in this task:

- (a) CURRENT STATUS
- (b) INFLIGHT FAULTS
- (c) INTERACTIVE

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(2) CURRENT STATUS

- (a) The CURRENT STATUS Display shows faults that are currently active for the Autothrottle System. The screen shows this data:

- 1) The specific fault found (under CHAN-A)
- 2) A list of Possible Causes under SUSPECT LRU(S)
 - a) If there are more than three SUSPECT LRUs for that Flight Leg, they will show on a subsequent page.
- 3) INTERFACE PINS (if applicable) for FCC-A
- 4) A MSG Number in the format 22-31XXX
 - a) This is the number that is shown in the 22-MAINT MSG INDEX and the table at the end of this BITE Task under the header MAINTENANCE MESSAGE.
 - b) The Fault Isolation Manual (FIM) MAINTENANCE MESSAGE consists of the:
 - <1> MSG Number that you see on the CDU adjacent to Line Select Key (LSK) 4R and 5R
and
 - <2> Specific Fault Message Text shown to the right of (and just below) LSK 1L.

(3) INFLIGHT FAULTS

- (a) The INFLIGHT FAULTS Display shows the flight legs during which faults occurred.

- 1) The Autothrottle BITE shows data for the last ten flight legs that had faults.
- 2) The flight legs are shown with the flight leg that had the most recent fault at the top of the first page.
- 3) Only the flight legs during which faults occurred will show.
- 4) You can use the PREV PAGE and NEXT PAGE keys to see all the flight legs.

- (b) When you push the LSK adjacent to the prompt for one of the Flight Legs, you will see details for the faults in that Flight Leg:

- 1) FCC CHAN-A
- 2) The specific fault found (under CHAN-A)
- 3) A list of Possible Causes under SUSPECT LRU(S)
 - a) If there are more than three SUSPECT LRUs for that Flight Leg, they will show on a subsequent page.
- 4) INTERFACE PINS (if applicable) for FCC-A
- 5) A MSG Number in the format 22-31XXX

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- a) This is the number that is shown in the 22-MAINT MSG INDEX and in the table at the end of this BITE Task under the header MAINTENANCE MESSAGE.
- b) The FIM MAINTENANCE MESSAGE consists of the:
 - <1> MSG Number that you see on the CDU adjacent to LSK 4R and 5R and
 - <2> Specific Fault Text shown to the right of (and just below) LSK 1L.
- 6) If this is a repeated fault
- 7) The Time and Date that the fault occurred
- (4) INTERACTIVE
 - (a) The INTERACTIVE Tests require specific actions to be completed by the maintenance crew.
 - 1) You must do the instructions that show on the CDU to complete the INTERACTIVE Tests.
 - 2) The CDU will show the specific fault(s) found, SUSPECT LRU(S), INTERFACE PINS (if applicable) for FCC-A and the applicable MSG Number(s) in the format 22-31XXX that are currently active for the Autothrottle System.

SIA ALL

B. BITE Procedure

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- (1) Do the Autothrottle BITE Procedure as follows (Figure 201):
 - (a) Do this task: Air Data Inertial Reference System - Alignment from the ISDU, AMM TASK 34-21-00-820-802 or Air Data Inertial Reference System - Alignment from the FMC CDU, AMM TASK 34-21-00-820-801.
 - (b) If you are not at one of the A/T BITE TEST Displays, then do these steps:
 - 1) Push the INIT REF function key.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX to show.
 - 3) Push the LSK adjacent to the MAINT prompt.
 - 4) From the MAINT BITE INDEX, push the LSK adjacent to the A/T prompt.
NOTE: This shows the A/T BITE TEST Index.
 - 5) Push the LSK adjacent to INFLIGHT FAULTS.
 - 6) Push the LSK adjacent to the prompt for the Flight Leg (FLT) during which the fault occurred.
NOTE: The most recent Flight Leg is FLT 01.
 - a) If TEST FAILED shows with Maintenance Messages 22-11209 and 22-11210, then do these steps:
 - <1> Do a check of the Time and Altitude that the Maintenance Message 22-11209 (Channel A) and 22-11210 (Channel B) are recorded.

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SIA ALL; WITH COLLINS FCCs (Continued)

<a> If the Maintenance Message 22-11209 (Channel A) and 22-11210 (Channel B) have the same recorded Time and Altitude, then ignore this failure.

NOTE: This is a Nuisance Fault.

 If the Maintenance Message 22-11209 (Channel A) and 22-11210 (Channel B) have different recorded Time and Altitude, then continue.

- b) Make a record of the specific Fault Message Text, INTERFACE PINS and MSG Numbers.

NOTE: The FIM MAINTENANCE MESSAGE consists of the MSG Number that you see on the CDU adjacent to LSK 4R and 5R and the Specific Fault Text shown to the right of (and just below) LSK 1L.

- c) Refer to the table at the end of this BITE Task to find the applicable FIM Tasks for the maintenance messages that show.

NOTE: Push the LSK adjacent to NEXT FLIGHT to move to the subsequent flight leg that has faults.

- (c) If no faults show in INFLIGHT FAULTS, do these steps to look for maintenance messages in CURRENT STATUS:

- 1) Push the LSK adjacent to CURRENT STATUS.

- 2) Do the instructions that are shown on the CDU to complete the initial conditions that are necessary for the Self-Test.

- 3) Push the LSK adjacent to CONTINUE.

NOTE: During the CURRENT STATUS Tests, the CDU will show TEST IN PROGRESS.

- 4) If the Autothrottle BITE detects active faults, you will see a specific Fault Message Text for each fault.

- a) Make a record of the specific Fault Message Text, INTERFACE PINS (if present) and MSG Numbers.

NOTE: The FIM MAINTENANCE MESSAGE consists of the MSG Number that you see on the CDU adjacent to LSK 4R and 5R and the Specific Fault Text shown to the right of (and just below) LSK 1L.

- b) Refer to the table at the end of this BITE Task to find the applicable FIM Tasks for the maintenance messages that show.

NOTE: Push the LSK adjacent to NEXT FLIGHT to move to the subsequent flight leg that has faults.

NOTE: The number of pages of maintenance messages that are in CURRENT STATUS is shown in the upper right corner of the CDU. You can use the PREV PAGE and NEXT PAGE keys to move from one page to another.

- 5) If NO FAULTS shows on the CDU, then do these steps:

NOTE: The NO FAULTS message tells you that there are no faults that are currently active.

- a) Push the LSK adjacent to INDEX.

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SIA ALL; WITH COLLINS FCCs (Continued)

- b) Do the instructions on the CDU.
- c) Push the LSK adjacent to CONTINUE.

NOTE: This will show the A/T BITE TEST Index.

- (d) If no faults show in CURRENT STATUS, do these steps to look for maintenance messages in INTERACTIVE Tests:

- 1) Push the LSK adjacent to INTERACTIVE.
- 2) Do the instructions that show on the CDU to complete all INTERACTIVE Tests.
 - a) MODE ANNUNCIATION
 - b) INPUT DISCRETES
 - c) DISENG/WARNINGS
 - d) THROTTLE TESTS
 - <1> SERVO MOTOR TEST
 - <2> RANGE CHECK
 - <3> TORQUE TEST

- 3) If faults show, make a record of the specific Fault Message Text, INTERFACE PINS (if present) and MSG Numbers.

NOTE: The FIM MAINTENANCE MESSAGE consists of the MSG Number that you see on the CDU adjacent to LSK 4R and 5R and the Specific Fault Text shown to the right of (and just below) LSK 1L.

- a) Refer to the table at the end of this task to find the applicable FIM Tasks for the maintenance messages that show.

- 4) If NO FAULTS shows on the CDU, then do these steps:

NOTE: The NO FAULTS message tells you that there are no faults that are currently active.

- a) Push the LSK adjacent to INDEX.
- b) Do the instructions on the CDU.
- c) Push the LSK adjacent to CONTINUE.

NOTE: This will bring you back to the A/T BITE TEST Index.

SIA ALL

- (2) The BITE results table shows the link between Line Replaceable Unit (LRU)/system, maintenance message, and applicable FIM Task.

SIA ALL; WITH COLLINS FCCs

NOTE: The LRU/SYSTEM - EDFCC-A refers to airplanes with the Collins autothrottle system.

SIA ALL

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
A/T COMPUTER	EEC 1 PERFORM R NOT IN CTRL	22-31 TASK 806
A/T COMPUTER	EEC 2 PERFORM R NOT IN CTRL	22-31 TASK 806
EDFCC-A	22-31001 NO ADIRU(ADC) DATA	22-31 TASK 807

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EDFCC-A	22-31004 NO ADIRU(IRU) DATA	22-31 TASK 807
EDFCC-A	22-31005 NO ADIRU(IRU) DATA	22-31 TASK 807
EDFCC-A	22-31011 AOA VANE INV	22-31 TASK 813
EDFCC-A	22-31012 AOA VANE INV	22-31 TASK 813
EDFCC-A	22-31017 AOA INV	22-11 TASK 806
EDFCC-A	22-31018 AOA INV	22-11 TASK 807
EDFCC-A	22-31024 NO ADIRU(ADC) DATA	22-31 TASK 807
EDFCC-A	22-31035 VANE DIFF	22-31 TASK 813
EDFCC-A	22-31046 ASM 1 NO DATA	22-31 TASK 821
EDFCC-A	22-31051 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31052 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31056 ASM 2 NO DATA	22-31 TASK 821
EDFCC-A	22-31057 ASM 1 NO INPUT	22-31 TASK 822
EDFCC-A	22-31058 ASM 2 NO INPUT	22-31 TASK 822
EDFCC-A	22-31059 ASM 1 DATA INALID	22-31 TASK 822
EDFCC-A	22-31060 ASM 2 DATA INALID	22-31 TASK 822
EDFCC-A	22-31061 MCP FAULT	22-31 TASK 804
EDFCC-A	22-31071 NO FMC DATA (J1A-E04,D04)	22-31 TASK 803
EDFCC-A	22-31072 A/T DISC	22-31 TASK 801
EDFCC-A	22-31074 MCP A/T ARM FAIL	22-31 TASK 804
EDFCC-A	22-31081 NO SMYDC DATA	22-31 TASK 808
EDFCC-A	22-31082 NO SMYDC DATA	22-31 TASK 808
EDFCC-A	22-31221 TOGA SW INPUT FAIL	22-13 TASK 810
EDFCC-A	22-31222 TOGA SW INPUT FAIL	22-13 TASK 811
EDFCC-A	22-31263 A/T 28 VDC PWR INV	22-31 TASK 810
EDFCC-A	22-31273 ASM 1 RATE NOT ZERO	22-31 TASK 822
EDFCC-A	22-31274 ASM 2 RATE NOT ZERO	22-31 TASK 822
EDFCC-A	22-31281 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCC-A	22-31282 A/P DISC SW INPUT INV	22-13 TASK 809
EDFCC-A	22-31294 ASM 1 TORQ NOT ZERO	22-31 TASK 822
EDFCC-A	22-31295 ASM 2 TORQ NOT ZERO	22-31 TASK 822
EDFCC-A	22-31296 ASM 1 NO EEC DATA	22-31 TASK 823
EDFCC-A	22-31297 ASM 2 NO EEC DATA	22-31 TASK 823
EDFCC-A	22-31303 FCC INTERNAL FAULT	22-14 TASK 801
EDFCC-A	22-31317 FCC INTERNAL FAULT	22-14 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCC-A	22-31341 PWRUP SOP PARITY	22-15 TASK 823
EDFCC-A	22-31343 PROGRAM PIN INV	22-15 TASK 823
EDFCC-A	22-31344 S/W CONFIG INV	22-31 TASK 801
EDFCC-A	22-31351 BITE ENTRY INHIBIT	22-11 TASK 826
EDFCC-A	22-31353 FCC-B XCH-2 BUS	22-15 TASK 825
EDFCC-A	22-31354 FCC-B XCH-1 BUS	22-15 TASK 825
EDFCC-A	22-31359 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31360 NO FMC REQUEST	22-31 TASK 803
EDFCC-A	22-31361 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCC-A	22-31362 BITE ENTRY INHIBIT	22-11 TASK 817
EDFCC-A	22-31363 BITE ENTRY INHIBIT	22-15 TASK 815
EDFCC-A	22-31376 ADIRU(ADC)-1	22-31 TASK 807
EDFCC-A	22-31377 ADIRU(ADC) DATA INV	22-31 TASK 807
EDFCC-A	22-31378 ADIRU(IRU) DATA INVALID	22-31 TASK 807
EDFCC-A	22-31379 ADIRU(IRU) DATA INVALID	22-31 TASK 807
EDFCC-A	22-31385 RADIO ALT DATA INVALID	22-31 TASK 809
EDFCC-A	22-31388 FMC DATA INV	22-31 TASK 803
EDFCC-A	22-31397 SMYDC DATA INV	22-31 TASK 808
EDFCC-A	22-31398 SMYDC DATA INV	22-31 TASK 808
EDFCC-A	22-31399 ASM DATA INV	22-31 TASK 822
EDFCC-A	22-31400 ASM DATA INV	22-31 TASK 822
EDFCC-A	22-31401 PROG PIN ERR	22-15 TASK 823
EDFCC-A	22-31403 SMYDC FLAPS INV	22-31 TASK 808
EDFCC-A	22-31404 SMYDC FLAPS INV	22-31 TASK 808
EDFCC-A	22-31410 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31411 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31412 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31413 EEC DATA INV	22-31 TASK 806
EDFCC-A	22-31425 RADIO ALT INV	22-31 TASK 809
EDFCC-A	22-31453 ASM 1 CONFIG INVALID	22-31 TASK 820
EDFCC-A	22-31454 ASM 2 CONFIG INVALID	22-31 TASK 820
EDFCC-A	22-31501 NO ASM DATA	22-31 TASK 822
EDFCC-A	22-31502 NO ASM DATA	22-31 TASK 822
EDFCC-A	22-31511 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31512 NO EEC DATA	22-31 TASK 806

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCC-A	22-31513 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31514 NO EEC DATA	22-31 TASK 806
EDFCC-A	22-31515 EEC FAULT	22-31 TASK 806
EDFCC-A	22-31516 EEC FAULT	22-31 TASK 806
EDFCC-A	22-31517 ASM 1 LOGIC PWR	22-31 TASK 826
EDFCC-A	22-31518 ASM 1 MOTOR PWR	22-31 TASK 826
EDFCC-A	22-31519 ASM 2 LOGIC PWR	22-31 TASK 826
EDFCC-A	22-31520 ASM 2 MOTOR PWR	22-31 TASK 826
EDFCC-A	22-31523 TARGET MON	22-31 TASK 818
EDFCC-A	22-31524 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31525 THROT SPLIT	22-31 TASK 812
EDFCC-A	22-31531 BITE ENTRY INHIBIT	22-11 TASK 801
EDFCC-A	22-31532 BITE ENTRY INHIBIT	22-11 TASK 801
EDFCC-A	22-31538 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31539 A/T DISENG WARN CAPT	22-32 TASK 814
EDFCC-A	22-31540 A/T DISENG WARN F/O	22-32 TASK 814
EDFCC-A	22-31541 A/T ENGAGE HOLD ON	22-32 TASK 810
EDFCC-A	22-31542 THROTTLE HOLD	22-31 TASK 802
EDFCC-A	22-31543 A/T ENG 28 VDC INV	22-31 TASK 830
EDFCC-A	22-31544 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31545 A/T CUTOUT/RESET	22-32 TASK 805
EDFCC-A	22-31546 A/T WARN RESET	22-15 TASK 804
EDFCC-A	22-31547 A/T WARN RESET	22-15 TASK 804
EDFCC-A	22-31578 ASM 1 CONFIG INV 00	22-31 TASK 820
EDFCC-A	22-31579 ASM 2 CONFIG INV 00	22-31 TASK 820
EDFCC-A	22-31580 ASM 1 CONFIG INV 10	22-31 TASK 820
EDFCC-A	22-31581 ASM 2 CONFIG INV 01	22-31 TASK 820
EDFCC-A	22-31582 ASM 1 INTERNAL FAULT	22-31 TASK 822
EDFCC-A	22-31583 ASM 2 INTERNAL FAULT	22-31 TASK 822
EDFCC-A	22-31584 ASM 1 LOGIC VOLTAGE	22-31 TASK 826
EDFCC-A	22-31585 ASM 2 LOGIC VOLTAGE	22-31 TASK 826
EDFCC-A	22-31588 NO RADIO ALT DATA	22-31 TASK 809
EDFCC-A	22-31590 A/T -01 BUS FAIL	22-31 TASK 802
EDFCC-A	22-31610 MCP-3 DATA INV	22-31 TASK 804
EDFCC-A	22-31611 NO MCP-3 DATA	22-31 TASK 804

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCC-A	22-31671 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31672 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31673 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31674 T/O SET HIGH	22-31 TASK 817
EDFCC-A	22-31675 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31676 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31677 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31678 T/O SET LOW	22-31 TASK 817
EDFCC-A	22-31679 REJECTED T/O	22-31 TASK 817
EDFCC-A	22-31680 T/O SET UP	22-31 TASK 817
EDFCC-A	22-31681 LATE TOGA	22-32 TASK 804
EDFCC-A	22-31682 THROTTLE MOVEMENT	22-31 TASK 802
EDFCC-A	22-31683 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31684 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31685 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31686 N1 BLOOM	22-31 TASK 819
EDFCC-A	22-31687 RATE MONITOR	22-32 TASK 819
EDFCC-A	22-31688 RATE MONITOR	22-32 TASK 819
EDFCC-A	22-31689 NO ENGINE RATINGS	22-31 TASK 806
EDFCC-A	22-31690 ENGINE FAILED	22-31 TASK 806
EDFCC-A	22-31691 NO TORQUE OR RATE TEST	22-31 TASK 825
EDFCC-A	22-31692 NO TORQUE OR RATE TEST	22-31 TASK 825
EDFCC-A	22-31696 ASM 1 MOTOR PWR INV	22-31 TASK 826
EDFCC-A	22-31728 FMC NO QCS	22-31 TASK 803
EDFCC-A	22-31729 FCC A/T-01 BUS TO DEU	22-32 TASK 817
EDFCC-A	22-31742 DISCRETE WRAP FAIL	22-32 TASK 814
EDFCC-A	22-31745 FCC A/T-01 BUS TO DEU	22-32 TASK 817
EDFCC-A	22-31761 ASM 2 MOTOR PWR INV	22-31 TASK 826
EDFCC-A	22-31762 ASM 1 TRA RATE	22-31 TASK 822
EDFCC-A	22-31763 ASM 2 TRA RATE	22-31 TASK 822
EDFCC-A	22-31764 ASM 1 A/T DATA MISSING	22-31 TASK 821
EDFCC-A	22-31765 ASM 2 A/T DATA MISSING	22-31 TASK 821
EDFCC-A	22-31766 ASM 1 TRA POS	22-31 TASK 824
EDFCC-A	22-31767 ASM 2 TRA POS	22-31 TASK 824
EDFCC-A	22-31768 ASM 1 RATE CMD <> 0	22-31 TASK 822

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
EDFCC-A	22-31769 ASM 2 RATE CMD <> 0	22-31 TASK 822
EDFCC-A	22-31770 ASM 1 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31771 ASM 2 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31772 ASM 1 ACT BIT NOT SET	22-31 TASK 822
EDFCC-A	22-31773 ASM 2 ACT BIT NOT SET	22-31 TASK 822
EDFCC-A	22-31774 ASM 1 TRA POS(+)	22-31 TASK 827
EDFCC-A	22-31775 ASM 2 TRA POS(+)	22-31 TASK 827
EDFCC-A	22-31776 ASM 1 RATE FEEDBACK(+)	22-31 TASK 825
EDFCC-A	22-31777 ASM 2 RATE FEEDBACK(+)	22-31 TASK 825
EDFCC-A	22-31778 ASM 1 LIMIT/RATE/POS	22-31 TASK 824
EDFCC-A	22-31779 ASM 2 LIMIT/RATE/POS	22-31 TASK 824
EDFCC-A	22-31780 ASM 1 LIMIT FAIL	22-31 TASK 824
EDFCC-A	22-31781 ASM 2 LIMIT FAIL	22-31 TASK 824
EDFCC-A	22-31782 ASM 1 POS > EEC LIM	22-31 TASK 824
EDFCC-A	22-31783 ASM 2 POS > EEC LIM	22-31 TASK 824
EDFCC-A	22-31784 ASM 1 RATE FEEDBACK(-)	22-31 TASK 825
EDFCC-A	22-31785 ASM 2 RATE FEEDBACK(-)	22-31 TASK 825
EDFCC-A	22-31786 ASM 1 LIMIT BIT SET	22-31 TASK 822
EDFCC-A	22-31787 ASM 2 LIMIT BIT SET	22-31 TASK 822
EDFCC-A	22-31788 ASM 1 TRA POS(-)	22-31 TASK 827
EDFCC-A	22-31789 ASM 2 TRA POS(-)	22-31 TASK 827
EDFCC-A	22-31790 ASM 1 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31791 ASM 2 TORQUE INVALID	22-31 TASK 825
EDFCC-A	22-31792 ASM 1 CONFIG INV 11	22-31 TASK 820
EDFCC-A	22-31793 ASM 2 CONFIG INV 11	22-31 TASK 820
EDFCC-A	22-31794 ASM 1 10 DEG RATE	22-31 TASK 825
EDFCC-A	22-31795 ASM 2 10 DEG RATE	22-31 TASK 825
EDFCC-A	22-31803 ENGINE 1 FAILED	22-31 TASK 806
EDFCC-A	22-31804 ENGINE 2 FAILED	22-31 TASK 806
EDFCC-A	22-31805 RUD ACT TRQ LIM	22-17 TASK 804
EDFCC-A	22-31822 FMC DATA INV	22-31 TASK 803

————— **END OF TASK** —————

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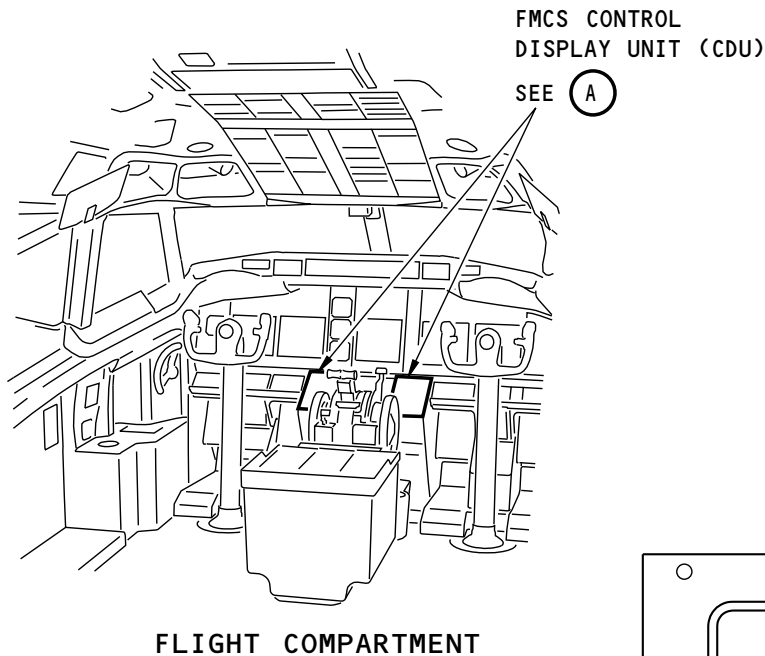
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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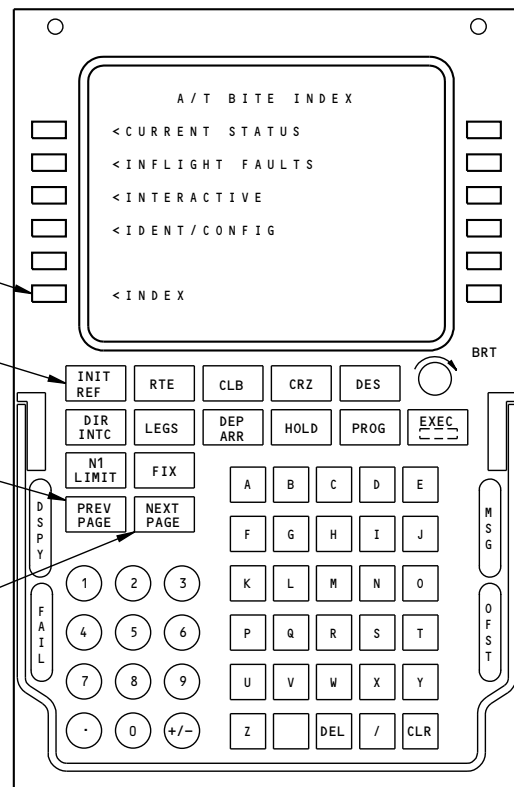


LINE SELECT KEY (LSK)
(12 LOCATIONS)

INIT REF
FUNCTION KEY

PREVIOUS
PAGE KEY

NEXT PAGE KEY



FMCS CONTROL DISPLAY UNIT (CDU)

A

G17555 S0000146824_V1

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Figure 201/22-31-00-990-802

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802. Autothrottle Internal Problems - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:
 - (a) 22-31590 A/T-01 BUS FAIL
 - 1) The FCC-A detects an A/T-01 Output Bus Wraparound failure.
 - 2) Associated Interface Pins: (J1A-B04,A04) - Output
 - (b) 22-31682 THROTTLE MOVEMENT
 - 1) The FCC-A detects that the Autothrottle is responsible for a Thrust increase during Take-off.

SIA ALL

B. Possible Causes

- (1) Auto throttle Servo Motor (ASM) 1 (2), M1836 (M1837)
- (2) Wiring

SIA ALL; WITH COLLINS FCCs

- (3) Flight Control Computer (FCC)-A, M1875

SIA ALL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-31
- (3) WDM 22-31-41
- (4) WDM 22-31-51
- (5) SSM 22-31-11
- (6) SSM 22-31-31
- (7) SSM 22-31-41
- (8) SSM 22-31-51

E. Initial Evaluation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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SIA ALL; WITH COLLINS FCCs

- (1) Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (2) Do this Task: Autothrottle ARM Problem - Fault Isolation, 22-32 TASK 810.
- (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

803. Flight Management Computer Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1A-E04,D04
- (a) 22-31360 NO FMC REQUEST
 - 1) The FCCs do not receive Flight Management Computer (FMC) BITE Request.
- (b) 22-31388 FMC DATA INV
 - 1) The FCCs receive invalid data from the FMC-1 Input Bus.
- (c) 22-31071 NO FMC DATA
 - 1) The FCCs receive no data from the FMC Input Bus.

SIA ALL

B. Possible Causes

- (1) FMC-1 (2) , M1175 (M1632)
- (2) Wiring

SIA ALL; WITH COLLINS FCCs

- (3) FCC-A, M1875

SIA ALL

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	6	C01017	FMCS CMPTR 1

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	16	C01262	FMCS CMPTR 2

D. Related Data

- (1) WDM 34-61-14
- (2) SSM 34-61-14

E. Initial Evaluation

- (1) Do the Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (a) If an FMC maintenance message shows, then do the applicable FIM for the FMC messages that show.
 - (b) If an FMC maintenance message does not show, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the Wiring Diagram Manual (WDM) to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the FMC-1 (2), M1175 (M1632). This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
- (c) Make sure that the FMCS Transfer Switch on the P5 panel is in the BOTH ON R position.
- (d) Examine the wiring between the FCC-A, M1875 and the FMC-1 (2), M1175 (M1632) as follows (WDM 34-61-14):

FCC-A	FMC-1
D10135A	D2179A
pin E4	pin G9
pin D4	pin H9

FCC-A	FMC-2
D3261A	D2179A
pin E4	pin G9
pin D4	pin H9

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the FMC-1 (2), M1175 (M1632). This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.

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- d) Do the Repair Confirmation at the end of this task.
- (2) Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

804. Mode Control Panel Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1A-K05,K04

 - (a) 22-31610 MCP-3 DATA INV
 - 1) The FCC-A receives incorrect data from the MCP-3 Bus.
 - (b) 22-31611 NO MCP-3 DATA
 - 1) The FCC-A receives no data from the MCP-3 Bus.

SIA ALL

B. Possible Causes

- (1) DFCS MCP, M198
- (2) Wiring

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- (3) FCC-A, M1875

SIA ALL

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

D. Related Data

- (1) WDM 22-11-51
- (2) SSM 22-11-51

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) If the CDU shows an MCP failure, then do these steps:
 - 1) Replace the DFCS Mode Control Panel. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the CDU shows an FCC failure in the DFCS BITE, then do these steps:
 - 1) Replace the applicable FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If the CDU does not show an MCP or FCC failure in the DFCS BITE, then continue.
- (2) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Mode Control Panel (MCP), M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Examine the wiring between the FCC-A, M1875 and the MCP, M198 as follows (WDM 22-11-51):

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FCC-A	MCP
D10135B	D301
pin K5	pin 2
pin K4	pin 1

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
- (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

806. Electronic Engine Control Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins:

- J1A-C04,B05
- J1B-C04,B05

NOTE: Suspect LRUs:

- EEC-1A
- EEC-1B

- (a) 22-31410 EEC DATA INV
 - 1) The FCC-A receives invalid data from the EEC-1A.
- (b) 22-31411 EEC DATA INV
 - 1) The FCC-A receives invalid data from the EEC-1B.
- (c) 22-31511 NO EEC DATA
 - 1) The FCC-A receives no data from the EEC-1A.
- (d) 22-31512 NO EEC DATA
 - 1) The FCC-A receives no data from the EEC-1B.

SIA ALL

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B. Possible Causes

- (1) Electronic Engine Control (EEC)-1 (2), M1818
- (2) Wiring

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	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 73-24-11
- (2) WDM 73-24-21
- (3) SSM 22-31-31
- (4) SSM 22-31-41
- (5) SSM 73-24-11
- (6) SSM 73-24-21

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the EEC BITE Procedure, 73-00 TASK 801.
 - (a) If you find EEC faults, replace the applicable EEC. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - 1) Do the Repair Confirmation at the end of this task.
- (2) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) Look for one of these maintenance messages:

NOTE: If one of these maintenance messages shows, then the related Data Bus between the Display Electronic Unit (DEU) and the EEC has a problem.

 - 31-69211
 - 31-69212
 - 31-69221
 - 31-69222

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- 31-69241
 - 31-69242
 - 31-69251
 - 31-69252
- 1) If one or more of these maintenance messages shows, then refer to the table at the end of the CDS BITE Procedure, 31-62 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem.
 - 2) If none of these maintenance messages shows, then continue.

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- (3) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an Aeronautical Radio Incorporated (ARINC) 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connectors DP0303 and DP0304 from the applicable EEC, M1818.

NOTE: The EEC is on the right side of the Engine Fan Case at the two o'clock position.

- (c) Examine the wiring between the FCC-A and the EEC-1 as follows (WDM 73-24-11):

ENGINE 1

FCC-A		EEC 1, CH-A
D10135A		DP0303
pin B5	.....	pin N
pin C4	.....	pin M

FCC-A		EEC 1, CH-B
D10135B		DP0404
pin B5	.....	pin N
pin C4	.....	pin M

- (d) Examine the wiring between the FCC-A and the EEC-2 as follows (WDM 73-24-21):

ENGINE 2

FCC-A		EEC 2, CH-A
D10135A		DP0303
pin J2	.....	pin N
pin J1	.....	pin M

FCC-A		EEC 2, CH-B
D10135B		DP0404
pin C10	.....	pin N
pin D9	.....	pin M

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.

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- 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-connect connectors DP0303 and DP0304 to the applicable EEC, M1818.
- 4) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

807. Air Data Inertial Reference Unit Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

NOTE: Associated Interface Pins:

- J1B-E04,D04
- J1A-K04,J04

NOTE: Suspect LRUs:

- ADIRU(ADC)-1
- ADIRU(ADC)-2

- (a) 22-31001 NO ADIRU(ADC) DATA
 - 1) The FCC-A receives no data from the ADIRU(ADC)-1 Input Bus.
- (b) 22-31376 ADIRU(ADC) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(ADC)-1 Input Bus.
- (c) 22-31377 ADIRU(ADC) DATA INV
 - 1) The FCC-A receives invalid data from the ADIRU(ADC)-2 Input Bus.

SIA ALL

B. Possible Causes

- (1) Left (Right) Air Data Inertial Reference Unit (ADIRU), M1749 (M1752)

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(2) FCC-A, M1875

SIA ALL

(3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	8	C00425	ADIRU LEFT EXC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

D. Related Data

- (1) WDM 34-21-23
- (2) WDM 34-21-24
- (3) WDM 34-21-13
- (4) WDM 34-21-14
- (5) SSM 34-21-13
- (6) SSM 34-21-14

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If the CDU shows an ADIRU failure, then do these steps:
 - 1) Replace the applicable ADIRU. These are the tasks:
 - Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
 - Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801
 - a) Do the Repair Confirmation at the end of this task.

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- (2) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the Left (Right) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
- (c) Examine the wiring between the FCC-A, M1875 and the Left ADIRU as follows (WDM 34-21-13, WDM 34-21-14):

LEFT IR OUTPUTS

FCC-A	LEFT ADIRU
D10135B	D3687B
pin K2	pin E6
pin K3	pin E5

LEFT ADR OUTPUTS

FCC-A	LEFT ADIRU
D10135B	D3687A
pin E4	pin A3
pin D4	pin B3

- (d) Examine the wiring between the FCC-A, M1875 and the Right ADIRU as follows (WDM 34-21-23, WDM 34-21-24):

RIGHT IR OUTPUTS

FCC-A	RIGHT ADIRU
D10135A	D3693B
pin K3	pin C10
pin K2	pin C11

RIGHT ADR OUTPUTS

FCC-A	RIGHT ADIRU
D10135A	D3693A
pin K4	pin A7
pin J4	pin B7

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the applicable Left (Right) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

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- (3) Install a new FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801

- (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
- (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
- (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

808. Stall Management Yaw Damper Computer Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1A-H04,G04

NOTE: Suspect LRUs:

- SMYDC-1
 - SMYDC-2
- (a) 22-31081 NO SMYDC DATA
- 1) The FCC-A receives no data from the Stall Management Yaw Damper (SMYD)-1.
- (b) 22-31082 NO SMYDC DATA
- 1) The FCC-B receives no data from the SMYD-2.
- (c) 22-31397 SMYDC DATA INV
- 1) The FCC-A receives invalid data (non-Flap related) from the SMYD-1.
- (d) 22-31398 SMYDC DATA INV
- 1) The FCC-B receives invalid data (non-Flap related) from the SMYD-2.
- (e) 22-31403 SMYDC FLAPS INV
- 1) The FCC-A receives invalid Flap Data from the SMYD-1.
- (f) 22-31404 SMYDC FLAPS INV
- 1) The FCC-B receives invalid Flap Data from the SMYD-2.

SIA ALL

B. Possible Causes

- (1) SMYD Computer 1 (2), M1747 (M1748)
- (2) Wiring

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	6	C01354	YAW DAMPER 2 DC
D	7	C00286	YAW DAMPER 1 DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC

D. Related Data

- (1) WDM 22-23-11
- (2) WDM 27-32-11
- (3) WDM 27-32-21
- (4) SSM 22-23-11
- (5) SSM 27-32-11
- (6) SSM 27-32-21

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

- (1) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the CDU shows a SMYD failure, then do these steps:
 - 1) Replace the applicable SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - (b) If the CDU Display does not show a SMYD failure, then continue.
- (2) Do this task: FCC Cross Channel Communication Problem - Fault Isolation, 22-15 TASK 825
 - (a) If there is a fault message, then do the FIM Task for that message.

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- 1) Do the Repair Confirmation at the end of this task.
- (b) If there are no fault messages, then continue.
- (3) Do this check of the wiring:
NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.
 - (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the SMYD Computer 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (c) Examine the wiring between the FCC-A, M1875 and the SMYD Computer 1, M1747 as follows (WDM 27-32-11):

STALL WARN ING SYSTEM 1

FCC-A	SMYDC 1
D10135A	D3683A
pin G4	pin 95
pin H4	pin 94

- (d) Examine the wiring between the FCC-B, M1876 and the SMYD Computer 2, M1748 as follows (WDM 27-32-21):

STALL WARN ING SYSTEM 2

FCC-B	SMYDC 2
D10137A	D3685A
pin G4	pin 95
pin H4	pin 94

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the SMYD Computer 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

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809. Radio Altimeter Transceiver Failure - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

(1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: J1B-B04,A04

NOTE: Suspect LRUs:

- RADIO ALT-1
- RADIO ALT-2

(a) 22-31051 NO RADIO ALT DATA

1) FCC-A receives no data from the Radio Altimeter-1 Input Bus.

(b) 22-31052 NO RADIO ALT DATA

1) FCC-B receives no data from the Radio Altimeter-2 Input Bus.

(c) 22-31359 NO RADIO ALT DATA

1) The FCC-A receives no data from the Radio Altimeter-2 via the FCC-B Cross Channel Bus.

(d) 22-31385 RADIO ALT DATA INV

1) FCC-A receives invalid data from the Radio Altimeter-1 Input Bus.

(e) 22-31386 RADIO ALT DATA INV

1) FCC-A receives invalid data from the Radio Altimeter-2 Input Bus.

(f) 22-31588 NO RADIO ALT DATA

1) The Radio Altitude is invalid.

(g) 22-31425 RADIO ALT DATA INV

1) FCC-B receives invalid data from the Radio Altimeter-2 Input Bus.

(h) 22-31832 RADIO ALT DISAGREE

1) FCC detects a disagreement between Radio Altimeter #1 and Radio Altimeter #2.

SIA ALL

B. Possible Causes

(1) Radio Altimeter (RA) 1 (2) M1735 (M1736)

(2) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01384	RADIO NAVIGATION RADIO ALTM 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01385	RADIO NAVIGATION RADIO ALTM 2

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D. Related Data

- (1) WDM 34-33-11
- (2) WDM 34-33-21
- (3) SSM 34-33-11
- (4) SSM 34-33-21

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

- (1) Do this task: Low Range Radio Altimeter (LRRRA) BITE Procedure, 34-33 TASK 801.
 - (a) If you find RA related maintenance messages, then do to the applicable FIM Tasks for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find RA related maintenance messages, then continue.
- (2) Do this task: FCC Cross Channel Communication Problem - Fault Isolation, 22-15 TASK 825
 - (a) If there is a fault message, then do the FIM Task for that message.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there are no fault messages, then continue.
- (3) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the RA Transceiver 1 (2), M1735 (M1736). This is the task: Low Range Radio Altimeter (LRRRA) Receiver/Transmitter (R/T) Removal, AMM TASK 34-33-21-000-801.
- (c) Examine the wiring between the FCC-A, M1875 and the RA Transceiver 1, M1735 as follows (WDM 34-33-11):

FCC-A		RA XCVR 1
D10135B		D3667B
pin B4	.....	pin B2
pin A4	.....	pin B3

- (d) Examine the wiring between the FCC-B, M1876 and the RA Transceiver 2, M1736 as follows (WDM 34-33-11):

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FCC-B	RA XCVR 2
D10137B	D3669B
pin B4	pin B2
pin A4	pin B3

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the RA Transceiver 1 (2), M1735 (M1736). This is the task: Low Range Radio Altimeter (LRRA) Receiver/Transmitter (R/T) Installation, AMM TASK 34-33-21-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
- (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

810. Temporary Loss of 28V DC Electrical Input Power - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

SIA ALL; WITH COLLINS FCCs

- (a) 22-31263 A/T 28 VDC PWR INV
- 1) The FCC-A does not receive valid Auto Throttle (A/T) Input Power when configured for Enhanced Digital Flight Control System (EDFCS) with internal A/T.
NOTE: The valid A/T Input Power are measured voltages greater than 18 Volts Direct Current (VDC) at connector D10135C pin 52, and is supplied to the A/T thru circuit breaker, C721.
 - 2) AFCS A/T CB is the message text that shows on the CDU Line 2 as the Suspect LRU.
 - 3) This fault can occur during airplane power ON. During airplane power ON, FCC-A provides 28 VDC logic power to both ASM-1 and ASM-2 and can intermittently source excess current to ASM-1 and ASM-2, causing the A/T 28 VDC power supply to temporarily decrease below 18 VDC. If this condition occurs for more than 2 seconds approximately, the A/T will log this condition in BITE as 22-31263 A/T 28 VDC PWR INV.
 - a) Cycling AFCS A/T CB C721 may resolve this intermittent condition.

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- 4) This fault can occur during autothrottle mode engagement. During autothrottle mode engagement, FCC-A provides 28 VDC motor power to ASM-1 and ASM-2 and can intermittently source excess current to ASM-1 and ASM-2 due to an in-rush current condition, causing the A/T 28 VDC power supply to temporarily decrease below 18 VDC. If this condition occurs for more than 2 seconds approximately, the A/T will log this condition in BITE as maintenance message 22-31263 A/T 28VDC PWR INV.
 - a) Cycling AFCS A/T CB C721 may resolve this intermittent condition.

SIA ALL

B. Possible Causes

- (1) Intermittent in-rush ASM current demand during airplane power ON or Autothrottle Mode engagement, resulting in A/T 28 VDC power to decrease below 18 VDC

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- (2) FCC-A, M1875

SIA ALL

- (3) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

SIA ALL; WITH COLLINS FCCs

- (1) SSM 22-31-31
- (2) WDM 22-31-31

SIA ALL

E. Initial Evaluation

- (1) Open and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

- (2) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent 28 VDC power fault.
 - (b) If the maintenance message shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do a check for 28 VDC power wiring (WDM 22-31-31):
 - (a) Remove the FCC-A, M1875 from the E1-1 Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect connector D41803P from D41803J at the Left Load Control Center, P18.
 - (c) Do a wiring check as follows:

**LOAD
CONTROL
CENTER - LEFT,
P18
D41803P**

**FLIGHT
CONTROL
COMPUTER-A,
M1875
D10135C**

pin 14 pin 52

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D41803P to D41803J.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-connect connector D41803P to D41803J.
- (2) Install a new FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

812. Thrust Difference Between Engines Too Large - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for this maintenance message:

NOTE: Suspect LRUs:

- A/T BRAKE
- ASM-1/-2
- EEC-1/-2
- TLA-1/-2

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(a) 22-31525 THROT SPLIT

- 1) The FCC-A detects too large of a difference between the two Throttle Handle positions.

SIA ALL

B. Possible Causes

- (1) A/T Brake Assembly
- (2) ASM 1 (2), M1836 (M1837)

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- (3) FCC-A, M1875

SIA ALL

- (4) ENG 1 (2) Thrust Lever Angle (TLA) Resolver, M1819
- (5) EEC, M1818
- (6) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-41
- (3) WDM 73-24-11
- (4) WDM 73-24-21
- (5) SSM 22-31-11
- (6) SSM 22-31-31
- (7) SSM 22-31-41
- (8) SSM 73-24-11
- (9) SSM 73-24-21

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E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801. Look for A/T, ASM and EEC related maintenance messages.

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- (a) If one of these maintenance messages shows in CURRENT STATUS, then go to the indicated FIM Task to troubleshoot the problem:
 - 1) Go to Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation, 22-31 TASK 830 for this maintenance message:
 - 22-31543 A/T ENG 28 VDC
 - 2) Go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 for these maintenance messages:
 - 22-31590 A/T-01 BUS FAIL
 - 22-31682 THROTTLE MOVEMENT
 - 3) Go to Electronic Engine Control Failure - Fault Isolation, 22-31 TASK 806 for these EEC related maintenance messages:
 - 22-31410 EEC DATA INV
 - 22-31411 EEC DATA INV
 - 22-31511 NO EEC DATA
 - 22-31512 NO EEC DATA
 - 4) ASM Related Maintenance Messages: Refer to the table at the end of the A/T BITE Task to find the applicable FIM Tasks for the messages that show.

SIA ALL

- (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.
- (c) If you do not find A/T, ASM or EEC maintenance messages, then one of these conditions occurred:
 - There was an intermittent fault.

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- Wiring issue between FCCs to EECs can have a fault.

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- ASM 1 (2), M1836 (M1837) can have a fault.
 - EEC 1A, EEC 1B, EEC 2A, EEC 2B can have a fault.
 - The A/T Brake Assembly can have a fault.
 - The TLA Resolver can have a fault.
- 1) To find the fault in the A/T Brake Assembly or TLA Resolver, do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connector D10025 (D10027) from the ASM 1 (2), M1836 (M1837).

- (c) Disconnect connectors DP0303 and DP0404 from the applicable EEC, M1818.

NOTE: The EEC is on the right side of the Engine Fan Case at the two o'clock position.

- (d) Disconnect connectors D3973A/B/D/E (D3975A/B/D/E) from the DEU 1 (2), M1808 (M1809).

- (e) Examine the wiring between the FCC-A, M1875 and the ASM 1 (2), M1836 (M1837) as follows (WDM 22-31-31, WDM 22-31-41):

FCC-A	ASM 1
D10135A	D10025
pin A9	pin 9
pin B9	pin 3
pin A14	pin 14
pin B14	pin 6
pin C6	pin 12
pin D5	pin 13
D10135B	D10025
pin H3	pin 7
pin J2	pin 8

FCC-A	ASM 2
D10135B	D10027
pin A9	pin 9
pin B9	pin 3
pin A14	pin 14
pin B14	pin 6
pin C6	pin 12
pin D5	pin 13
pin H3	pin 7
pin J2	pin 8

- (f) Examine the wiring between the FCC-A, M1875 and the EEC, M1818 as follows (WDM 73-24-11, WDM 73-24-21):

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ENGINE 1

FCC-A	EEC 1, CH-A
D10135A	DP0303
pin B5	pin N
pin C4	pin M

FCC-A	EEC 1, CH-B
D10135B	DP0404
pin B5	pin N
pin C4	pin M

ENGINE 2

FCC-A	EEC 2, CH-A
D10135A	DP0303
pin J2	pin N
pin J1	pin M

FCC-A	EEC 2, CH-B
D10135B	DP0404
pin C10	pin N
pin D9	pin M

- (g) Examine the wiring between the FCC-A, M1875 and the DEU 1 (2), M1808 (M1809) as follows (WDM 73-24-11):

FCC-A	DEU 1
D10135A	D3973A
pin B5	pin A5
pin C4	pin B5

FCC-A	DEU 2
D10135A	D3975A
pin B5	pin A5
pin C4	pin B5

FCC-A	DEU 1
D10135B	D3973B
pin B5	pin A5
pin C4	pin B5

FCC-A	DEU 2
D10135B	D3975B
pin B5	pin A5
pin C4	pin B5

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- (h) Examine the wiring between the FCC-A, M1875 and the DEU 1 (2), M1808 (M1809) as follows (WDM 73-24-21):

FCC-A	DEU 1
D10135A	D3973D
pin J2	pin A5
pin J1	pin B5

FCC-A	DEU 2
D10135A	D3975D
pin J2	pin A5
pin J1	pin B5

FCC-A	DEU 1
D10135B	D3973E
pin C10	pin A5
pin D9	pin B5

FCC-A	DEU 2
D10135B	D3975E
pin C10	pin A5
pin D9	pin B5

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-connect connector D10025 (D10027) to the ASM 1 (2), M1836 (M1837).
 - d) Re-connect connectors DP0303 and DP0404 to the applicable EEC, M1818.
 - e) Re-connect connectors D3973A/B/D/E (D3975A/B/D/E) to the DEU 1 (2), M1808 (M1809).
 - f) 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 FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - b) Re-connect connector D10025 (D10027) to the ASM 1 (2), M1836 (M1837).
 - c) Re-connect connectors DP0303 and DP0404 to the applicable EEC, M1818.
 - d) Re-connect connectors D3973A/B/D/E (D3975A/B/D/E) to the DEU 1 (2), M1808 (M1809).

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- (2) Do the following tests as follows:

- (a) Do this BITE Test of the A/T Brake Assembly as follows:

- 1) Make sure that the A/T BITE TEST Index shows on the CDU.

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- 2) If you are not at the A/T BITE TEST Index, then do these steps:
 - a) Push the INIT REF function key on the CDU.
 - b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX Display to show.
 - c) Push the LSK adjacent to MAINT.
 - d) Push the LSK adjacent to A/T.

NOTE: The two A/T Warning Lights come ON during the BITE.
 - e) Make sure that the A/T BITE TEST Index shows on the CDU.
- 3) Push the LSK adjacent to INTERACTIVE.
- 4) Push the LSK adjacent to THROTTLE TESTS.



MAKE SURE THAT ENGINE START LEVERS ARE IN THE CUTOFF POSITION. IF THE ENGINE START LEVERS ARE NOT IN THE CUTOFF POSITION, THE ENGINE START SEQUENCE CAN OCCUR. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 5) Do the instructions on the CDU.
 - 6) Push the LSK adjacent to CONTINUE.
 - 7) Push the LSK adjacent to TORQUE TEST.
 - 8) Do the instructions on the CDU.
 - 9) Push the LSK adjacent to CONTINUE.

NOTE: This will start the Interactive TORQUE TEST, which is a test for smooth movement of the Thrust Levers. There are three phases of the test:

 - At the start of the test, there is no Thrust Lever movement.
 - Thrust Levers move to forward stop.
 - Thrust Levers move to aft stop.
 - a) Make sure that the Torque stays at a stable value to within approximately ± 1.5 oz-in while the Thrust Levers move.

NOTE:

 - The CDU screen updates once every 2 seconds.
 - When the Thrust Levers get to their limit of travel, the torque can increase by 3.0 to 6.0 oz-in. However, this may not be shown on the CDU because of the slow screen refresh rate.
 - It is not expected that the Thrust Lever 1 and Thrust Lever 2 to have the same torque indications.
 - The stable torque values can change for different A/T units, as long as they stay stable within ± 1.5 oz-in.
- <1> If the Torque values for the Thrust Levers are not satisfactory, then replace the Autothrottle Brake Assembly. These are the tasks:
- Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
 - Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801

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<a> Do the interactive TORQUE TEST for the Thrust Lever again.

- I. If the Torque values for the Thrust Levers are satisfactory, then you corrected the problem. Do these steps to complete the task:
- II. Push the LSK adjacent to INDEX.
- III. Push the LSK adjacent to INDEX again.
- IV. Do the instructions on the CDU.
- V. Push the LSK adjacent to CONTINUE.
- VI. Push the LSK adjacent to INDEX.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

<2> If the Torque values for the Thrust Levers are satisfactory, then continue.

(b) Do this check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.

1) If the values for the Thrust Levers are not satisfactory, then do these steps:

a) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.

b) Do the check of the TLA Resolvers again.

c) If the values are satisfactory, then you corrected the problem. Do these steps to complete the task:

<1> Push the LSK adjacent to INDEX.

<2> Push the LSK adjacent to INDEX again.

<3> Push the LSK adjacent to INDEX again.

<4> Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

d) If the values for the TLA Resolvers are satisfactory, then the fault was intermittent.

(c) Do the Repair Confirmation at the end of this task.

(3) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:

- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
- Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801

(a) Do the Repair Confirmation at the end of this task.

(4) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(a) If you find EEC faults, replace the applicable EEC. These are the task:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

1) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.

(a) Look for A/T, ASM and EEC related maintenance messages.

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- 1) If the A/T, ASM and EEC related maintenance messages shows in CURRENT STATUS then, do the Fault Isolation Task for each related maintenance message.

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- 2) If the maintenance message 22-31525 does not show on the next flights, then you corrected the problem.
- 3) If the maintenance message 22-31525 shows on the next flights, then continue the Fault Isolation Procedure at the subsequent step.

SIA ALL

———— **END OF TASK** ————

813. Angle of Attack Sensor Problems - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ALPHA VANE-1
 - ALPHA VANE-2
- (a) 22-31035 VANE DIFF
 - 1) The FCC-A receives ALPHA VANE data with a disagreement between ADIRU(ADC)-1 and ADIRU(ADC)- 2

SIA ALL

B. Possible Causes

- (1) L (R) Angle of Attack Sensor, T433 (T437)
- (2) Left (Right) ADIRU, M1749 (M1752)

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- (3) FCC-A, M1875

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- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1
E	5	C01009	ADIRU LEFT DC
E	7	C01007	ADIRU LEFT AC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	8	C00425	ADIRU LEFT EXC

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01008	ADIRU RIGHT AC
C	15	C00426	ADIRU RIGHT EXC
C	17	C01010	ADIRU RIGHT DC

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 34-21-12
- (3) WDM 34-21-22
- (4) SSM 34-21-14
- (5) SSM 34-21-24
- (6) SSM 22-31-11
- (7) SSM 34-21-12
- (8) SSM 34-21-22

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do this check of the wiring:
 - (a) Remove the Left (Right) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - (b) Disconnect connector D10015 (D10017) from the L (R) AOA Sensor, T433 (T437).
 - (c) Examine the wiring between the Left (R) ADIRU and the L (R) AOA Sensor as follows (WDM 34-21-12, WDM 34-21-22):

L ADIRU	L AOA SNSR
D3687A	D10015
pin J7	pin 3
pin H7	pin 4
pin K7	pin 5

R ADIRU	R AOA SNSR
D3693A	D10017
pin H7	pin 3
pin J7	pin 4
pin K7	pin 5

- (d) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
 - 2) Re-install the applicable L (R) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) Re-connect the applicable connector D10015 (D10017) to the L (R) AOA Sensor, T433 (T437).
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then do these steps and continue.
- 1) Re-connect the applicable connector D10015 (D10017) to the L (R) AOA Sensor, T433 (T437).
 - 2) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (f) Examine the wiring between the FCC-A, M1875 and the Left (Right) ADIRU, M1749 (M1752) as follows (WDM 34-21-14, SSM 34-21-24):

FCC-A	L ADIRU
D10135B	D3687A
pin E4	pin A3
pin D4	pin B3

FCC-A	R ADIRU
D10135A	D3693A
pin K4	pin A7
pin J4	pin B7

- (g) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the applicable Left (Right) ADIRU, M1749 (M1752). This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (2) Install a new FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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817. N1 Target Problems at Throttle Hold - Fault Isolation

A. Description

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(1) This task is for these maintenance messages:

(a) 22-31671 T/O SET HIGH

NOTE: SUSPECT LRU(S): ENGINE 1 N1

1) FCC-A detects that at the initiation of Throttle Hold for Take Off (T/O), N1 is set too High on Engine 1.

(b) 22-31672 T/O SET HIGH

NOTE: SUSPECT LRU(S): ENGINE 2 N1

1) FCC-A detects that at the initiation of Throttle Hold for T/O, N1 is set too High on Engine 2.

(c) 22-31673 T/O SET HIGH

NOTE: SUSPECT LRU(S): TRA 1

1) FCC-A detects that at the initiation of Throttle Hold for T/O, Thrust Lever Resolver Angle (TRA) 1 is set too High.

(d) 22-31674 T/O SET HIGH

NOTE: SUSPECT LRU(S): TRA 2

1) FCC-A detects that at the initiation of Throttle Hold for T/O, TRA 2 is set too High.

(e) 22-31675 T/O SET LOW

NOTE: SUSPECT LRU(S): ENGINE 1 N1

1) FCC-A detects that at the initiation of Throttle Hold for T/O, N1 is set too Low on Engine 1.

(f) 22-31676 T/O SET LOW

NOTE: SUSPECT LRU(S): ENGINE 2 N1

1) FCC-A detects that at the initiation of Throttle Hold for T/O, N1 is set too Low on Engine 2.

(g) 22-31677 T/O SET LOW

NOTE: SUSPECT LRU(S): TRA 1

1) FCC-A detects that at the initiation of Throttle Hold for T/O, TRA 1 is set too Low.

(h) 22-31678 T/O SET LOW

NOTE: SUSPECT LRU(S): TRA 2

1) FCC-A detects that at the initiation of Throttle Hold for T/O, TRA 2 is set too Low.

(i) 22-31679 REJECTED T/O

NOTE: SUSPECT LRU(S):

- CREW OPERATION
- ASM

1) FCC-A detects that at the initial stage of T/O, the crew has retarded the Throttles.

(j) 22-31680 T/O SET UP

NOTE: SUSPECT LRU(S):

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- CREW OPERATION
- FMC

1) FCC-A detects that the crew has not set up the FMC Engine Rating for T/O.

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- (2) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
- (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) SMYD 1 (2), M1747 (M1748)
- (2) ENG 1 (2) TRA, M1819
- (3) EEC, M1818
- (4) Wiring
- (5) Software
- (6) FMC-1 (2), M1175 (M1632)
- (7) BLEED Switch, S6 (S7)

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- (8) Left (Right) Pack Flow Control and Shutoff Valve, V18 (V19)

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- (9) Left (Right) Pack Flow Control and Shutoff Valve, V184 (V185)

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- (10) ASM-1 (2), M1836 (M1837)

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- (11) FCC-A, M1875

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1
A	7	C01238	FMCS MCDU 1
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT
D	15	C01239	FMCS MCDU 2
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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	3	C01613	AIR COND PACK CONT VALVES L ALT
D	4	C01614	AIR COND PACK CONT VALVES R ALT

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 27-32-11
- (3) WDM 27-32-21
- (4) WDM 34-61-14
- (5) WDM 73-24-11
- (6) WDM 73-24-21

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- (7) WDM 21-51-11
- (8) WDM 21-51-21
- (9) WDM 34-61-17

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- (10) SSM 22-31-11
- (11) SSM 22-31-31
- (12) SSM 22-31-41
- (13) SSM 27-32-11
- (14) SSM 27-32-21
- (15) SSM 34-61-14

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- (16) SSM 21-51-11
- (17) SSM 21-51-21
- (18) SSM 36-11-11

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E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message still shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find SMYD related maintenance messages, then do the applicable FIM task for the messages that show.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you did not find SMYD related maintenance messages, then continue.
- (2) Do this check of the wiring (WDM 22-31-11, WDM 27-32-11, WDM 27-32-21):
 - (a) Remove the applicable SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the Proximity Switch Electronic Unit (PSEU), M2061. This is the task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (c) Examine the wiring between the and the SMYD 1 (2) at the E3-2 Shelf and the PSEU as follows:

STALL WARNING SYSTEM 1

SMYD 1	PSEU
D3683A	D11138
pin 20	pin 28

STALL WARNING SYSTEM 2

SMYD 2	PSEU
D3685A	D10988
pin 20	pin 28

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the PSEU, M2061. This is the task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - d) Do the Repair Confirmation at the end of this task.

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- 2) If you do not find a problem with the wiring, then install a new SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - a) Re-install the PSEU, M2061. This is the task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - b) Do the Repair Confirmation at the end of this task.
- (3) Do these tasks:
 - Autothrottle System - Operational Test, AMM TASK 22-31-00-710-801
 - Autothrottle System - System Test, AMM TASK 22-31-00-710-802
 - (a) If you find any related maintenance messages, then do the FIM task for each messages that you find.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you did not find any related maintenance messages, then continue.
- (4) Do a check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.
 - (a) If the values for the Thrust Levers are not correct, then do these steps:
 - 1) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
 - 2) Do a check of the TLA Resolvers again.
 - 3) If the values are satisfactory, then you corrected the fault. Do these steps to complete the task:
 - a) Push the LSK adjacent to INDEX.
 - b) Push the LSK adjacent to INDEX again.
 - c) Push the LSK adjacent to INDEX again.
 - d) Push the LSK adjacent to INDEX again.
 - (b) If the values for the TLA resolvers are correct, then continue.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

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- (5) Look at the SUSPECT LRU(S) that show on the CURRENT STATUS Display.
 - (a) If the SUSPECT LRU(S) is ENGINE 1 N1 or ENGINE 2 N1, then do this task: Electronic Engine Control Failure - Fault Isolation, 22-31 TASK 806.
 - (b) Do the Repair Confirmation at the end of this task.

SIA ALL

- (6) Look at the SUSPECT LRU(S) that show on the CURRENT STATUS Display.
 - (a) If the SUSPECT LRU(S) is FMC, then do this task: Flight Management Computer Failure - Fault Isolation, 22-31 TASK 803.
 - (b) Do the Repair Confirmation at the end of this task.
- (7) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.

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- 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem with the configuration, then continue.
- (8) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (9) For the following maintenance messages, refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.

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- 22-31671 T/O SET HIGH
- 22-31672 T/O SET HIGH
- 22-31675 T/O SET LOW
- 22-31676 T/O SET LOW

SIA ALL

- (a) If the test is not satisfactory, then do these steps:
 - 1) Do this wiring check (WDM 34-61-17):
 - a) Remove the FMC-1 (2), M1175 (M1632). This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - b) Remove the Air Conditioning/Bleed Air Controls Panel, P5-10. This is the task: Air Conditioning Module Removal, AMM TASK 21-51-65-000-801.
 - c) Do a wiring check as follows:

FMC-1, M1175	BLEED 1
D2179B	Switch, S6
pin H13	D646
	pin 39

FMC-1, M1175	BLEED 2
D2179B	Switch, S7
pin H14	D680
	pin 39

FMC-2, M1632	BLEED 1
D3261B	Switch, S6
pin H13	D646
	pin 39

FMC-2, M1632	BLEED 2
D3261B	Switch, S7
pin H14	D680
	pin 39

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.

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- Re-install the Air Conditioning/Bleed Air Controls Panel, P5-10. This is the task: Air Conditioning Module Installation, AMM TASK 21-51-65-400-801.
 - <c> Re-install the FMC. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
 - <d> Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.
 - <e> Do the Repair Confirmation at the end of this task.
 - <2> If there is no problem with the wiring, then continue.
 - <a> Re-install the FMC. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
- 2) Replace the BLEED 1 (2) Switch, S6 (S7).
- a) Re-install the Air Conditioning/Bleed Air Controls Panel, P5-10. This is the task: Air Conditioning Module Installation, AMM TASK 21-51-65-400-801.
 - b) Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.
 - c) Do the Repair Confirmation at the end of this task.
- 3) Do this wiring check (WDM 21-51-11, WDM 21-51-21, WDM 34-61-17):
- a) On the Air Conditioning/Bleed Air Controls Panel, P5-10, set to the OFF position and attach the DO NOT OPERATE tags, STD-858, to these switches:
 - L (R) PACK Switch
 - BLEED 1 (2) Switch
 - BLEED APU Switch
 - 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

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- c) Disconnect the connector D486 (D490) from the Left (Right) Pack Flow Control and Shutoff Valve, V18 (V19).

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- d) Disconnect the connector D15832 (D15836) from the Left (Right) Pack Flow Control and Shutoff Valve, V184 (V185).

SIA ALL

- e) Remove the FMC-1 (2), M1175 (M1632). This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
- f) Do this wiring check as follows:

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	Left Pack Flow Control and Shutoff Valve, V18
FMC-1, M1175	D486
D2179B	
pin J13	pin 3
	Right Pack Flow Control and Shutoff Valve, V19
FMC-1, M1175	D490
D2179B	
pin B14	pin 3
	Left Pack Flow Control and Shutoff Valve, V18
FMC-2, M1632	D486
D3261B	
pin J13	pin 3
	Right Pack Flow Control and Shutoff Valve, V19
FMC-2, M1632	D490
D3261B	
pin B14	pin 3

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	Left Pack Flow Control and Shutoff Valve, V184
FMC-1, M1175	D15832
D2179B	
pin J13	pin 3
	Right Pack Flow Control and Shutoff Valve, V185
FMC-1, M1175	D15836
D2179B	
pin B14	pin 3

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FMC-2, M1632	Left Pack Flow
D3261B	Control and
	Shutoff Valve,
	V184
pin J13	D15832
	pin 3

FMC-2, M1632	Right Pack Flow
D3261B	Control and
	Shutoff Valve,
	V185
pin B14	D15836
	pin 3

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- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-install the FMC. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.

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- <c> Re-connect the connector D486 (D490) to the Left (Right) Pack Flow Control and Shutoff Valve, V18 (V19).

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- <d> Re-connect the connector D15832 (D15836) to the Left (Right) Pack Flow Control and Shutoff Valve, V184 (V185).

SIA ALL

- <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> On the Air Conditioning/Bleed Air Controls Panel, P5-10, remove the DO NOT OPERATE tags, STD-858, and set to their original position these switches:
 - L (R) PACK Switch
 - BLEED 1 (2) Switch
 - BLEED Auxiliary Power Unit (APU) Switch
- <g> Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.

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<h> Do the Repair Confirmation at the end of this task.

- g) If there is no problem with the wiring, then continue.
- <1> Re-install the FMC-1 (2), M1175 (M1632). This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.

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- 4) Replace the Left (Right) Pack 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 Flow Control and Shutoff Valve - Installation, AMM TASK 21-51-01-400-802-002
- a) Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.
- b) Do the Repair Confirmation at the end of this task.

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- 5) Replace the Left (Right) Pack Flow Control and Shutoff Valve, V184 (V185). These are the tasks:
 - Left Flow Control and Shutoff Valve Removal, AMM TASK 21-51-01-000-806-003 or Right Flow Control and Shutoff Valve Removal, AMM TASK 21-51-01-000-807-003
 - Right Flow Control and Shutoff Valve Installation, AMM TASK 21-51-01-400-806-003 or Left Flow Control and Shutoff Valve Installation, AMM TASK 21-51-01-400-807-003
- a) Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.
- b) Do the Repair Confirmation at the end of this task.

SIA ALL

- 6) Replace the FMC-1 (2), M1175 (M1632). These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
- a) Refer to the Flight Management Computer System - System Test, AMM TASK 34-61-00-730-801 to do the test of the engine bleed discretes.
- b) Do the Repair Confirmation at the end of this task.
- (b) If the test satisfactory, then continue.
- (10) Replace the ASM 1 (2), M1836 (M1837). These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation at the end of this task.

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- (11) Look at the SUSPECT LRU(S) that show on the CURRENT STATUS Display.
 - If the SUSPECT LRU(S) is TRA 1 or TRA 2, then do this task: Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802.
- (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message still shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

818. Target N1 More Than Maximum Permitted - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:
 - (a) 22-31523 TARGET MON
 - FCC-A detects that the FMC N1 Target is more than maximum permitted.
 - The Autothrottle may disconnect or fail to engage if the condition occurs.
- NOTE: FCC-A provides the integrated autothrottle function.

SIA ALL

- (2) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
 - (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) Software
- (2) FMC, M1175
- (3) EEC, M1818
- (4) TAT Probe, M171
- (5) T12 Sensor, Sensor 1 (Ch A) or Sensor 2 (Ch B)
- (6) Wiring

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- (7) FCC-A, M1875

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 34-61-14
- (2) WDM 73-24-11
- (3) WDM 73-24-21
- (4) SSM 22-31-11
- (5) SSM 22-31-31
- (6) SSM 22-31-41
- (7) SSM 34-61-14

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message shows in INFLIGHT FAULTS, but it does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If the maintenance message shows in INFLIGHT FAULTS and CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) If the A/T LIMIT indication shows on the autothrottle thrust mode display, then do this task: A/T LIMIT Problem - Fault Isolation, 22-32 TASK 815.
- (2) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (a) If you find related maintenance messages, then do the applicable Fault Isolation Procedure to correct the fault.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you did not find related maintenance messages, then continue.
- (3) Do this task: EEC BITE Procedure, 73-00 TASK 801.

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- (a) If you find related maintenance messages, then do the applicable Fault Isolation Procedure to correct the fault.
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If you did not find related maintenance messages, then continue.
- (4) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If you find related maintenance messages, then do the applicable Fault Isolation Procedure to correct the fault.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you did not find related maintenance messages, then continue.
- (5) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the configuration, then continue.
- (6) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the FMC. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (8) Replace the ECC. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (9) Replace the TAT Probe. These are the tasks:
 - Total Air Temperature Probe - Removal, AMM TASK 34-21-06-000-801
 - Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (10) Replace the T12 (Ch A) or (Ch B) sensor. These are the tasks:
 - T12 Sensor Removal, AMM TASK 73-21-05-000-801-F00
 - T12 Sensor Installation, AMM TASK 73-21-05-400-801-F00

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- (11) Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then you have corrected the problem.
 - (b) If the maintenance message shows, or the maintenance message shows again in future flights, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

819. Unusual N1 Increase During Takeoff - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- TEMP INVERSN

- (a) 22-31524 N1 BLOOM

- 1) FCC-A detects an unusual increase in FMC N1 during takeoff.

SIA ALL

B. Possible Causes

- (1) Increase in Outside Air Temperature

C. Fault Isolation Procedure

- (1) If there was an Engine Exceedence, then do this task: Engine Overspeed, N1 Over Redline - Fault Isolation, 71-06 TASK 801.
- (2) If there was no Engine Exceedence, then no maintenance action is necessary for these messages and the conditions that cause the N1 increase.

————— **END OF TASK** —————

820. ASM 1 (2) CONFIG INVALID - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

- (a) 22-31453 ASM 1 CONFIG INVALID
- (b) 22-31578 ASM 1 CONFIG INV 00
- (c) 22-31580 ASM 1 CONFIG INV 10
- (d) 22-31792 ASM 1 CONFIG INV 11
- (e) 22-31454 ASM 2 CONFIG INVALID
- (f) 22-31579 ASM 2 CONFIG INV 00
- (g) 22-31581 ASM 2 CONFIG INV 01
- (h) 22-31793 ASM 2 CONFIG INV 11

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B. Possible Causes

- (1) ASM 1 (2), M1836 (M1837)
- (2) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

- (1) Do this check of the program pins:
 - (a) AUTOTHROTTLE SERVO MOTOR 1 (WDM 22-31-31)
 - 1) Disconnect electrical connector D10025 from the ASM 1, M1836.
 - 2) Do a continuity check between pin 1 and pin 5 at the connector D10025.
 - (b) AUTOTHROTTLE SERVO MOTOR 2 (WDM 22-31-41)
 - 1) Disconnect electrical connector D10027 from the ASM 2, M1837.
 - 2) Do a continuity check between pin 1 and pin 11 at the connector D10027.
 - (c) If there is no continuity between pin 1 and pin 5 at D10025 or pin 1 and 11 at D10027, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D10025 (D10027) to ASM 1 (2), M1836 (M1837).
 - 3) Do the Repair Confirmation below.
 - (d) If there is continuity between pin 1 and 5 at D10025 or pin 1 and 11 at D10027, then do these steps:
 - 1) Replace the applicable ASM 1(2), M1836 (M1837). These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
 - 2) Do the Repair Confirmation below.

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- (2) If the problem continues, do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connector D10025 (D10027) from ASM 1 (2), M1836 (M1837).

NOTE: The ASMs are under the Control Stand in the area forward of the Nose Landing Gear Wheel Well.

- (c) Examine the wiring between the FCC A, M1875 and the ASM 1, M1836 as follows (WDM 22-31-31):

FCC-A	ASM 1
D10135A	D10025
pin C6	pin 12
pin B9	pin 3
pin B14	pin 6
pin D5	pin 13
pin A9	pin 9
pin A14	pin 14

FCC-A	ASM 1
D10135B	D10025
pin H3	pin 7
pin J2	pin 8

- (d) Examine the wiring between the FCC A, M1875 and the ASM 2, M1837 as follows (WDM 22-31-41):

FCC-A	ASM 2
D10135B	D10027
pin C6	pin 12
pin H3	pin 7
pin B9	pin 3
pin B14	pin 6
pin D5	pin 13
pin J2	pin 8
pin A9	pin 9
pin A14	pin 14

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install the FCC A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-connect connector D10025 (D10027) to ASM 1 (2), M1836 (M1837).

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- 4) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.

SIA ALL

G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
 - (c) Push the LSK adjacent to the MAINT prompt.
 - (d) Push the LSK adjacent to INTERACTIVE.
 - (e) Push the LSK adjacent to THROTTLE TESTS.
 - (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

821. ASM 1 (2) DATA MISSING (NO DATA) - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31046 ASM 1 NO DATA
NOTE: Associated Interface Pins: J1A-C06, D05
 - 1) FCC-A detects no Input Data from ASM-1.
 - (b) 22-31056 ASM 2 NO DATA
NOTE: Associated Interface Pins: J1B-C05, D05
 - 1) FCC-A detects no Input Data from ASM-2.
 - (c) 22-31764 ASM 1 DATA MISSING
 - 1) FCC-A detects that Data (Labels 123, 135 and 365) are not being received by ASM-1 (Label 270, Bits 24-26) when Rate Command is sent (Label 123) with Rate Command Enable not set (Label 123, Bit 17=0).
 - (d) 22-31765 ASM 2 DATA MISSING

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- 1) FCC-A detects that Data (Labels 123, 135 and 365) are not being received by ASM-2 (Label 270, Bits 24-26) when Rate Command is sent (Label 123) with Rate Command Enable not set (Label 123, Bit 17=0).

SIA ALL

B. Possible Causes

- (1) Wiring
- (2) ASM 1 (2), M1836 (M1837)

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

SIA ALL; WITH COLLINS FCCs

- (1) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Disconnect connector D10025 (D10027) from ASM 1 (2), M1836 (M1837).

NOTE: The ASMs are under the Control Stand in the area forward of the Nose Landing Gear Wheel Well.

- (c) Examine the wiring between the FCC A, M1875 and the ASM 1, M1836 as follows (WDM 22-31-31):

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FCC-A	ASM 1
D10135A	D10025
pin C6	pin 12
pin B9	pin 3
pin B14	pin 6
pin D5	pin 13
pin A9	pin 9
pin A14	pin 14

FCC-A	ASM 1
D10135B	D10025
pin H3	pin 7
pin J2	pin 8

- (d) Examine the wiring between the FCC A, M1875 and the ASM 2, M1837 as follows (WDM 22-31-41):

FCC-A	ASM 2
D10135B	D10027
pin C6	pin 12
pin H3	pin 7
pin B9	pin 3
pin B14	pin 6
pin D5	pin 13
pin J2	pin 8
pin A9	pin 9
pin A14	pin 14

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-connect connector D10025 (D10027) to ASM 1 (2), M1836 (M1837).
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then do this step and then continue::
- (g) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
 - (c) Push the LSK adjacent to the MAINT prompt.
 - (d) Push the LSK adjacent to INTERACTIVE.
 - (e) Push the LSK adjacent to THROTTLE TESTS.
 - (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

822. ASM 1 (2) Internal Fault - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31057 ASM 1 NO INPUT
 - 1) FCC-A detects missing Input Data from ASM-1.
 - (b) 22-31058 ASM 2 NO INPUT
 - 1) FCC-A detects missing Input Data from ASM-2.
 - (c) 22-31059 ASM 1 DATA INVALID
 - 1) FCC-A detects SSM other than Normal Operation on Input Data from ASM-1.
 - (d) 22-31060 ASM 2 DATA INVALID
 - 1) FCC-A detects SSM other than Normal Operation on Input Data from ASM-2.
 - (e) 22-31273 ASM 1 RATE NOT ZERO
 - 1) FCC-A detects Rate Command (Label 267) not equal to zero from ASM-1.
 - (f) 22-31274 ASM 2 RATE NOT ZERO
 - 1) FCC-A detects Rate Command (Label 267) not equal to zero from ASM-2.
 - (g) 22-31294 ASM 1 TORQ NOT ZERO
 - 1) FCC-A detects Torque (Label 361) not equal to zero from ASM-1.
 - (h) 22-31295 ASM 2 TORQ NOT ZERO
 - 1) FCC-A detects Torque (Label 361) not equal to zero from ASM-2.
 - (i) 22-31399 ASM DATA INVALID

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- 1) FCC-A receives invalid data from ASM-1.
- (j) 22-31400 ASM DATA INVALID
 - 1) FCC-A receives invalid data from ASM-2.
- (k) 22-31501 ASM DATA INVALID
 - 1) FCC-A receives no data from ASM-1.
- (l) 22-31502 ASM DATA INVALID
 - 1) FCC-A receives no data from ASM-2.
- (m) 22-31582 ASM 1 INTERNAL FAULT
 - 1) FCC-A detects a Servo Fault (Label 270, Bit 22 is set) from ASM-1.
- (n) 22-31583 ASM 2 INTERNAL FAULT
 - 1) FCC-A detects a Servo Fault (Label 270, Bit 22 is set) from ASM-2.
- (o) 22-31762 ASM 1 TRA RATE
 - 1) FCC-A detects a TRA change when Rate Command is sent (Label 123) with Rate Command Enable not set (Label 123, Bit 17=0) from ASM-1.
- (p) 22-31763 ASM 2 TRA RATE
 - 1) FCC-A detects a TRA change when Rate Command is sent (Label 123) with Rate Command Enable not set (Label 123, Bit 17=0) from ASM-2.
- (q) 22-31768 ASM 1 RATE CMD <> 0
 - 1) FCC-A detects a TRA Rate (Label 267 from ASM) not equal to 0 Degrees/Second from ASM-1.
- (r) 22-31769 ASM 2 RATE CMD <> 0
 - 1) FCC-A detects a TRA Rate (Label 267 from ASM) not equal to 0 Degrees/Second from ASM-2.
- (s) 22-31772 ASM 1 ACT BIT NOT SET
 - 1) FCC-A detects that the ASM Label 270 Bit 20 is not set while commanding ASM-1.
- (t) 22-31773 ASM 2 ACT BIT NOT SET
 - 1) FCC-A detects that the ASM Label 270 Bit 20 is not set while commanding ASM-2.
- (u) 22-31786 ASM 1 LIMIT BIT SET
 - 1) FCC-A detects Servo Limiting (ASM Label 270, Bit 23 is set) from ASM-1.
- (v) 22-31787 ASM 2 LIMIT BIT SET
 - 1) FCC-A detects Servo Limiting (ASM Label 270, Bit 23 is set) from ASM-2.

SIA ALL

B. Possible Causes

- (1) ASM 1 (2), M1836 (M1837)

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C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation below.

G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
 - (c) Push the LSK adjacent to the MAINT prompt.
 - (d) Push the LSK adjacent to INTERACTIVE.
 - (e) Push the LSK adjacent to THROTTLE TESTS.
 - (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
 - (a) If the maintenance message does not show, then you corrected the problem.

————— **END OF TASK** —————

823. ASM 1 (2) NO EEC DATA - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31296 ASM 1 NO EEC DATA
- 1) FCC-A detects that EEC Pass Through Data (Labels 135 and 365) are not being received by ASM-1 (Label 270, Bits 26 & 25).
- (b) 22-31297 ASM 2 NO EEC DATA
- 1) FCC-A detects that EEC Pass Through Data (Labels 135 and 365) are not being received by ASM-2 (Label 270, Bits 26 & 25).

SIA ALL

B. Possible Causes

- (1) Wiring
- (2) EEC 1 (2), M1818
- (3) ASM 1 (2), M1836 (M1837)

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

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- (b) Disconnect connectors DP0303 and DP0304 from the applicable EEC, M1818.
NOTE: The EEC is on the right side of the Engine Fan Case at the two o'clock position.
- (c) Examine the wiring between the FCC-A and the EEC-1 as follows (WDM 73-24-11):

ENGINE 1

FCC-A	EEC 1, CH-A
D10135A	DP0303
pin B5	pin N
pin C4	pin M

FCC-A	EEC 1, CH-B
D10135B	DP0404
pin B5	pin N
pin C4	pin M

- (d) Examine the wiring between the FCC-A and the EEC-2 as follows (WDM 73-24-21):

ENGINE 2

FCC-A	EEC 2, CH-A
D10135A	DP0303
pin J2	pin N
pin J1	pin M

FCC-A	EEC 2, CH-B
D10135B	DP0404
pin C10	pin N
pin D9	pin M

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-connect connectors DP0303 and DP0304 to the applicable EEC, M1818.
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then do this step and then continue:
- 1) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (2) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the applicable EEC1 (2), M1818. These are the tasks:
- EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00

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- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
- (a) Push the INIT REF function key.
- (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
- (c) Push the LSK adjacent to the MAINT prompt.
- (d) Push the LSK adjacent to INTERACTIVE.
- (e) Push the LSK adjacent to THROTTLE TESTS.
- (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
- (a) If the maintenance message does not show, then you corrected the problem.
- (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

824. ASM 1 (2) LIMIT FAIL - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31766 ASM 1 TRA POSITION
- 1) FCC-A detects that the TRA position (Label 135 from EEC) is not equal 36 Degrees from ASM-1.
- (b) 22-31767 ASM 2 TRA POSITION
- 1) FCC-A detects that the TRA position (Label 135 from EEC) is not equal 36 Degrees from ASM-2.
- (c) 22-31780 ASM 1 LIMIT FAIL
- 1) FCC-A does not detect Servo Limiting (ASM Label 270, Bit 23 is not set) and TRA position (Label 135 from EEC) does not equal EEC Limit (Label 365) from ASM-1.
- (d) 22-31781 ASM 2 LIMIT FAIL
- 1) FCC-A does not detect Servo Limiting (ASM Label 270, Bit 23 is not set) and TRA position (Label 135 from EEC) does not equal EEC Limit (Label 365) from ASM-2.
- (e) 22-31778 ASM 1 LIMIT/RATE/POS
- 1) FCC-A detects one of these conditions from ASM-1:

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- Servo limiting does not occur (ASM Label 270, Bit 23 not set).
 - ASM Rate Feedback does not go to zero (Label 267).
 - TRA position (Label 135 from EEC) is not within 2 Degrees of EEC Limit (Label 365).
- (f) 22-31779 ASM 2 LIMIT/RATE/POS
- 1) FCC-A detects one of these conditions from ASM-2:
 - Servo limiting does not occur (ASM Label 270, Bit 23 not set).
 - ASM Rate Feedback does not go to zero (Label 267).
 - TRA position (Label 135 from EEC) is not within 2 Degrees of EEC Limit (Label 365).
- (g) 22-31782 ASM 1 LIMIT FAIL
- 1) FCC-A detects TRA position (Label 135 from EEC) is more than the EEC Limit (Label 365) plus 2 Degrees from ASM-1.
- (h) 22-31783 ASM 2 LIMIT FAIL
- 1) FCC-A detects TRA position (Label 135 from EEC) is more than the EEC Limit (Label 365) plus 2 Degrees from ASM-2.

SIA ALL

B. Possible Causes

- (1) TRA
- (2) ASM 1 (2), M1836 (M1837)

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
- (2) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS two or three more times.
 - (a) If the maintenance message does not show, then there was an intermittent fault.

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- (b) If only maintenance message 22-31780 and/or 22-31781 shows, then you can be disregard this as a nuisance condition.

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- (c) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Adjust the TRA. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
- (a) Do the Repair Confirmation below.
- (2) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation below.

G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
- (a) Push the INIT REF function key.
- (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
- (c) Push the LSK adjacent to the MAINT prompt.
- (d) Push the LSK adjacent to INTERACTIVE.
- (e) Push the LSK adjacent to THROTTLE TESTS.
- (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
- (a) If the maintenance message does not show, then you corrected the problem.
- (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

825. ASM 1 (2) TORQUE INVALID - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31691 NA TORQUE OR RATE TEST
- 1) FCC-A detects that ASM 1 has failed the Noise Abatement Rate Test or Torque Test.
- (b) 22-31692 NA TORQUE OR RATE TEST
- 1) FCC-A detects that ASM 2 has failed the Noise Abatement Rate Test or Torque Test.

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- (c) 22-31794 ASM 1 10 DEG RATE
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-1.
- (d) 22-31795 ASM 2 10 DEG RATE
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-2.
- (e) 22-31770 ASM 1 TORQUE INVALID
 - 1) FCC-A detects that the ASM Torque (Label 361) is not within a valid range (1-12 oz-inches) for ASM-1.
- (f) 22-31771 ASM 2 TORQUE INVALID
 - 1) FCC-A detects that the ASM Torque (Label 361) is not within a valid range (1-12 oz-inches) for ASM-2.
- (g) 22-31776 ASM 1 RATE FEEDBACK (+)
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-1.
- (h) 22-31777 ASM 2 RATE FEEDBACK (+)
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-2.
- (i) 22-31784 ASM 1 RATE FEEDBACK (-)
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-1.
- (j) 22-31785 ASM 2 RATE FEEDBACK (-)
 - 1) FCC-A detects that the TRA Rate Feedback (Label 267 from ASM) is not within 15% of the Commanded Rate for ASM-2.
- (k) 22-31790 ASM 1 TORQUE INVALID
 - 1) FCC-A detects that ASM Torque (Label 361) is not within a valid range (-1 to -12 oz-inches) for ASM-1.
- (l) 22-31791 ASM 2 TORQUE INVALID
 - 1) FCC-A detects that ASM Torque (Label 361) is not within a valid range (-1 to -12 oz-inches) for ASM-2.

SIA ALL

B. Possible Causes

- (1) Mechanical Friction Problem
- (2) ASM 1 (2), M1836 (M1837)

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

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D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.

NOTE: Make sure to do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS.

- (a) If the maintenance message does not show, then there was an intermittent fault.
- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a check for mechanical friction. This is the task: Forward Thrust Lever (Difficult To Move In Forward Thrust) - Fault Isolation, 76-05 TASK 802
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
 - (a) Do the Repair Confirmation below.

G. Repair Confirmation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.

NOTE: Make sure to do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS.

- (a) If the maintenance message does not show, then you corrected the problem.
- (b) If the maintenance message still shows, continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

826. ASM Motor (Logic) Voltage Problems - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31517 ASM 1 LOGIC PWR
 - 1) FCC-A detects a problem with the ASM-1 Logic Power Output.
 - (b) 22-31518 ASM 1 LOGIC PWR
 - 1) FCC-A detects a problem with the ASM-1 Motor Power Output.
 - (c) 22-31519 ASM 2 LOGIC PWR
 - 1) FCC-A detects a problem with the ASM-2 Logic Power Output.
 - (d) 22-31520 ASM 2 LOGIC PWR

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- 1) FCC-A detects a problem with the ASM-2 Motor Power Output.
- (e) 22-31584 ASM 1 LOGIC VOLTAGE
 - 1) FCC-A detects that the Logic Voltage Fault (Label 270, Bit 27 is not set) from ASM-1.
- (f) 22-31585 ASM 2 LOGIC VOLTAGE
 - 1) FCC-A detects that the Logic Voltage Fault (Label 270, Bit 27 is not set) from ASM-2.
- (g) 22-31696 ASM 1 MOTOR PWR INV
 - 1) FCC-A detects that the Motor Voltage Fault (Label 270, Bit 28 is not set) from ASM-1.
- (h) 22-31761 ASM 2 MOTOR PWR INV
 - 1) FCC-A detects that the Motor Voltage Fault (Label 270, Bit 28 is not set) from ASM-2.

SIA ALL

B. Possible Causes

- (1) ASM 1 (2), M1836 (M1837)
- (2) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Make sure that the applicable AUTOTHROTTLE DC 1 (2) circuit breaker is closed.
- (2) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

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- (1) Do this check of the wiring:

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the WDM to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connector D10025 (D10027) from the ASM 1 (2), M1836 (M1837).

NOTE: The ASMs are under the Control Stand in the area forward of the Nose Landing Gear Wheel Well.

- (c) Examine the Power Wiring between the FCC-A, and the ASM 1 as follows (WDM 22-31-31):

FCC-A	ASM 1
D10135A	D10025
pin A9	pin 9
pin B9	pin 3
pin B14	pin 6
pin A14	pin 14

- (d) Examine the Power Wiring between the FCC-A, and the ASM 2 as follows (WDM 22-31-41):

FCC-A	ASM 2
D10135B	D10027
pin B9	pin 3
pin A9	pin 9
pin B14	pin 6
pin A14	pin 14

- (e) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 3) Re-connect connector D10025 (D10027) to ASM 1 (2), M1836 (M1837).
- 4) Do the Repair Confirmation below.

- (f) If you do not find a problem with the wiring, then do these steps and then continue:

- 1) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- 2) Re-connect connector D10025 (D10027) to ASM 1 (2), M1836 (M1837).

- (2) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:

- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
- Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801

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- (a) Do the Repair Confirmation below.

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G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
 - (c) Push the LSK adjacent to the MAINT prompt.
 - (d) Push the LSK adjacent to INTERACTIVE.
 - (e) Push the LSK adjacent to THROTTLE TESTS.
 - (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

827. ASM 1 (2) TRA Position Change Problem - Fault Isolation

A. Description

SIA ALL; WITH COLLINS FCCs

- (1) This task is for these maintenance messages:

NOTE: Suspect LRUs:

- ASM-1
 - ASM-2
- (a) 22-31774 ASM 1 TRA POS(+)
 - 1) FCC-A detects that the TRA position (Label 135 from EEC) has not changed 16 Degrees after commanding ASM-1 at a Rate of 4 Degrees/second for 4 seconds.
 - (b) 22-31775 ASM 2 TRA POS(+)
 - 1) FCC-A detects that the TRA position (Label 135 from EEC) has not changed 16 Degrees after commanding ASM-2 at a Rate of 4 Degrees/second for 4 seconds.
 - (c) 22-31788 ASM 1 TRA POS(-)
 - 1) FCC-A detects that the TRA position (Label 135 from EEC) has not changed -16 Degrees after commanding ASM-1 at a Rate of -4 Degrees/second for 4 seconds.
 - (d) 22-31789 ASM 2 TRA POS(-)
 - 1) FCC-A detects that the TRA position (Label 135 from EEC) has not changed -16 Degrees after commanding ASM-2 at a Rate of -4 Degrees/second for 4 seconds.

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B. Possible Causes

- (1) TLA Resolver
- (2) EEC 1 (2), M1818
- (3) Mechanical Friction
- (4) ASM 1 (2), M1836 (M1837)

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-31
- (2) WDM 22-31-41
- (3) SSM 22-31-31
- (4) SSM 22-31-41

E. Initial Evaluation

- (1) Do the SERVO MOTOR TEST of the INTERACTIVE THROTTLE TESTS in the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Adjust the TRA. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
 - (a) Do the Repair Confirmation below.
- (2) Do the check of mechanical friction. This is the task: Forward Thrust Lever (Difficult To Move In Forward Thrust) - Fault Isolation, 76-05 TASK 802.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the applicable TLA Resolver. These are the tasks:
 - Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal, AMM TASK 76-11-05-000-801-F00
 - Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation, AMM TASK 76-11-05-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the applicable EEC1 (2), M1818. These are the tasks:
 - EEC Removal, AMM TASK 73-21-60-000-801-F00
 - EEC Installation, AMM TASK 73-21-60-400-801-F00
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801

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- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If you are at A/T BITE TEST, push the LSK next to RERUN.
- (2) If you are not at on the A/T BITE TEST Displays, then do these steps:
 - (a) Push the INIT REF function key.
 - (b) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This causes the INIT/REF INDEX to show.
 - (c) Push the LSK adjacent to the MAINT prompt.
 - (d) Push the LSK adjacent to INTERACTIVE.
 - (e) Push the LSK adjacent to THROTTLE TESTS.
 - (f) Push the LSK adjacent to SERVO MOTOR TEST.
- (3) Look at the CDU to see if the maintenance message shows.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

— END OF TASK —

830. Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 22-31543 A/T ENG 28 VDC
 - 1) FCC-A detects fault on output power monitor for A/T Engage 28 VDC.
NOTE: FCC-A provides this 28V DC power source to the Mode Control Panel (MCP) to magnetically hold the Autothrottle Arm Switch into the engaged state when the switch is moved into the ARM position.

B. Possible Causes

- (1) Wiring
- (2) MCP, M198
- (3) FCC-A, M1875

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-51
- (2) SSM 22-31-51

E. Initial Evaluation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.

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- (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the wiring:
- (a) Disconnect connector D301 from the MCP, M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (b) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (c) Examine the wiring between the MCP, M198 and the FCC-A, M1875 (WDM 22-31-51).

MCP, M198

D301

7 D11

FCC-A, M1875

D10135A

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D301 to the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (2) Replace the MCP, M198. These are the tasks:
- DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the FCC-A, M1875. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
- (a) If the maintenance message does not show in CURRENT STATUS, then you corrected the problem.
 - (b) If the maintenance message shows in CURRENT STATUS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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801. Autothrottle N1 Limit/Set Speed Problem or ASA Amber Warning - Fault Isolation

A. Description

- (1) The Autothrottle N1 or SPEED Mode is set manually from the Digital Flight Control System (DFCS) Mode Control Panel (MCP).
 - (a) The engines stay at the correct N1 or Speed Limit for the Flight Mode Selection made by the flight crew.
- (2) The Autothrottle Yellow Warning Lights flash on the Autoflight Status Annunciators (P1 and P3) when one of these conditions occurs:
 - (a) The Airspeed is Ten Knots above the Target Speed and it does not decelerate.
 - (b) The Airspeed is Five Knots below the Target Speed and it does not accelerate.
 - (c) The Airspeed has decreased to the Alpha Floor during a Dual Channel Approach.

B. Possible Causes

- (1) N1 or SPEED Mode Selector Pushbutton on the MCP, M198
- (2) Autothrottle Brake Assembly
- (3) Auto throttle Servo Motor (ASM) 1 (2), M1836 (M1837)

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- (4) Flight Control Computer (FCC)-A, M1875

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- (5) Flight Management Computer (FMC), M1175
- (6) Electronic Engine Control (EEC)-1 (2), M1818
- (7) ENG-1 (2) TLA Resolver, M1819
- (8) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	16	C01262	FMCS CMPTR 2

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-41
- (3) WDM 34-61-14
- (4) WDM 73-24-11
- (5) WDM 73-24-21
- (6) SSM 22-31-21
- (7) SSM 22-31-31
- (8) SSM 22-31-41
- (9) SSM 34-61-14

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If ASM, A/T, FMC, EEC or MCP related maintenance messages show in CURRENT STATUS, refer to the table at the end of the BITE TASK to find the applicable Fault Isolation Manual (FIM) Tasks for the messages that show.
 - (b) If none of the above maintenance messages show, then one of these conditions occurred:
 - 1) There was an intermittent fault.
 - 2) The N1 or SPEED Mode Selector Pushbutton can have a fault.
 - 3) The Autothrottle Brake Assembly can have a fault.
 - 4) The ENG-1 (2) TLA Resolver, M1819 can have a fault.
 - (c) To find the fault in the N1 or SPEED Mode Selector Pushbutton, the Autothrottle Brake Assembly, or the Thrust Lever Resolver Angle (TRA), then do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this check of the N1 or SPEED Mode Selector Pushbutton:
 - (a) Make sure that DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU page, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the Line Select Key (LSK) adjacent to the INDEX prompt.

NOTE: This causes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.

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- 4) Push the LSK adjacent to DFCS.
- 5) When the DFCS Self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
- (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
- (d) Push the LSK adjacent to BITE LIBRARY TEST.
- (e) Push the LSK adjacent to CHANNEL A AND B.
- (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
- (g) Push and release the NEXT PAGE key on the CDU until 50 MCP PUSHBTN shows on the CDU.
- (h) Push the LSK adjacent to 50 MCP PUSHBTN.
- (i) Push the LSK adjacent to EXECUTE.
- (j) Do the instructions on the CDU.
- (k) If the check of the N1 or SPEED Mode Selector is not satisfactory, then do these steps:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - 1) Do the check of the N1 or SPEED Mode Selector again.
 - 2) If the N1 or SPEED Mode Selector is satisfactory, then you corrected the problem. Do this step to complete the task:
 - a) Get out of DFCS BITE (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801).
 - (l) If the check of the N1 or SPEED Mode Selector Pushbutton is satisfactory, then continue.
- (2) Do this BITE Test of the Autothrottle Brake Assembly:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the line select key adjacent to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.

NOTE: The two Autothrottle Warning Lights come ON during the BITE.
 - 5) Make sure that the A/T BITE TEST index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to THROTTLE TESTS.



CAUTION

MAKE SURE THAT ENGINE START LEVERS ARE IN THE CUTOFF POSITION. IF THE ENGINE START LEVERS ARE NOT IN THE CUTOFF POSITION, THE ENGINE START SEQUENCE CAN OCCUR. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do the instructions on the CDU.
- (f) Push the LSK adjacent to CONTINUE.

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- (g) Push the LSK adjacent to TORQUE TEST.
- (h) Do the instructions on the CDU.
- (i) Push the LSK adjacent to CONTINUE.

NOTE: This will start the Interactive TORQUE TEST, which is a test for smooth movement of the Thrust Levers.

- 1) Make sure that the Torque values does not exceed 11 in-oz while the Thrust Levers are moving.
- 2) Make sure that the Torque values does not exceed 17 in-oz while motors are driving the Thrust Levers against the aft stop.
- 3) Make sure that the Torque values on the Control Display Unit (CDU) is within approximately ± 1.5 in-oz of stable values during these phases of the test:
 - a) Start of the test, no Thrust Levers movement.
 - b) Thrust Levers moving toward forward stop.
 - c) Thrust Levers moving toward aft stop.

NOTE: 1) It is important that the Thrust Levers reach steady state torques and stay within ± 1.5 in-oz of stable Torque values at each phase, this is testing for smooth lever movement free of restrictions.

2) When the Thrust Levers get to their limits of travel the torque may increase by approximately 3.0 to 6.0 in-oz.

3) The CDU has a 2 second screen update rate, the torque shown may not be consistent with a stable value during phase changes due to this delay.

4) It is not expected that Throttle-1 and Throttle-2 torque reading to be the same value.

- d) If the Torque values for the Thrust Levers are not satisfactory, then replace the Autothrottle Brake Assembly. These are the steps:

- Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
- Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801

<1> Do the interactive TORQUE TEST for the Thrust Lever again.

<a> If the Torque values for the Thrust Levers are satisfactory, then you corrected the fault. Do these steps to complete the task:

- I. Push the LSK adjacent to INDEX.
- II. Push the LSK adjacent to INDEX again.
- III. Do the instructions on the CDU.
- IV. Push the LSK adjacent to CONTINUE.
- V. Push the LSK adjacent to INDEX.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

- e) If the Torque values for the Thrust Levers are satisfactory, then continue.

- (3) Do this check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.

- (a) If the values for the Thrust Levers are not satisfactory, then do these steps:

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- 1) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
- 2) Do the check of the TLA Resolvers again.
- 3) If the values are satisfactory, then you corrected the problem. Do these steps to complete the task:
 - a) Push the LSK adjacent to INDEX.
 - b) Push the LSK adjacent to INDEX again.
 - c) Push the LSK adjacent to INDEX again.
 - d) Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

- (b) If the values for the TLA Resolvers are satisfactory, there was an intermittent fault.

————— **END OF TASK** —————

802. Autothrottle Retard Problem - Fault Isolation

A. Description

- (1) Retard occurs when the Thrust Levers automatically move back to the Idle Stops during Airplane Descent or Flare.

B. Possible Causes

- (1) FCC-A (B), M1875 (M1876)
- (2) Autothrottle Brake Assembly
- (3) ASM 1 (2), M1836 (M1837)
- (4) ENG-1 (2) Thrust Lever Angle (TLA) Resolver, M1819
- (5) Radio Altimeter (RA) Transceiver 1 (2), M1735 (M1736)
- (6) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01384	RADIO NAVIGATION RADIO ALTM 1
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	5	C01044	AFCS MCP DC 1
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01385	RADIO NAVIGATION RADIO ALTM 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK

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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01047	AFCS MCP DC 2

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-41
- (3) WDM 34-33-11
- (4) WDM 34-33-21f
- (5) SSM 22-31-21
- (6) SSM 22-31-22
- (7) SSM 22-31-31
- (8) SSM 22-31-41
- (9) SSM 34-33-11
- (10) SSM 34-33-21

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If ASM or A/T related maintenance messages show in CURRENT STATUS, refer to the table at the end of the BITE TASK to find the applicable FIM Tasks for the messages that show.
 - (b) If RA, related maintenance messages show in CURRENT STATUS, do this task: Low Range Radio Altimeter (LRR) BITE Procedure, 34-33 TASK 801.
 - 1) Refer to the table at the end of the LRR BITE TASK to find the applicable FIM Tasks for the messages that show.
 - (c) If none of the above maintenance messages show, then one of these conditions occurred:
 - 1) There was an intermittent fault.
 - 2) The FCC can have a fault.
 - 3) The Autothrottle Brake Assembly can have a fault.
 - 4) The ENG-1 (2) TLA Resolver, M1819 can have a fault.
 - (d) To find the fault in the FCC, Autothrottle Brake Assembly, or TLA Resolver, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this BITE Test of the FCC:
 - (a) Make sure that DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU page, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) Push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to DFCS.

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- 5) When the DFCS Self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
- (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
- (d) Push the LSK adjacent to BITE LIBRARY TEST.
- (e) Push the LSK adjacent to CHANNEL A AND B.
- (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
- (g) Push and release the NEXT PAGE key on the CDU until MCP INTERF 16 shows on the CDU.
- (h) Push the LSK adjacent to MCP INTERF 16.
- (i) Push the LSK adjacent to EXECUTE.
- (j) Do the instructions on the CDU.
- (k) If the FCC is not satisfactory, then do these steps:
 - 1) Replace the applicable FCC. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
 - 2) Do the check of the FCC again.
 - 3) If the FCC is satisfactory, then you corrected the problem Do this step to complete the task:
 - a) Get out of DFCS BITE (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801).
 - (l) If the FCC BITE Test is satisfactory, then continue.
- (2) Do this BITE Test of the Autothrottle Brake Assembly:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the line select key adjacent to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.

NOTE: The two Autothrottle Warning Lights come ON during the BITE.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to THROTTLE TESTS.



CAUTION

MAKE SURE THAT ENGINE START LEVERS ARE IN THE CUTOFF POSITION. IF THE ENGINE START LEVERS ARE NOT IN THE CUTOFF POSITION, THE ENGINE START SEQUENCE CAN OCCUR. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do the instructions on the CDU.
- (f) Push the LSK adjacent to CONTINUE.

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- (g) Push the LSK adjacent to TORQUE TEST.
- (h) Do the instructions on the CDU.
- (i) Push the LSK adjacent to CONTINUE.

NOTE: This will start the Interactive TORQUE TEST, which is a test for smooth movement of the Thrust Levers.

- 1) Make sure that the Torque values does not exceed 11 in-oz while the Thrust Levers are moving.
- 2) Make sure that the Torque values does not exceed 17 in-oz while motors are driving the Thrust Levers against the aft stop.
- 3) Make sure that the Torque values on the CDU is within approximately ± 1.5 in-oz of stable values during these phases of the test:
 - a) Start of the test, no Thrust Levers movement.
 - b) Thrust Levers moving toward forward stop.
 - c) Thrust Levers moving toward aft stop.

NOTE: 1) It is important that the Thrust Levers reach steady state torques and stay within ± 1.5 in-oz of stable Torque values at each phase, this is testing for smooth lever movement free of restrictions.

2) When the Thrust Levers get to their limits of travel the torque may increase by approximately 3.0 to 6.0 in-oz.

3) The CDU has a 2 second screen update rate, the torque shown may not be consistent with a stable value during phase changes due to this delay.

4) It is not expected that Throttle-1 and Throttle-2 torque reading to be the same value.

- d) If the Torque values for the Thrust Levers are not satisfactory, then replace the Autothrottle Brake Assembly. These are the steps:

- Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
- Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801

<1> Do the interactive TORQUE TEST for the Thrust Lever again.

<a> If the Torque values for the Thrust Levers are satisfactory, then you corrected the fault. Do these steps to complete the task:

- I. Push the LSK adjacent to INDEX.
- II. Push the LSK adjacent to INDEX again.
- III. Do the instructions on the CDU.
- IV. Push the LSK adjacent to CONTINUE.
- V. Push the LSK adjacent to INDEX.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

- e) If the Torque values for the Thrust Levers are satisfactory, then continue.

- (3) Do this check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.

- (a) If the values for the Thrust Levers are not satisfactory, then do these steps:

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- 1) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
- 2) Do the check of the TLA Resolvers again.
- 3) If the values are satisfactory, then you corrected the problem. Do these steps to complete the task:
 - a) Push the LSK adjacent to INDEX.
 - b) Push the LSK adjacent to INDEX again.
 - c) Push the LSK adjacent to INDEX again.
 - d) Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

- (b) If the values for the TLA Resolvers are satisfactory, there was an intermittent fault.

————— **END OF TASK** —————

803. Target Airspeed Problem - Fault Isolation

A. Description

- (1) The IAS/MACH Selector is located on the Digital Flight Control System Mode Control Panel (DFCS MCP).
 - (a) Target Airspeed is shown on the IAS/MACH Display which is located above the selector on the MCP.
 - (b) Target Airspeed is also shown by the Target Airspeed indication on the Airspeed Display which is located on the Main Equipment Panels.
- (2) In normal operation, the IAS/MACH Selector is used to set the Target Airspeed shown on the IAS/MACH Display.
 - (a) The Target Airspeed also shows on the Airspeed Indicator.
 - (b) When the Speed Mode Selection is set, the Autothrottle keeps the Airplane Speed at the Target Airspeed.

B. Possible Causes

- (1) DFCS MCP, M198
- (2) FCC-A (B), M1875 (M1876)
- (3) Display Electronic Unit (DEU)-1 (2), M1808 (M1809)
- (4) Display Unit (DU)-1 (2), N187 (N192)
- (5) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1

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CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01365	DISPLAY CAPT INBD
D	4	C01363	DISPLAY CAPT OUTBD
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	11	C01360	DISPLAY DEU 2 PRI
E	10	C01364	DISPLAY F/O OUTBD
E	11	C01366	DISPLAY F/O INBD

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	2	C01042	AFCS SYS B SNSR EXC AC
C	3	C01047	AFCS MCP DC 2

D. Related Data

- (1) WDM 22-11-51
- (2) SSM 22-11-51

E. Initial Evaluation

- (1) Do this check of the MCP Speed Selector Knob:
 - (a) Make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU page, then do these steps:
 - 1) Push the INIT REF Function Key on the CDU.
 - 2) If the POS INIT Display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the line LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to DFCS.
 - 5) When the DFCS self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
 - (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
 - (d) Push the LSK adjacent to BITE LIBRARY TEST.
 - (e) Push the LSK adjacent to CHANNEL A AND B.
 - (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
 - (g) Push and release the NEXT PAGE key on the CDU until 54 MCP KNB shows on the CDU.
 - (h) Push the LSK adjacent to 54 MCP KNB.
 - (i) Push the LSK adjacent to EXECUTE.

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- (j) Do the instructions on the CDU.
- (k) If the check of the MCP Speed Selector Knob is not satisfactory, then do these steps:
 - 1) Replace the Mode Control Panel. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - 2) Do the check of the MCP Speed Selector Knob again.
 - 3) If the MCP Speed Selector Knob is satisfactory, then you corrected the problem. Do this step to complete the task:
 - a) Get out of DFCS BITE (Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801).
- (l) If the check of the MCP Speed Selector Knob is satisfactory, then continue. One of these conditions occurred:
 - 1) There was an intermittent fault.
 - 2) The DFCS can have a fault.
 - 3) The Common Display System (CDS) can have a fault.
- (m) To find the fault in the DFCS or the CDS, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this task: Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801.
 - (a) Refer to the table at the end of the DFCS BITE TASK to find the applicable FIM Tasks for the messages that show.
 - (b) If the DFCS BITE Test is satisfactory, then continue.
- (2) Do this check of the CDS:
 - (a) Make sure that DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU Page, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to DFCS.
 - 5) When the DFCS self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
 - (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
 - (d) Push the LSK adjacent to BITE LIBRARY TEST.
 - (e) Push the LSK adjacent to CHANNEL A AND B.
 - (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
 - (g) Push and release the NEXT PAGE key on the CDU until 25 CDS shows on the CDU.
 - (h) Push the LSK adjacent to 25 CDS.
 - (i) Push the LSK adjacent to EXECUTE.
 - (j) Do the instructions on the CDU.
 - (k) If the check of the CDS is not satisfactory, then do these steps:

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- 1) Refer to the table at the end of the DFCS BITE TASK to find the applicable FIM Tasks for the messages that show.
- 2) Do the check of the CDS again.
- 3) If the CDS is satisfactory, then you corrected the problem. Do this step to complete the task:
 - a) Get out of DFCS BITE (22-11 TASK 801).
 - (l) If the check of the CDS is satisfactory, then continue.
- (3) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) If a related CDS maintenance message shows, refer to the table at the end of the CDS BITE TASK to find the applicable FIM Tasks for the messages that show.
 - (b) If the CDS BITE Test is satisfactory, then there was an intermittent fault.

———— **END OF TASK** ————

804. Autothrottle TO/GA Switch Operation Problem - Fault Isolation

A. Description

- (1) The TO/GA Switches engage the Autothrottle and the DFCS to the Takeoff Mode or the Go-around Mode.
 - (a) On the ground, the two systems will go to the Takeoff Mode when you push the TO/GA Switch.
 - (b) If you push the TO/GA Switch during approach, the Autothrottle System increases Engine Thrust to a reduced Thrust Go-around.
 - (c) If you push the TO/GA Switch a second time, the Engine Thrust increases to the maximum Thrust Go-around.
- (2) This task is for these Observed Faults:
 - (a) Thrust Lever does not move forward when the TO/GA Switch is pushed.
 - (b) Autothrottle does not go to full rated N1 when the TO/GA Switch is pushed a second time during Go-around
 - (c) Autothrottle does not go to reduced N1 when the TO/GA Switch is pushed one time during Go-around

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- (3) This Task is for these maintenance messages:
 - (a) 22-31681 LATE TOGA
NOTE: SUSPECT LRU(S):
 - CREW OPERATION
 - EEC
 - 1) FCC-A detects that the crew was late in selecting TOGA for Take-off.
 - (b) 22-11705 TOGA FAIL ACTIVE
NOTE: SUSPECT LRU(S):
 - TOGA SW-1
 - TOGA SW-2

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- 1) TOGA input is failed activated.

SIA ALL

B. Possible Causes

- (1) Thrust Lever 1 (2) TO/GA Switch, S786 (S787)
- (2) Autothrottle Brake Assembly
- (3) ASM 1 (2), M1836 (M1837)

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- (4) FCC-A (B), M1875 (M1876)

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- (5) FMC, M1175
- (6) EEC-1 (2), M1818
- (7) ENG-1 (2) TLA, M1819
- (8) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-41
- (3) WDM 34-61-14
- (4) WDM 73-24-11
- (5) WDM 73-24-21
- (6) SSM 22-31-11

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- (7) SSM 22-31-31
- (8) SSM 22-31-41
- (9) SSM 34-61-14

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801. Look for A/T, ASM and EEC related maintenance messages.

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- (a) If one of these maintenance messages shows in CURRENT STATUS, then go to the indicated FIM Task to troubleshoot the problem:
 - 1) Go to Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation, 22-31 TASK 830 for this maintenance message:
 - 22-31543 A/T ENG 28 VDC
 - 2) Go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 for these maintenance messages:
 - 22-31590 A/T-01 BUS FAIL
 - 22-31682 THROTTLE MOVEMENT
 - 3) Go to Electronic Engine Control Failure - Fault Isolation, 22-31 TASK 806 for these EEC related maintenance messages:
 - 22-31410 EEC DATA INV
 - 22-31411 EEC DATA INV
 - 22-31511 NO EEC DATA
 - 22-31512 NO EEC DATA
 - 4) Go to Flight Management Computer Failure - Fault Isolation, 22-31 TASK 803 for these FMC related maintenance messages:
 - 22-31360 NO FMC REQUEST
 - 22-31388 FMC DATA INV
 - 22-31071 NO FMC DATA
 - 5) ASM Related Maintenance Messages: Refer to the table at the end of the A/T BITE Task to find the applicable FIM Tasks for the messages that show.

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- (b) If the problem continues, then do the Fault Isolation Procedure below.
- (c) If you do not find A/T, ASM, EEC or FMC maintenance messages, then one of these conditions occurred:
 - There was an intermittent fault.
 - The TO/GA Switch can have a fault.
 - The Autothrottle Brake Assembly can have a fault.
 - The TLA Resolver can have a fault.
- 1) To find the fault in the TO/GA Switch, Autothrottle Brake Assembly or TLA Resolver, do the Fault Isolation Procedure below:

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F. Fault Isolation Procedure

- (1) Do this check of the TO/GA Switch:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to INPUT DISCRETES.
 - (e) Read the instructions on the CDU.
 - (f) Push the NEXT PAGE key.
 - (g) Push and hold the TO/GA Switch on Throttle Lever 1.
 - 1) Make sure that the CDU indication adjacent to TOGA changes from NOT PRESSED to PRESSED.
 - (h) Release the TO/GA Switch on Throttle Lever 1.
 - 1) Make sure that the CDU indication adjacent to TOGA changes from PRESSED to NOT PRESSED.
 - (i) Push and hold the TO/GA Switch on Throttle Lever 2.
 - 1) Make sure that the CDU indication adjacent to TOGA changes from NOT PRESSED to PRESSED.
 - (j) Release the TO/GA Switch on Throttle Lever 2.
 - 1) Make sure that the CDU indication adjacent to TOGA changes from PRESSED to NOT PRESSED.
 - (k) If the TO/GA Switch is not satisfactory, then continue.
- (2) Do this task: FCC Exchange Check, 22-11 TASK 820.
 - (a) If the problem continues, then continue.
- (3) If the problem continues and the fault is on Throttle Lever 1 Takeoff Go-around Switch, S786, then do these wiring checks:
 - (a) Remove FCC-A (B), M1875 (M1876) at the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect the Takeoff Go-around Switch connector D8313P (D8315P) from D8313J (D8315J) at the Control Stand.
 - (c) Examine the wiring between the Throttle Lever 1 Takeoff Go-Around Switch, S786 and FCC-A (B) as follows (WDM 22-11-14):



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THROTTLE LEVER 1 / CHANNEL A FAULT

LEVER 1 T/O

SW

FCC-A

D8313P

D10135A

pin 1 pin F4

LEVER 1 T/O

SW

D8313P

pin 2 GND

THRUST LEVER 1 / CHANNEL B FAULT

LEVER 1 T/O

SW

FCC-B

D8315P

D10137A

pin 1 pin F4

LEVER 1 T/O

SW

D8315P

pin 2 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the applicable connector D8313P (D8315P) to the Throttle Lever 1 Takeoff Go Around Switch, S786.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (4) If the problem continues and the fault is on Throttle Lever 2 Takeoff Go-around Switch, S787, then do these wiring checks:
 - (a) Remove FCC-A (B), M1875 (M1876) at the E1-1 (E1-4) Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Disconnect the Takeoff Go-around Switch, S787 connector D8313P (D8315P) from D8313J (D8315J) at the Control Stand.
 - (c) Examine the wiring between the Throttle Lever 2 Takeoff Go-Around Switch, S787 and FCC-A (B) as follows (WDM 22-11-14):

THROTTLE LEVER 2 / CHANNEL A FAULT

LEVER 2 T/O

SW

FCC-A

D8313P

D10135A

pin 11 pin F4

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LEVER 2 T/O

SW

D8313P

pin 12 GND

THRUST LEVER 2 / CHANNEL B FAULT

LEVER 2 T/O

SW

FCC-B

D8315P

D10137A

pin 11 pin F4

LEVER 2 T/O

SW

D8315P

pin 12 GND

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the applicable connector D8313P (D8315P) to the Throttle Lever 2 Takeoff Go Around Switch, S787.
 - c) Re-install the applicable FCC-A (B), M1875 (M1876). This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- (5) Replace the applicable TOGA Switch. These are the tasks:
 - Takeoff/Go-Around Switch Removal, AMM TASK 22-11-39-000-801
 - TOGA Switch Installation, AMM TASK 22-11-39-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Do this BITE Test of the Autothrottle Brake Assembly:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (c) Push the LSK adjacent to INTERACTIVE.
 - (d) Push the LSK adjacent to THROTTLE TESTS.

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MAKE SURE THAT ENGINE START LEVERS ARE IN THE CUTOFF POSITION. IF THE ENGINE START LEVERS ARE NOT IN THE CUTOFF POSITION, THE ENGINE START SEQUENCE CAN OCCUR. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do the instructions on the CDU.
- (f) Push the LSK adjacent to CONTINUE.
- (g) Push the LSK adjacent to TORQUE TEST.
- (h) Do the instructions on the CDU.
- (i) Push the LSK adjacent to CONTINUE.

NOTE: This will start the Interactive TORQUE TEST, which is a test for smooth movement of the Thrust Levers.

- 1) Make sure that the Torque values does not exceed 11 in-oz while the Thrust Levers are moving.
- 2) Make sure that the Torque values does not exceed 17 in-oz while motors are driving the Thrust Levers against the aft stop.
- 3) Make sure that the Torque values on the CDU is within approximately ± 1.5 in-oz of stable values during these phases of the test:
 - a) Start of the test, no Thrust Levers movement.
 - b) Thrust Levers moving toward forward stop.
 - c) Thrust Levers moving toward aft stop.

NOTE: 1) It is important that the Thrust Levers reach steady state torques and stay within ± 1.5 in-oz of stable Torque values at each phase, this is testing for smooth lever movement free of restrictions.

2) When the Thrust Levers get to their limits of travel the torque may increase by approximately 3.0 to 6.0 in-oz.

3) The CDU has a 2 second screen update rate, the torque shown may not be consistent with a stable value during phase changes due to this delay.

4) It is not expected that Throttle-1 and Throttle-2 torque reading to be the same value.

- d) If the Torque values for the Thrust Levers are not satisfactory, then replace the Autothrottle Brake Assembly. These are the steps:
 - Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
 - Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801
- <1> Do the interactive TORQUE TEST for the Thrust Lever again.
 - <a> If the Torque values for the Thrust Levers are satisfactory, then you corrected the fault. Do these steps to complete the task:
 - I. Push the LSK adjacent to INDEX.
 - II. Push the LSK adjacent to INDEX again.
 - III. Do the instructions on the CDU.
 - IV. Push the LSK adjacent to CONTINUE.

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V. Push the LSK adjacent to INDEX.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

e) If the Torque values for the Thrust Levers are satisfactory, then continue.

(7) Do this check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.

(a) If the values for the Thrust Levers are not satisfactory, then do these steps:

- 1) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.
- 2) Do the check of the TLA Resolvers again.
- 3) If the values are satisfactory, then you corrected the problem. Do these steps to complete the task:
 - a) Push the LSK adjacent to INDEX.
 - b) Push the LSK adjacent to INDEX again.
 - c) Push the LSK adjacent to INDEX again.
 - d) Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

(b) If the values for the TLA Resolvers are satisfactory, there was an intermittent fault.

G. Repair Confirmation

(1) Do the check of the TO/GA Switch again.

(a) If the check of the TO/GA Switch is satisfactory, then you corrected the fault. Do these steps to complete the task:

- 1) Push the LSK adjacent to INDEX.
- 2) Push the LSK adjacent to INDEX again.
- 3) Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

(b) If the TO/GA Switch not is satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

805. Autothrottle Manual Disengage Problem - Fault Isolation

A. Description

(1) This task is for this Observed Fault:

(a) Autothrottle does not disengage when one of the Autothrottle Disengage Switches on the Thrust Levers is pushed.

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(2) This Task is for these maintenance messages:

NOTE: INTERFACE PINS: (J1B-F07)

(a) 22-31538 A/T CUTOUT/RESET

NOTE: SUSPECT LRU(S): FCC-A

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- 1) FCC-A receives invalid or no data from the A/T Disconnect (CUTOUT) Switch during the BITE.
- (b) 22-31544 CUTOUT/RESET
NOTE: SUSPECT LRU(S): A/T DISENG THR LVR-1
 - 1) FCC-A does not receive A/T CUTOUT/RESET from the Thrust Lever Disengage Switch 1 during the BITE.
- (c) 22-31545 CUTOUT/RESET
NOTE: SUSPECT LRU(S): A/T DISENG THR LVR-2
 - 1) FCC-A does not receive A/T CUTOUT/RESET from the Thrust Lever Disengage Switch 2 during the BITE.

SIA ALL

B. Possible Causes

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- (1) FCC-A (B), M1875 (M1876)

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- (2) Thrust Lever 1 (2) Autothrottle Disengage Switch, S113 (S114)
- (3) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-51
- (2) SSM 22-31-51

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If you find A/T related maintenance messages in CURRENT STATUS, then go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 to troubleshoot the problem
 - (b) If you do not find A/T related maintenance messages, then one of these conditions occurred:
 - There was an intermittent fault.
 - The Autothrottle Disengage Switch can have a fault.
 - 1) To find the fault in the Autothrottle Disengage Switch, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Make sure that no EEC maintenance messages show.

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- (b) If you find EEC maintenance messages in CURRENT STATUS, then refer to the table at the end of the EEC BITE Procedure, 73-00 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem.
- (2) Do this check of the Autothrottle (A/T) Disengage Switch:
- (a) Make sure that the A/T BITE TEST Index shows on the CDU.
- (b) If you are not at the A/T BITE TEST Index, then do these steps:
- 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the line select key adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX display show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
NOTE: The two Autothrottle Warning Lights come ON during the BITE.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.
- (c) Push the LSK adjacent to INTERACTIVE.
- (d) Push the LSK adjacent to DISENG/WARNINGS.
- (e) Follow the instructions on the CDU.
- (f) Push the NEXT PAGE key.
- (g) On the P7 Mode Control Panel, put the A/T Switch to ARM.
- (h) Push and release the Autothrottle Disengage Switch on Thrust Lever 1.
 - 1) Make sure that the Autothrottle Disengage Switch goes to OFF.
- (i) Put the Autothrottle Disengage Switch to ARM.
- (j) Push and release the Autothrottle Disengage Switch on Thrust Lever 2.
 - 1) Make sure that the Autothrottle Disengage Switch goes to OFF.
- (k) If the Autothrottle Disengage Switch is not satisfactory, then do these steps:
- 1) Replace the applicable Thrust Lever 1 (2) Autothrottle Disengage Switch, S113 (S114). These are the tasks:
 - Autothrottle Disengage Switch Removal, AMM TASK 22-31-51-000-801
 - Autothrottle Disengage Switch Installation, AMM TASK 22-31-51-400-801
 - 2) Do the check of the Autothrottle Disengage Switch again.
 - 3) If the check of the Autothrottle Disengage Switch is satisfactory, then you corrected the problem. Do these steps to complete the task:
 - a) Push the NEXT PAGE key.
 - b) Push the LSK adjacent to INDEX.
 - c) Push the LSK adjacent to INDEX again.

————— **END OF TASK** —————

806. Autothrottle Automatic Disengage Problem - Fault Isolation

A. Description

- (1) The Autothrottle is usually used during Flight Operations.
- (a) The Autothrottle automatically disengages during flight if it finds a problem.

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- (b) The Autothrottle can intermittently disengage on-ground during takeoff mode (TOGA) engagement.
- (2) This task is for these Observed Faults:
 - (a) Autothrottle automatically disengages during flight.
 - (b) Autothrottle automatically disengaged during takeoff mode (TOGA) engagement.

B. Possible Causes

- (1) Airplane 28 Volts Direct Current (VDC) Power
- (2) Takeoff/Go-Around (TO/GA) Switches
- (3) ASM
- (4) MCP, M198

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- (5) FCC-A, M1875

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- (6) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-51
- (2) SSM 22-31-51

E. Initial Evaluation

- (1) Do the Autothrottle CURRENT STATUS BITE Procedure. This is the task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If related maintenance messages show in CURRENT STATUS, then refer to the table at the end of the Autothrottle BITE Procedure, 22-31 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem.
 - (b) If no related maintenance messages show in CURRENT STATUS, then one of these conditions occurred:
 - 1) There was an intermittent fault.
 - 2) The Autothrottle Disengage Wiring Circuitry can have a fault. Do a check of the Disconnect Circuit.

F. Fault Isolation Procedure

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- (1) Do this check of the 28 VDC power to the FCC-A:

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- (a) Open and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

- (b) Do the Autothrottle CURRENT STATUS BITE Procedure. This is the task: Autothrottle BITE Procedure, 22-31 TASK 801.
- 1) If no maintenance messages show in CURRENT STATUS, then one of these conditions occurred:
- a) There was an intermittent 28 VDC power fault.
- b) There was an intermittent autothrottle disengage circuit fault.
- (2) Do this wiring check of the Autothrottle Disengage Circuit:
- (a) Remove the FCC-A, M1875 at the E1-1 Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (b) Remove the MCP, M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
- (c) Disconnect both Throttle Lever 1 and 2 Autothrottle Disengage Switch connectors D8313P (D8315P) at the Control Stand.
- (d) Examine the Autothrottle Disengage Circuit as follows (WDM 22-31-51):

THROTTLE LEVER 1

A/T DISENG

SW, S113

FCC-A, M1875

D8313P

D10135A

pin 5 pin J12

D8313P

D10135B

pin 6 pin F7

pin 7 GD800-DC

THROTTLE LEVER 2

A/T DISENG

SW, S114

FCC-A, M1875

D8315P

D10135B

pin 6 pin F7

pin 7 GD803-DC

A/T DISENG

SW, S114

A/T DISENG

SW, S113

D8315P

D8313P

pin 6 pin 6

pin 8 pin 8

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A/T DISENG SW, S114 D8315P pin 5	DFCS MODE CONTROL PANEL, M198 D301 pin 8

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connectors D8313P (D8315P) to D8313J (D8315J).
 - c) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - d) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 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-connect the connectors D8313P (D8315P) to D8313J (D8315J).
 - b) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - c) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (3) Do checks of the TO/GA Switches. These are the tasks:
 - Autothrottle TO/GA Switch Operation Problem - Fault Isolation, 22-32 TASK 804
 - Autothrottle Manual Disengage Problem - Fault Isolation, 22-32 TASK 805
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do these checks of the ASM:
 - (a) Do the Servo Motor Test only. This is the task: Autothrottle System - System Test, AMM TASK 22-31-00-710-802.
 - 1) If the results are not satisfactory, then do these steps:
 - a) Record all faults/maintenance messages shown on the CDU.
 - b) Refer to the tables at the end of the Autothrottle BITE Procedure, 22-31 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem, until the Autothrottle Servo Motor Test passes.
 - 2) If the results are satisfactory, then continue.
- (5) Do this check of the Autothrottle ARM MCP Switch:
 - (a) Do the Disengage/Warnings test only. This is the task: Autothrottle System - System Test, AMM TASK 22-31-00-710-802.
 - 1) If the results are not satisfactory, then replace the MCP, M198. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If the results are satisfactory, then continue.

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- (6) Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do the Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the BITE Test is satisfactory, then you corrected the problem.
 - (b) If the BITE Test is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

807. FMA Status Change Problem - Fault Isolation

A. Description

- (1) The Autothrottle Modes are shown on the primary Electronic Flight Instrument System (EFIS) DU on the P1 and P3 Main Instrument Panels.
- (2) During normal operation, all changes in Autothrottle Mode are shown on the Flight Mode Annunciator (FMA) DUs.
- (3) This task is for these Observed Faults:
 - (a) Autothrottle Status does not show on the FMA.
 - (b) Autothrottle Status Mode does not change automatically.

B. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If maintenance messages show in CURRENT STATUS, then refer to the table at the end of the Autothrottle BITE Procedure, 22-31 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem.
 - (b) If maintenance messages do show in CURRENT STATUS, then continue. One of these conditions occurred:
 - 1) There was an intermittent fault.
 - 2) The CDS can have a fault.
 - (c) To find the fault in the CDS, do the Fault Isolation Procedure below:

C. Fault Isolation Procedure

- (1) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) If CDS maintenance messages show, then refer to the table at the end of the CDS BITE Procedure, 31-62 TASK 801 to find the applicable FIM Tasks to troubleshoot the problem.

———— **END OF TASK** ————

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808. Thrust Lever Movement Problem - Fault Isolation

A. Description

- (1) The Autothrottle moves Throttle Levers to control the speed of the airplane or the Engine N1.
- (2) If the Throttle Levers do not move smoothly, or if they continuously move Forward and Aft around a point, the operation is not correct.
- (3) This task is for these Observed Faults:
 - (a) Autothrottle over-controls with A/T Mode engaged.
 - (b) Throttle Lever Problem

B. Possible Causes

- (1) Autothrottle Brake Assembly
- (2) ASM 1 (2), M1836 (M1837)

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- (3) FCC-A, M1875

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- (4) FMC, M1175
- (5) ENG-1 (2) TLA Resolver, M1819
- (6) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

- (1) WDM 22-31-11
- (2) WDM 22-31-41
- (3) WDM 73-24-11
- (4) WDM 73-24-21
- (5) SSM 22-31-11
- (6) SSM 22-31-31
- (7) SSM 22-31-41

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E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801. Look for A/T, ASM and EEC related maintenance messages.

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- (a) If one of these maintenance messages shows in CURRENT STATUS, then go to the indicated FIM Task to troubleshoot the problem:
 - 1) Go to Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation, 22-31 TASK 830 for this maintenance message:
 - 22-31543 A/T ENG 28 VDC
 - 2) Go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 for these maintenance messages:
 - 22-31590 A/T-01 BUS FAIL
 - 22-31682 THROTTLE MOVEMENT
 - 3) Go to Electronic Engine Control Failure - Fault Isolation, 22-31 TASK 806 for these EEC related maintenance messages:
 - 22-31410 EEC DATA INV
 - 22-31411 EEC DATA INV
 - 22-31511 NO EEC DATA
 - 22-31512 NO EEC DATA
 - 4) ASM Related Maintenance Messages: Refer to the table at the end of the A/T BITE Task to find the applicable FIM Tasks for the messages that show.

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- (b) If the problem continues, then do the Fault Isolation Procedure below.
- (c) If you do not find A/T, ASM or EEC maintenance messages, then one of these conditions occurred:
 - There was an intermittent fault.
 - The Autothrottle Brake Assembly can have a fault.
 - The TLA Resolver can have a fault.
 - 1) To find the fault in the Autothrottle Brake Assembly or TLA Resolver, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this BITE Test of the Autothrottle Brake Assembly as follows:
 - (a) Make sure that the A/T BITE TEST Index shows on the CDU.
 - (b) If you are not at the A/T BITE TEST Index, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to A/T.
NOTE: The two Autothrottle Warning Lights come ON during the BITE.
 - 5) Make sure that the A/T BITE TEST Index shows on the CDU.

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- (c) Push the LSK adjacent to INTERACTIVE.
- (d) Push the LSK adjacent to THROTTLE TESTS.



CAUTION

MAKE SURE THAT ENGINE START LEVERS ARE IN THE CUTOFF POSITION. IF THE ENGINE START LEVERS ARE NOT IN THE CUTOFF POSITION, THE ENGINE START SEQUENCE CAN OCCUR. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Do the instructions on the CDU.
- (f) Push the LSK adjacent to CONTINUE.
- (g) Push the LSK adjacent to TORQUE TEST.
- (h) Do the instructions on the CDU.
- (i) Push the LSK adjacent to CONTINUE.

NOTE: This will start the Interactive TORQUE TEST, which is a test for smooth movement of the Thrust Levers.

- 1) Make sure that the Torque values does not exceed 11 in-oz while the Thrust Levers are moving.
- 2) Make sure that the Torque values does not exceed 17 in-oz while motors are driving the Thrust Levers against the aft stop.
- 3) Make sure that the Torque values on the CDU is within approximately ± 1.5 in-oz of stable values during these phases of the test:
 - a) Start of the test, no Thrust Levers movement.
 - b) Thrust Levers moving toward forward stop.
 - c) Thrust Levers moving toward aft stop.

NOTE: 1) It is important that the Thrust Levers reach steady state torques and stay within ± 1.5 in-oz of stable Torque values at each phase, this is testing for smooth lever movement free of restrictions.

2) When the Thrust Levers get to their limits of travel the torque may increase by approximately 3.0 to 6.0 in-oz.

3) The CDU has a 2 second screen update rate, the torque shown may not be consistent with a stable value during phase changes due to this delay.

4) It is not expected that Throttle-1 and Throttle-2 torque reading to be the same value.

- d) If the Torque values for the Thrust Levers are not satisfactory, then replace the Autothrottle Brake Assembly. These are the steps:
 - Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
 - Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801
- <1> Do the interactive TORQUE TEST for the Thrust Lever again.
 - <a> If the Torque values for the Thrust Levers are satisfactory, then you corrected the fault. Do these steps to complete the task:
 - I. Push the LSK adjacent to INDEX.
 - II. Push the LSK adjacent to INDEX again.
 - III. Do the instructions on the CDU.

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IV. Push the LSK adjacent to CONTINUE.

V. Push the LSK adjacent to INDEX.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

e) If the Torque values for the Thrust Levers are satisfactory, then continue.

(2) Do this check of the TLA Resolvers. This is the task: Engine 1 and Engine 2 Thrust Lever Angle Resolver Alignment Test, AMM TASK 73-21-00-700-807-F00.

(a) If the values for the Thrust Levers are not satisfactory, then do these steps:

1) Adjust the TLA Resolvers. This is the task: Thrust Lever Angle Resolver Adjustment, AMM TASK 76-11-05-820-801-F00.

2) Do the check of the TLA Resolvers again.

3) If the values are satisfactory, then you corrected the fault. Do these steps to complete the task:

a) Push the LSK adjacent to INDEX.

b) Push the LSK adjacent to INDEX again.

c) Push the LSK adjacent to INDEX again.

d) Push the LSK adjacent to INDEX again.

NOTE: Make sure that the CDU shows the MAINT BITE INDEX.

(b) If the values for the TLA Resolvers are satisfactory, then the fault was intermittent.

———— **END OF TASK** ————

809. MCP A/T Mode Selector Switch Problem - Fault Isolation

A. Description

(1) The Autothrottle N1 or SPEED mode is set manually from the Digital Flight Control System Mode Control Panel (DFCS MCP).

(a) The engines stay at the correct N1 or Speed Limit for the Flight Mode that the flight crew selects.

(2) This task is for this Observed Fault:

(a) Autothrottle Mode does not change when Mode Switch is pushed.

B. Possible Causes

(1) N1 or SPEED Mode Selector Pushbutton on the MCP, M198

(2) FCC-A (B), M1875 (M1876)

(3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)
D	2	C01045	AFCS SYS A FCC DC
D	3	C01048	AFCS SYS A ENGAGE INTLK
D	5	C01044	AFCS MCP DC 1

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00374	AFCS SYS B WARN LIGHT (BAT)
B	3	C01046	AFCS SYS B FCC DC
B	4	C00716	AFCS SYS B ENGAGE INTLK
C	3	C01047	AFCS MCP DC 2

D. Related Data

- (1) WDM 22-11-51
- (2) WDM 22-31-11
- (3) WDM 22-31-41
- (4) SSM 22-11-51
- (5) SSM 22-31-11
- (6) SSM 22-31-21
- (7) SSM 22-31-31
- (8) SSM 22-31-41

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801. Look for A/T, ASM and EEC related maintenance messages.

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- (a) If one of these maintenance messages shows in CURRENT STATUS, then go to the indicated FIM Task to troubleshoot the problem:
 - 1) Go to Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation, 22-31 TASK 830 for this maintenance message:
 - 22-31543 A/T ENG 28 VDC
 - 2) Go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 for these maintenance messages:
 - 22-31590 A/T-01 BUS FAIL
 - 22-31682 THROTTLE MOVEMENT
 - 3) Go to Mode Control Panel Failure - Fault Isolation, 22-31 TASK 804 for these MCP related maintenance messages:
 - 22-31610 MCP-3 DATA INV
 - 22-31611 NO MCP-3 DATA
 - 4) FCC Related Maintenance Messages: Go to Digital Flight Control System (DFCS) BITE Procedure, 22-11 TASK 801

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- (b) If the problem continues, then do the Fault Isolation Procedure below.

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- (c) If you do not find A/T, FCC or MCP maintenance messages, then one of these conditions occurred:
- There was an intermittent fault.
 - The N1 or SPEED Mode Selector Pushbutton can have a fault.
- 1) To find the fault in the N1 or SPEED Mode Selector Push-button, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

- (1) Do this check of the N1 or SPEED Mode Selector Push-button:
- (a) Make sure that DFCS BITE TEST MAIN MENU shows on the CDU.
 - (b) If you are not at the DFCS BITE TEST MAIN MENU Page, then do these steps:
 - 1) Push the INIT REF function key on the CDU.
 - 2) If the POS INIT Display shows, then push the LSK adjacent to the INDEX prompt.
NOTE: This makes the INIT/REF INDEX Display to show.
 - 3) Push the LSK adjacent to MAINT.
 - 4) Push the LSK adjacent to DFCS.
 - 5) When the DFCS Self-test is complete, make sure that the DFCS BITE TEST MAIN MENU shows on the CDU.
 - (c) Push the LSK adjacent to EXTENDED MAINTENANCE.
 - (d) Push the LSK adjacent to BITE LIBRARY TEST.
 - (e) Push the LSK adjacent to CHANNEL A AND B.
 - (f) Push the LSK adjacent to RUN SELECT LIBRARY TESTS.
 - (g) Push and release the NEXT PAGE key on the CDU until 50 MCP PUSHBTN shows on the CDU.
 - (h) Push the LSK adjacent to 50 MCP PUSHBTN.
 - (i) Push the LSK adjacent to EXECUTE.
 - (j) Do the instructions on the CDU.
 - (k) If the check of the N1 or SPEED Mode Selector is not satisfactory, then do these steps:
 - 1) Replace the DFCS Mode Control Panel. These are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - 2) Do the check of the N1 or SPEED Mode Selector again.
 - 3) If the N1 or SPEED Mode Selector is satisfactory, then you corrected the problem. Do this step to complete the task:
 - a) Get out of DFCS BITE (22-11 TASK 801).
 - (l) If the check of the N1 or SPEED Mode Selector is satisfactory, then there was an intermittent fault.

———— **END OF TASK** ————

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810. Autothrottle ARM Problem - Fault Isolation

A. Description

(1) This task is for these Observed Faults:

- (a) The Autothrottle does not arm.
- (b) ARM does not show on the FMA.
- (c) The ARM Light on the MCP does not come ON.

NOTE: The ARM Light on the MCP operates differently on the Honeywell and Rockwell Collins MCPs.

- The ARM Light on the Honeywell MCP is not as bright as the Rockwell Collins MCP in Daylight/Sunlight conditions.
- The ARM on the Honeywell MCP does not come ON when the Master Test and Dimming Switch is set to the TEST position.

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(2) This task is for these maintenance messages:

- (a) 22-31541 A/T ENGAGE HOLD ON
 - 1) The FCC-A detects a Discrete Wraparound failure for the A/T Engage Hold ON or a Software requested Disengage did not occur during the BITE.
 - 2) Associated Interface Pins: (J1A-J12) - Output

SIA ALL

B. Possible Causes

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(1) FCC-A (B), M1875 (M1876)

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- (2) Autothrottle Engage Solenoid Switch on the Digital Flight Control System Mode Control Panel (DFCS MCP), M198
- (3) Throttle Lever 1 (2) Autothrottle Disengage Switch, S113 (S114)
- (4) FMCS Dip Switch, M1990
- (5) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

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D. Related Data

- (1) WDM 22-31-51
- (2) SSM 22-31-51

E. Initial Evaluation

- (1) Cycle power to the A/T computer and the FCC:
Open and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C01045	AFCS SYS A FCC DC
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

- (a) Set the A/T switch on the MCP to the ARM position
 - 1) If the ARM light comes on, then there was an intermittent fault.
 - 2) If the ARM light does not come on, then continue.
- (2) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801. Look for A/T, ASM and EEC related maintenance messages.

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- (a) If one of these maintenance messages shows in CURRENT STATUS, then go to the indicated FIM Task to troubleshoot the problem:
 - 1) Go to Autothrottle 28VDC output to MCP A/T ARM Switch Problem - Fault Isolation, 22-31 TASK 830 for this maintenance message:
 - 22-31543 A/T ENG 28 VDC
 - 2) Go to Autothrottle Internal Problems - Fault Isolation, 22-31 TASK 802 for these maintenance messages:
 - 22-31590 A/T-01 BUS FAIL
 - 22-31682 THROTTLE MOVEMENT
 - 3) Go to Mode Control Panel Failure - Fault Isolation, 22-31 TASK 804 for these MCP related maintenance messages:
 - 22-31610 MCP-3 DATA INV
 - 22-31611 NO MCP-3 DATA

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- (b) If the problem continues, then do the Fault Isolation Procedure below.
- (c) If you do not find A/T or MCP maintenance messages, then one of these conditions occurred:
 - There was an intermittent fault.
 - The Autothrottle Engage Switches can have a fault.
 - The wiring can have a fault.

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- 1) To find the fault in the N1 or SPEED Mode Selector Push-button, do the Fault Isolation Procedure below:

F. Fault Isolation Procedure

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- (1) Do this check of the wiring to the FCC:
 - (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the MCP, M198. This is the task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Examine the wiring between the MCP and the FCC-A, M1875 as follows (WDM 22-31-51):

MCP	FCC-A
D301	D10135A
pin 13	pin K7
pin 7	pin D11

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
 - (2) Do a check for an open circuit between the FCC-A, M1875 and the MCP as follows (WDM 22-31-51):

FCC-A	MCP
D10135A	D301
pin J12	pin 8

- (a) If you find an open circuit, then do these steps:
 - 1) Remove the Throttle Lever 1 Autothrottle Disengage Switch, S113. This is the task: Autothrottle Disengage Switch Removal, AMM TASK 22-31-51-000-801.
 - 2) Do a check for continuity between pins 1 and 2 on the switch.
 - a) If you do not find continuity, do these steps:
 - <1> Install a new Autothrottle Disengage Switch, S113. This is the task: Autothrottle Disengage Switch Installation, AMM TASK 22-31-51-400-801.
 - <2> Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - <3> Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - <4> Do the Repair Confirmation at the end of this task.

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- b) If you find continuity, do this step and then continue:
 - <1> Re-install the Autothrottle Disengage Switch, S113. This is the task: Autothrottle Disengage Switch Installation, AMM TASK 22-31-51-400-801.
- (3) Do this check of the Throttle Lever 2 Autothrottle Disengage Switch, S114:
 - (a) Remove the Throttle Lever 2 Autothrottle Disengage Switch, S114. This is the task: Autothrottle Disengage Switch Removal, AMM TASK 22-31-51-000-801.
 - (b) Do a check for continuity between pins 1 and 2 on the switch.
 - 1) If you do not find continuity, do these steps:
 - a) Install a new Autothrottle Disengage Switch, S114. This is the task: Autothrottle Disengage Switch Installation, AMM TASK 22-31-51-400-801.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you find continuity, do these steps and then continue:
 - a) Re-install Autothrottle Disengage Switch, S114. This is the task: Autothrottle Disengage Switch Installation, AMM TASK 22-31-51-400-801.
 - b) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - c) Re-install the MCP, M198. This is the task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.

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- (4) Do this check of the wiring to the FMC:
 - (a) Remove the FMC, M1175. This is the task: AMM TASK 34-61-02-000-801.
 - (b) Remove the FMC, M1632. This is the task: AMM TASK 34-61-02-000-801.
 - (c) Make sure that the FMCS Dip Switch, M1990, switch settings match what is shown on WDM 34-61-19.
 - (d) For the FMC, M1175, do a continuity check as follows: (WDM 34-61-19):

FMC	FMCS DIP SWITCH
D2179A	M1990
F14	pin 9

- (e) For the FMC, M1632, do a continuity check as follows: (WDM 34-61-19):

FMC	FMCS DIP SWITCH
D3261B	M1990
F14	pin 9

- (f) If you find a problem with the wiring, then do these steps:

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- 1) Repair the wiring.
- 2) Re-install the FMC, M1175. This is the task: AMM TASK 34-61-02-400-801.
- 3) Re-install the FMC, M1632. This is the task: AMM TASK 34-61-02-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then do these steps and continue:
 - 1) Re-install the FMC, M1175. This is the task: AMM TASK 34-61-02-400-801.
 - 2) Re-install the FMC, M1632. This is the task: AMM TASK 34-61-02-400-801.
- (5) Do the BITE test of the FMC:
 - (a) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801
 - (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that you are in A/T BITE.
- (2) Set the Autothrottle ARM Switch to ARM.
 - (a) If the Autothrottle Arm Switch stays in ARM, then you corrected the problem.
 - (b) If the Autothrottle Arm Switch does not stay in ARM, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

811. A/T Does Not Disengage When Thrust Levers Are Split - Fault Isolation

A. Description

- (1) This task is for these Observed Faults:
 - (a) The Throttle Levers are split; They are OK with Autothrottle disengaged.
 - (b) Autothrottle does not disengage when Throttle Levers are split.
- (2) The Autothrottle automatically disengages if the angle between the Throttle Levers is more than the maximum permitted value.

B. Possible Causes

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- (1) FCC-A, M1875

SIA ALL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

D. Related Data

- (1) WDM 22-31-51
- (2) SSM 22-31-51

E. Initial Evaluation

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- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the maintenance message 22-31525 THROT SPLIT and/or other A/T related message does not show, then there was an intermittent fault.
 - (b) If the maintenance message 22-31525 THROT SPLIT and/or other A/T related message shows, then do the Fault Isolation Procedure below:

SIA ALL

F. Fault Isolation Procedure

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- (1) Replace the FCC-A, M1875. These are the tasks:
 - Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (a) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - 1) If the maintenance message 22-31525 THROT SPLIT and/or other A/T related message does not show, then you corrected the problem.

————— **END OF TASK** —————

814. A/T Disengage Warning - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: SUSPECT LRU(S): FCC-A

NOTE: J1A-XX, J1B-XX and J1C-XX (where XX is a pin number) are the connector and pin numbers on the FCC-A and FCC-B.

For the FCC-A: J1A=D10135A, J1B=D10135B and J1C=D10135C

For the FCC-B: J1A=D10137A, J1B=D10137B and J1C=D10137C

- (a) 22-31539 A/T DISENG WARN CAPT

NOTE: Associated Interface Pins: (J1A-C09,J1BF10) - Output

- 1) FCC-A detects Discrete Wrap Around for A/T Disengage Warning – CAPT.

- (b) 22-31540 A/T DISENG WARN F/O

NOTE: Associated Interface Pins: (J1B-E09,J1BF10) - Output

- 1) FCC-A detects Discrete Wrap Around for A/T Disengage Warning – F/O.

- (c) 22-31742 DISCRETE WRAP FAIL

NOTE: Associated Interface Pins: (J1A-C09,J1B-E09) - Output

- 1) FCC-A detects Discrete Wrap Around fail for A/T Disengage Warning – CAPT and F/O FMA

B. Possible Causes

- (1) A/T P/RST Warning Light
- (2) CAPT (F/O) Autoflight Status Annunciator, N170 (N171)
- (3) FCC-A, M1875
- (4) Wiring
- (5) Digital Flight Data Recorder, M675

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C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

D. Related Data

- (1) WDM 22-14-11
- (2) WDM 22-31-51
- (3) WDM 31-31-15
- (4) SSM 22-31-51

E. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) Make the selection for the A/T TEST.
 - (b) Make the selection for the LRU REPLACEMENT TEST.
 - 1) If no maintenance messages show, then there was an intermittent fault.
 - 2) If maintenance messages show, then do the applicable Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) On the applicable Autoflight Status Annunciator, do this check of the A/T P/RST Warning Light:
 - (a) Push and hold the TEST switch in the position 1.
 - 1) Make sure that the A/T P/RST Warning Light comes ON (Amber steady).
 - (b) Release the TEST switch to the center position.
 - 1) Make sure that the A/T P/RST Warning Light goes OFF.
 - (c) Push and hold the TEST switch in the position 2.
 - 1) Make sure that the A/T P/RST Warning Light comes ON (Red steady).
 - (d) Release the TEST switch to the center position.
 - 1) Make sure that the A/T P/RST Warning Light goes OFF.
 - (e) If the A/T P/RST Warning Light does not operate correctly, then do these steps:
 - 1) Replace the A/T P/RST Warning Light.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If the A/T P/RST Warning Light operates correctly, then continue.
- (2) Replace the applicable CAPT (F/O) Autoflight Status Annunciator, N170 (N171). These are the tasks:
 - Annunciator - Removal, AMM TASK 22-11-32-000-801
 - Annunciator - Installation, AMM TASK 22-11-32-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check for 28V DC at the applicable Autoflight Status Annunciator:

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- (a) Remove the applicable CAPT (F/O) Autoflight Status Annunciator, N170 (N171). This is the task: Annunciator - Removal, AMM TASK 22-11-32-000-801.
- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01049	AFCS SYS A WARN LIGHT (BAT)

- (c) At the P1 Panel, do a check for 28V DC at pin 15 of the applicable CAPT (F/O) Autoflight Status Annunciator connector, D2435 (D2439) (WDM 22-14-11).
 - 1) If you do not find 28V DC, examine the wiring as follows:

CAPT AUTO FLT STATUS ANNUNCIATOR

P18 PNL	N170 (P1 PNL)
D41807P	D2435
pin 3	pin 15

F/O AUTO FLT STATUS ANNUNCIATOR

P18 PNL	N171 (P3 PNL)
D41807P	D2439
pin 3	pin 15

- a) If you find a problem with the wiring, then do these steps:
 - <1> Repair the wiring.
 - <2> Re-install the applicable CAPT (F/O) Autoflight Status Annunciator. This is the task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - <3> Do the Repair Confirmation at the end of this task.
 - 2) If you find 28V DC, then continue.
- (4) Do these Wiring Checks:
 - (a) Remove the FCC-A, M1875 at the E1-1 Shelf. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
 - (b) Remove the Digital Flight Data Acquisition Unit (DFDAU), M675 at the E3-2 Shelf. This is the task: Digital Flight Data Acquisition Unit (DFDAU) Removal, AMM TASK 31-31-22-000-801
 - (c) Remove the applicable CAPT (F/O) Autoflight Status Annunciator. This is the task: Annunciator - Removal, AMM TASK 22-11-32-000-801.
 - (d) Examine the wiring between the applicable CAPT (F/O) Autoflight Status Annunciator and FCC-A, M1875 as follows (WDM 22-31-51):

CAPT AUTO FLT STATUS ANNUNCIATOR

N170 (P1 PNL)	FCC-A
D2435	D10135A
pin 10	pin C9

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F/O AUTO FLT STATUS ANNUNCIATOR

N171 (P3 PNL)

FCC-A

D2439

D10135B

pin 10 pin E9

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the applicable CAPT (F/O) Autoflight Status Annunciator. This is the task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 3) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 4) Re-install the DFDAU, M675. This is the task: Digital Flight Data Acquisition Unit (DFDAU) Installation, AMM TASK 31-31-22-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, do these steps and then continue.
 - 1) Re-install the applicable CAPT (F/O) Autoflight Status Annunciator. This is the task: Annunciator - Installation, AMM TASK 22-11-32-400-801.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
- (5) Install a new DFDAU, M675. This is the task: Digital Flight Data Acquisition Unit (DFDAU) Installation, AMM TASK 31-31-22-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If RERUN still shows on the CDU Display, then push the LSK adjacent to RERUN.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.
- (2) If RERUN does not show on the CDU Display, then do this task: LRU Replacement Test, 22-11 TASK 802.
 - (a) Make the selection for the Channels A and B.
 - (b) Make the selection for the FCC TEST.
 - (c) If the maintenance message does not show, then you corrected the problem.
 - (d) If the maintenance message still shows, then continue the Fault Isolation Procedure at the subsequent step.

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———— **END OF TASK** ————

815. A/T LIMIT Problem - Fault Isolation

A. Description

- (1) The Engine Display shows the A/T LIMIT message.

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B. Possible Causes

- (1) Total Air Temperature Probe, M171
- (2) Ps3 Line or Environmental Control System (ECS) Bleed Discrete is missing
- (3) FMC Failure
- (4) Air Data Inertial Reference System (ADIRS) Problem

C. Related Data

- (1) WDM 21-51-11
- (2) WDM 21-51-21
- (3) WDM 73-21-31
- (4) WDM 73-23-11

D. Initial Evaluation

- (1) Do this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If the CDU does not show this Flight Deck Effect (FDE) on the INFLIGHT FAULT pages, then you have an intermittent fault.
 - 1) Use your judgement, Airline policy, the history of the aircraft's Autothrottle System, and reports of user system malfunctions.
 - 2) Monitor the airplane on the subsequent flights.
 - (b) If the CDU shows this FDE on the INFLIGHT FAULT pages, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do these tasks and look for Total Air Temperature (TAT) Probe faults.
- (2) For the Left and Right Air Data Inertial Reference Unit (ADIRU)s, do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) Look for maintenance message "34-21022 TAT PROBE SIGNAL FAIL".
 - 1) If you find maintenance message 34-21022, then do the TAT Probe Signal Fail - Fault Isolation, 34-21 TASK 813 to correct the fault.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find maintenance message 34-21022, then continue.
- (3) For the Engine-1 and Engine-2, do this task: EEC BITE Procedure, 73-00 TASK 801.
 - (a) Look for these maintenance messages:
 - Engine-1: 73-11691, 73-11701, 73-11711, 73-21691, 73-21701, 73-21711, 73-31691, 73-31701, 73-31711
 - Engine-2: 73-11692, 73-11702, 73-11712, 73-21692, 73-21702, 73-21712, 73-31692, 73-31702, 73-31712
 - 1) If you find one or more of the above maintenance message(s), then refer to the table at the end of the EEC BITE Task to find the applicable Fault Isolation Procedures for the messages that show.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find the maintenance messages, then continue.
- (4) Access the CDS DEU BITE Display.
 - (a) Push INIT REF function key.

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- 1) If the POS INIT shows, then push the LSK next to the INDEX prompt.
- (b) Push the LSK next to the MAINT prompt.
- (c) Push the LSK next to the CDS prompt.
- (d) Push the LSK next to the DEU 2 prompt.
- (e) Push the LSK next to the INPUT MONITORING DISCRETE STATUS prompt.
- (f) Push the LSK next to the INSERT B prompt.
- (g) Make sure that the DISCRETE STATUS agrees with the SWITCH POSITION shown on Table 1.

Table 1

FLIGHT COMPARTMENT SWITCH	SWITCH POSITION	INSERT	PIN	DISCRETE STATUS
ENG 1 BLEED SWITCH	OFF	B	E7	G
ENG 1 BLEED SWITCH	ON	B	E7	0
ISOLATION VALVE	OPEN	B	J8	0
ISOLATION VALVE	CLOSED	B	J8	G
LEFT PACK	OFF	B	C6	G ^{*[1]}
LEFT PACK	AUTO/HIGH	B	C6	0 ^{*[1]}
LEFT PACK	AUTO	B	A2	G ^{*[1]}
LEFT PACK	HIGH/OFF	B	A2	0 ^{*[1]}
ENG 1 CTAI	OFF	B	A11	G
ENG 1 CTAI	ON	B	A11	0
WTAI	OFF	B	B8	G
WTAI	ON	B	B8	0

^{*[1]} Supply bleed air from the APU or from a ground cart.

NOTE: The CDU screen updates once per second. The status of the discrete can take up to 2 seconds to be updated.

- (h) Push the LSK next to INDEX prompt to go back to INPUT MONITORING DISCRETE STATUS.
- (i) Push the LSK next to INSERT E prompt.
- (j) Make sure that the DISCRETE STATUS agrees with the SWITCH POSITION shown on Table 2.

Table 2

FLIGHT COMPARTMENT SWITCH	SWITCH POSITION	INSERT	PIN	DISCRETE STATUS
ENG 2 BLEED SWITCH	OFF	E	E7	G

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Table 2 (Continued)

FLIGHT COMPARTMENT SWITCH	SWITCH POSITION	INSERT	PIN	DISCRETE STATUS
ENG 2 BLEED SWITCH	ON	E	E7	0
RIGHT PACK	OFF	E	C6	G ^{*[1]}
RIGHT PACK	AUTO/HIGH	E	C6	0 ^{*[1]}
RIGHT PACK	AUTO	E	A2	G ^{*[1]}
RIGHT PACK	HIGH/OFF	E	A2	0 ^{*[1]}
ENG 2 CTAI	OFF	E	A11	G
ENG 2 CTAI	ON	E	A11	0

^{*[1]} Supply bleed air from the APU or from a ground cart.

NOTE: The CDU Screen updates once per second. The status of the discrete can take up to 2 seconds to be updated.

- (k) Do the Repair Confirmation at the end of this task.
- (5) Do this task: PS3 Signal is out of Range - Fault Isolation, 73-26 TASK 803 and repair all Ground Faults.
 - (a) Do the Repair Confirmation at the end of this task.
- (6) If the A/T LIMIT message shows when the FMC has failed, do these tasks:
 - Flight Management Computer System BITE Procedure, 34-61 TASK 801
 - FMC Hardware/Software Faults - Fault Isolation, 34-61 TASK 807
 - (a) Do the Repair Confirmation at the end of this task.
- (7) If the A/T LIMIT message shows on the Ground, do these steps:
 - (a) Do the ADIRS BITE Procedure, 34-21 TASK 801 on the Left and Right ADIRU.
 - (b) Review the CURRENT FAULTS.
 - 1) If you find maintenance messages, then refer to the table at the end of the ADIRS BITE Task to find the applicable FIM Tasks for the maintenance messages that show.
 - (c) Do the Repair Confirmation at the end of this task.
- (8) If the A/T LIMIT message showed during flight, then do these steps:
 - (a) Do the ADIRS BITE Procedure, 34-21 TASK 801 on the Left and Right ADIRU.
 - (b) Review the INFLIGHT FAULTS.
 - 1) If you find maintenance messages, then refer to the table at the end of the ADIRS BITE Task to find the applicable FIM Tasks for the maintenance messages that show.
 - (c) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Monitor the airplane on subsequent flights for the A/T LIMIT message.
 - (a) If the message does not show, then you corrected the problem.

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- (b) If the message still shows, then continue the Fault Isolation Procedure.

———— **END OF TASK** ————

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817. CDS/DEU Interface Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

NOTE: Associated Interface Pins: (J1B-F09,F08) - Output

- (a) 22-31729 FCC A/T-01 BUS TO DEU

NOTE: SUSPECT LRU(S): CDS/DEU-1

- 1) Operator indicates no Display System response to data from FCC A/T-01 Output Bus to CDS/DEU-1.

- (b) 22-31745 CDS/DEU-2

NOTE: SUSPECT LRU(S): CDS/DEU-2

- 1) Operator indicates no Display System response to data from FCC A/T-01 Output Bus to CDS/DEU-2.

B. Possible Causes

- (1) DEU-1 (2), M1808 (M1809)
(2) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01041	AFCS SYS A SNSR EXC AC
D	2	C01045	AFCS SYS A FCC DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC
C	2	C01042	AFCS SYS B SNSR EXC AC

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D. Related Data

- (1) WDM 22-31-52
- (2) SSM 22-31-52

E. Initial Evaluation

- (1) Do the Mode Annunciation Section of this task: Autothrottle System - System Test, AMM TASK 22-31-00-710-802
 - (a) If this maintenance message does not show in CURRENT STATUS, then there was an intermittent fault.
 - (b) If this maintenance message shows in CURRENT STATUS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - (a) If the CDU shows an A/T failure, then do this task: DEU-1 No Input from LRU on 429 BUS - Fault Isolation, 31-63 TASK 817 or DEU-2 No Input from LRU on 429 BUS - Fault Isolation, 31-63 TASK 818:
 - (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Mode Annunciation Section of this task: Autothrottle BITE Procedure, 22-31 TASK 801.
 - (a) If this maintenance message does not show, you corrected the problem.

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———— **END OF TASK** ————

819. Thrust Lever Does Not Move During Autothrottle Operation - Fault Isolation

A. Description

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- (1) This task is for these maintenance messages:

NOTE: Applicable to airplanes with Collins Autothrottle (FCC-A) installed.

- (a) 22-31687 RATE MONITOR
 - 1) FCC-A detects that ASM 1 does not respond correctly to the Rate Command.
- (b) 22-31688 RATE MONITOR
 - 1) FCC-A detects that ASM 2 does not respond correctly to the Rate Command.

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B. Possible Causes

- (1) ASM 1 (2), M1836 (M1837)
- (2) Mechanical Friction
- (3) Wiring

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C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

SIA ALL

D. Related Data

- (1) SSM 22-31-31
- (2) SSM 22-31-11
- (3) SSM 22-31-41
- (4) WDM 22-31-11
- (5) WDM 22-31-31
- (6) WDM 22-31-41

E. Initial Evaluation

- (1) If there is an Autothrottle Disconnect or failure to engage, then do these steps:
- (a) Open and close this circuit breaker:

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

SIA ALL

- (b) On the CDU, do the INTERACTIVE/THROTTLE TESTS/SERVO MOTOR TEST.
 - 1) If the maintenance message does not show, then this was a Nuisance Fault and you can ignore it.
 - 2) If the maintenance message shows again, then do the Fault Isolation Procedure below.
- (2) If the Thrust Lever does not move, then do this task: Forward Thrust Lever (Difficult To Move In Forward Thrust) - Fault Isolation, 76-05 TASK 802.

F. Fault Isolation Procedure

- (1) Open and close this circuit breaker:

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CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

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- (a) Do the Repair Confirmation at the end of this task.

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- (2) Do this check of the wiring (WDM 22-31-31, WDM 22-31-41):

NOTE: If you use a Megohmmeter to do a wiring check on an ARINC 429 Bus (or if you need the exact Resistance of the Bus Wiring), first remove all the LRUs that are connected to the bus (use the Wiring Diagram Manual (WDM) to tell which LRUs are on the bus). Then re-install the LRUs when you are done.

- (a) Remove the FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.

- (b) Disconnect connector D10025 (D10027) from the ASM 1 (2), M1836 (M1837).

NOTE: The ASMs are under the Control Stand in the area forward of the Nose Landing Gear (NLG) Wheel Well.

- (c) Examine the wiring between the FCC-A, M1875 and the ASM 1 (2), M1836 (M1837) as follows:

FCC-A	ASM 1
D10135A	D10025
pin A9	pin 9
pin B9	pin 3
pin C6	pin 12
pin D5	pin 13

FCC-A	ASM 1
D10135B	D10025
pin H3	pin 7
pin J2	pin 8

FCC-A	ASM 2
D10135B	D10027
pin A9	pin 9
pin B9	pin 3
pin H3	pin 7
pin J2	pin 8
pin C6	pin 12
pin D5	pin 13

- 1) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - Re-connect connector D10025 (D10027) to the ASM 1 (2), M1836 (M1837).
 - Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue:
- Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

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- (3) Replace the applicable ASM 1 (2), M1836 (M1837). These are the tasks:

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- Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
- Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the applicable Gearbox. These are the tasks:
 - Autothrottle Servo Motor and Gearbox Removal, AMM TASK 22-31-91-020-801
 - Autothrottle Servo Motor and Gearbox Installation, AMM TASK 22-31-91-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the applicable Autothrottle Brake Assembly. These are the tasks:
 - Autothrottle Brake Assembly - Removal, AMM TASK 22-31-81-000-801
 - Autothrottle Brake Assembly - Installation, AMM TASK 22-31-81-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) On the CDU, do the INTERACTIVE/THROTTLE TESTS/SERVO MOTOR TEST.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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