

CHAPTER

30

**ICE AND RAIN
PROTECTION**



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

**CHAPTER 30
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208	Oct 15/2021		219	Oct 15/2021		222	Oct 15/2021	
209	Oct 15/2021		220	Oct 15/2021		223	Oct 15/2021	
210	Oct 15/2021		221	Oct 15/2021		224	Oct 15/2021	
211	Oct 15/2021		222	Oct 15/2021		225	Oct 15/2021	
212	Oct 15/2021		223	Oct 15/2021		226	Oct 15/2021	
213	Oct 15/2021		224	Oct 15/2021		227	Feb 15/2022	
214	Oct 15/2021		225	Oct 15/2021		228	Oct 15/2021	
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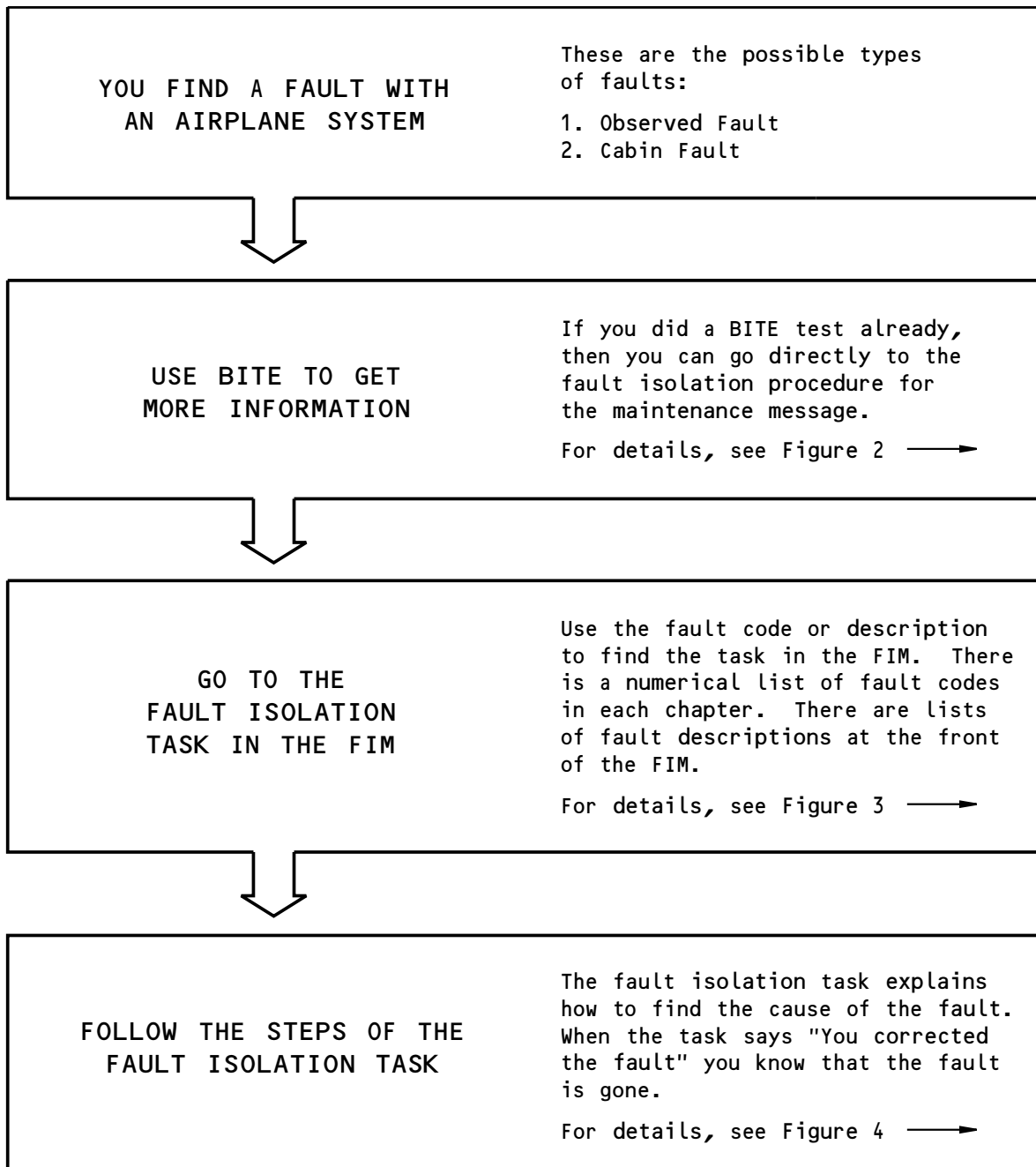
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R 221	Oct 15/2023		30-42 TASKS					
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G04902 S0000148576_V1

**Basic Fault Isolation Process
Figure 1**

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

A maintenance message can be any of these:

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

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

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

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

G04950 S0000148578_V1

**Getting Fault Information from BITE
Figure 2**

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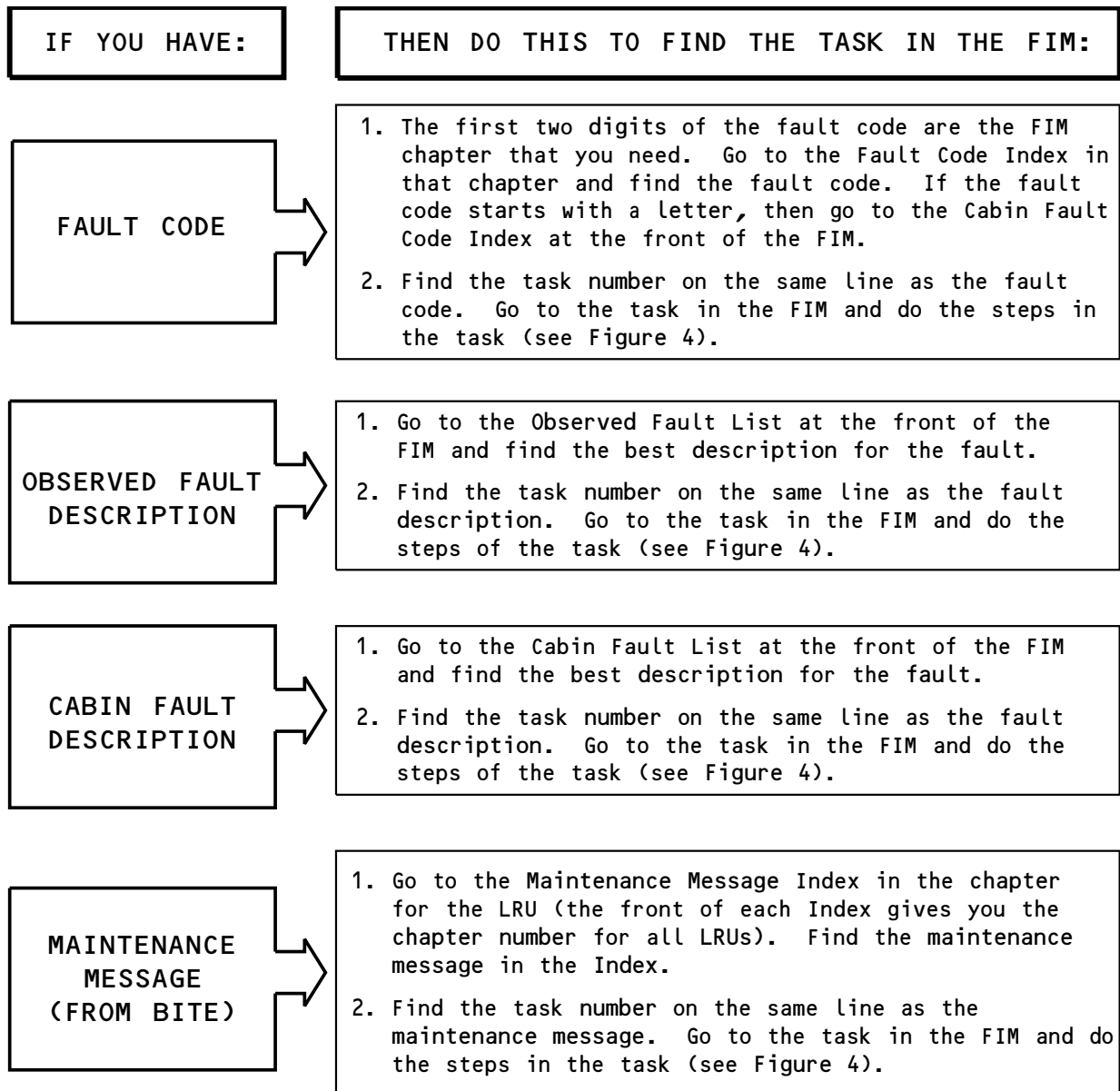
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G04979 S0000148579_V2

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

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ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

INITIAL EVALUATION PARAGRAPH

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

FAULT ISOLATION STEPS

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

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

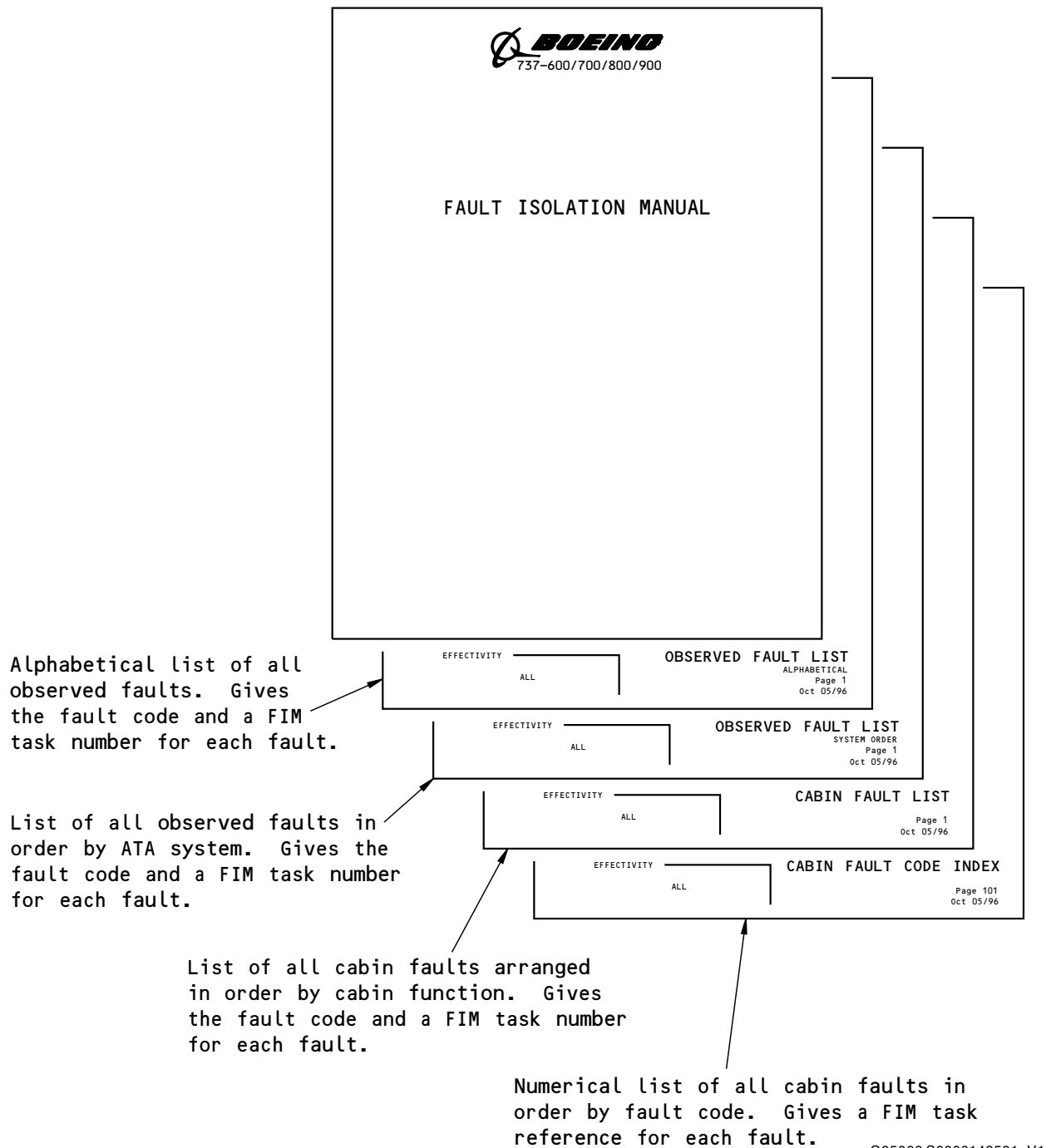
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Subjects at Front of FIM
Figure 5

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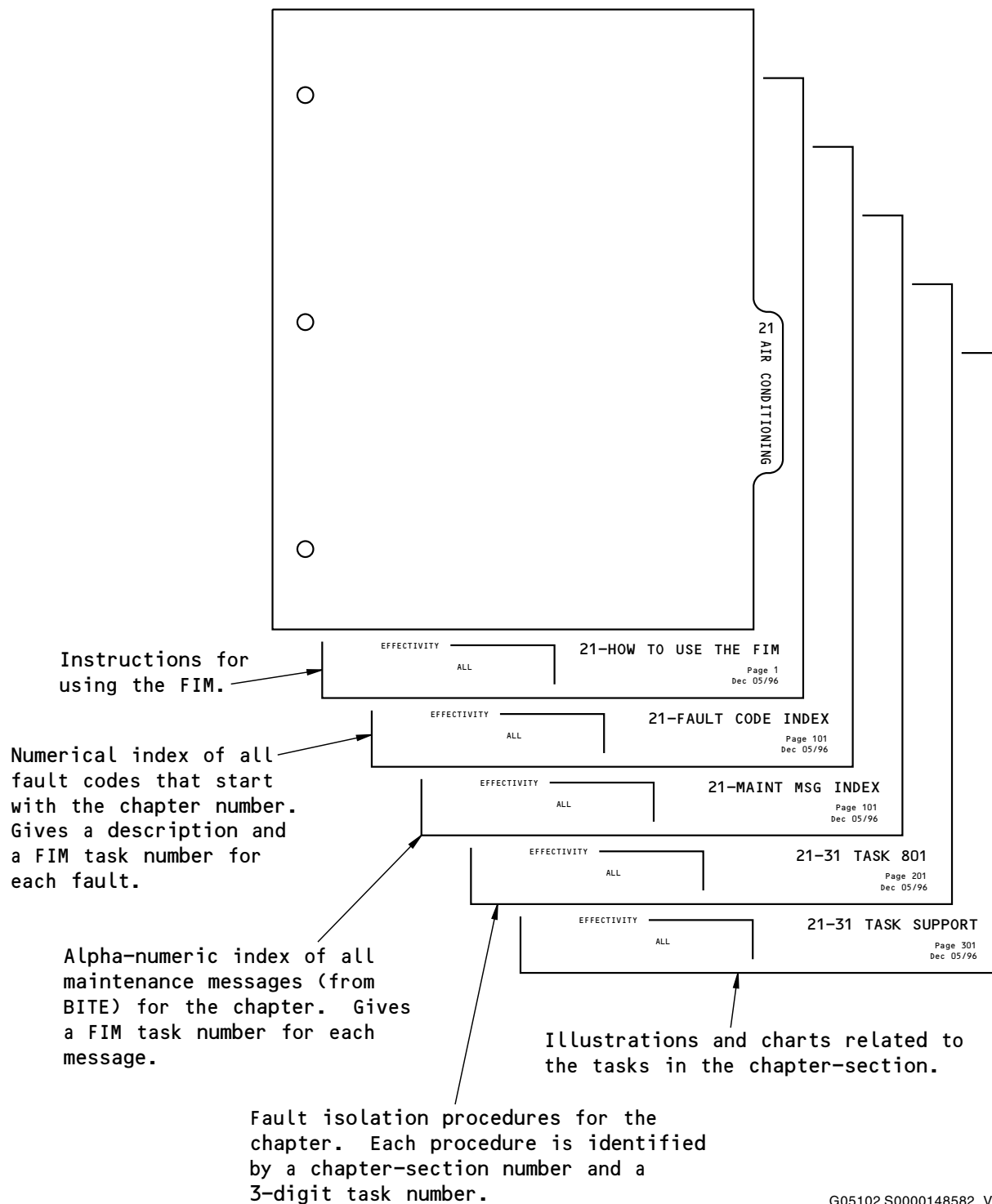
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G05102 S0000148582_V1

Subjects in Each FIM Chapter
Figure 6

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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
301 010 00	WING ANTI-ICE: L VALVE OPEN Light is slow to go from Bright to Dim when the WING ANTI-ICE Switch is moved to ON.	30-11 TASK 801
301 015 41	WING ANTI-ICE: Does not go bright during transition.	30-11 TASK 804
301 015 42	WING ANTI-ICE R VALVE OPEN light: Does not go bright during transition.	30-11 TASK 804
301 020 00	WING ANTI-ICE: L VALVE OPEN Light is slow to go from Bright to OFF when the WING ANTI-ICE Switch is moved to OFF.	30-11 TASK 802
301 030 00	WING ANTI-ICE: Stays ON bright.	30-11 TASK 803
301 050 00	WING ANTI-ICE: R VALVE OPEN Light is slow to go from Bright to Dim when the WING ANTI-ICE Switch is moved to ON.	30-11 TASK 801
301 060 00	WING ANTI-ICE: R VALVE OPEN Light is slow to go from Bright to OFF when the WING ANTI-ICE Switch is moved to OFF.	30-11 TASK 802
301 070 00	WING ANTI-ICE R VALVE OPEN light: Stays ON bright.	30-11 TASK 803
301 080 00	WING ANTI-ICE: does not come on.	30-11 TASK 805
301 090 00	WING ANTI-ICE R VALVE OPEN light: does not come on.	30-11 TASK 805
301 100 00	WING ANTI-ICE Switch: does not latch in the ON position with the engines not operating.	30-11 TASK 806
301 110 00	WING ANTI-ICE Switch: Unlatches when the engines are operating.	30-11 TASK 807
301 121 00	ANTI-ICE & RAIN ENG 1 & WING CONT circuit breaker tripped..	30-11 TASK 810
302 010 51	COWL ANTI-ICE light: light comes on independent of engine thrust setting - ENG ANTI-ICE 1.	30-21 TASK 801
302 010 52	COWL ANTI-ICE light: light comes on independent of engine thrust setting - ENG ANTI-ICE 2.	30-21 TASK 801
302 011 51	COWL ANTI-ICE light: light comes on at high thrust setting (takeoff or climb) and goes off at reduced thrust - ENG ANTI-ICE 1.	30-21 TASK 809
302 011 52	COWL ANTI-ICE light: light comes on at high thrust setting (takeoff or climb) and goes off at reduced thrust - ENG ANTI-ICE 2.	30-21 TASK 809
302 020 51	COWL VALVE OPEN Light: slow to go from Bright to Dim when the ENG ANTI-ICE Switch is moved to ON - ENG ANTI-ICE 1.	30-21 TASK 802
302 020 52	COWL VALVE OPEN Light: slow to go from Bright to Dim when the ENG ANTI-ICE Switch is moved to ON - ENG ANTI-ICE 2.	30-21 TASK 802
302 030 51	COWL VALVE OPEN Light: slow to go from Bright to OFF when the WING ANTI-ICE Switch is moved to OFF - ENG ANTI-ICE 1.	30-21 TASK 803
302 030 52	COWL VALVE OPEN Light: slow to go from Bright to OFF when the WING ANTI-ICE Switch is moved to OFF - ENG ANTI-ICE 2.	30-21 TASK 803
302 040 51	COWL VALVE OPEN Light: Stays ON bright - ENG ANTI-ICE 1.	30-21 TASK 804
302 040 52	COWL VALVE OPEN Light: Stays ON bright - ENG ANTI-ICE 2.	30-21 TASK 804

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302 050 51	COWL VALVE OPEN Light: Stays ON bright when the ENG ANTI-ICE Switch is moved to ON - ENG-1.	30-21 TASK 805
302 050 52	COWL VALVE OPEN Light: Stays ON bright when the ENG ANTI-ICE Switch is moved to ON - ENG-2.	30-21 TASK 805
303 010 00	AUX PITOT light: light on.	30-31 TASK 801
303 020 00	CAPT PITOT light: light on.	30-31 TASK 802
303 030 00	F/O PITOT light: light on.	30-31 TASK 803
303 040 00	L ALPHA VANE light: light on.	30-31 TASK 804
303 050 00	L ELV PITOT light: light on.	30-31 TASK 805
303 060 00	Pitot probe: Does not get hot.	30-31 TASK 806
303 070 00	Probe heater indicator lights: do not come on when PITOT STATIC HEAT switches are OFF.	30-31 TASK 807
303 080 00	R ALPHA VANE light: light on.	30-31 TASK 808
303 090 00	R ELV PITOT light: light on.	30-31 TASK 809
303 100 00	TEMP PROBE light: light on.	30-31 TASK 810
304 010 41	WINDOW HEAT OVERHEAT light: light on - L FWD.	30-41 TASK 801
304 010 42	WINDOW HEAT OVERHEAT light: light on - R FWD.	30-41 TASK 801
304 020 41	WINDOW HEAT OVERHEAT light: light on - L SIDE.	30-41 TASK 801
304 020 42	WINDOW HEAT OVERHEAT light: light on - R SIDE.	30-41 TASK 801
304 030 41	WINDOW HEAT Power ON light: does not come on - L FWD.	30-41 TASK 802
304 030 42	WINDOW HEAT Power ON light: does not come on - R FWD.	30-41 TASK 802
304 031 41	Window Heat Control: No BITE LED Indicators come ON - WHCU 1 (Win 1L / 2R).	30-41 TASK 806
304 031 42	Window Heat Control: No BITE LED Indicators come ON - WHCU 2 (Win 1R / 2L).	30-41 TASK 806
304 040 41	WINDOW HEAT Power ON light: does not come on - L SIDE.	30-41 TASK 809
304 040 42	WINDOW HEAT Power ON light: does not come on - R SIDE.	30-41 TASK 809
304 050 00	Window heat: lights do not operate correctly when the test switch is moved to PWR TEST.	30-41 TASK 801
304 060 00	Window heat: master caution and OVERHEAT lights do not operate correctly when the test switch is moved to OVHT.	30-41 TASK 801
304 080 00	Window heat: Does not heat correctly - windshield.	30-41 TASK 802
304 090 00	Window heat: Does not heat correctly - side window.	30-41 TASK 809
304 200 41	Windshield wiper: does not operate in any switch position - left.	30-42 TASK 801
304 200 42	Windshield wiper: does not operate in any switch position - right.	30-42 TASK 801
304 210 41	Windshield wiper: does not operate in one switch position - left.	30-42 TASK 802
304 210 42	Windshield wiper: does not operate in one switch position - right.	30-42 TASK 802
304 220 41	Windshield wiper: Speed is incorrect - left.	30-42 TASK 804

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304 220 42	Windshield wiper: Speed is incorrect - right.	30-42 TASK 804
304 230 41	Windshield wiper: Sweep is incorrect - left.	30-42 TASK 803
304 230 42	Windshield wiper: Sweep is incorrect - right.	30-42 TASK 803
304 240 41	Windshield wiper: does not park in the correct position - left.	30-42 TASK 805
304 240 42	Windshield wiper: does not park in the correct position - right.	30-42 TASK 805
304 250 41	Windshield wiper: does not stop - left.	30-42 TASK 806
304 250 42	Windshield wiper: does not stop - right.	30-42 TASK 806
304 260 41	Windshield wiper: does not remove water correctly - left.	30-42 TASK 807
304 260 42	Windshield wiper: does not remove water correctly - right.	30-42 TASK 807
307 010 00	Drain mast: Does not heat.	30-71 TASK 801
307 020 00	Drain mast: overheats.	30-71 TASK 802

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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
Electronic Engine Controller - 1	ENGINE - 1	73
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
Engine and Auxiliary Power Unit Fire Detection Control Module	ENG/APU FIRE	26
Enhanced Digital Flight Control Computer-A	EDFCC-A	22
Enhanced Digital Flight Control System	EDFCS	22
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28
Generator Control Unit - 1	GCU - 1	24
Generator Control Unit - 2	GCU - 2	24
Ground Proximity Computer	GROUND PROX	34
High Frequency Transceiver	HF XCVR	23
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
Window Heat Control Unit - Right Side	WHCU - R SIDE	30
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
WHCU - L FWD	BUS POWER	30-41 TASK 806
WHCU - L FWD	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - L FWD	WHCU-LRU	30-41 TASK 807
WHCU - L FWD	WINDOW POWER	30-41 TASK 814
WHCU - L FWD	WINDOW SENSOR	30-41 TASK 812
WHCU - L SIDE	BUS POWER	30-41 TASK 806
WHCU - L SIDE	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - L SIDE	WHCU-LRU	30-41 TASK 807
WHCU - L SIDE	WINDOW POWER	30-41 TASK 814
WHCU - L SIDE	WINDOW SENSOR	30-41 TASK 811
WHCU - R FWD	BUS POWER	30-41 TASK 806
WHCU - R FWD	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - R FWD	WHCU-LRU	30-41 TASK 807
WHCU - R FWD	WINDOW POWER	30-41 TASK 814
WHCU - R FWD	WINDOW SENSOR	30-41 TASK 812
WHCU - R SIDE	BUS POWER	30-41 TASK 806
WHCU - R SIDE	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - R SIDE	WHCU-LRU	30-41 TASK 807
WHCU - R SIDE	WINDOW POWER	30-41 TASK 814
WHCU - R SIDE	WINDOW SENSOR	30-41 TASK 811
WHCU1 - L FWD/R SIDE	P5-9 (Window 1L)	30-41 TASK 813
WHCU1 - L FWD/R SIDE	P5-9 (Window 2R)	30-41 TASK 813
WHCU1 - L FWD/R SIDE	SENSOR #1 (Window 1L)	30-41 TASK 812
WHCU1 - L FWD/R SIDE	SENSOR #1 (Window 2R)	30-41 TASK 811
WHCU1 - L FWD/R SIDE	SENSOR #2 (Window 1L)	30-41 TASK 812
WHCU1 - L FWD/R SIDE	SENSOR #2 (Window 2R)	30-41 TASK 811
WHCU1 - L FWD/R SIDE	WHCU-LRU (Window 1L)	30-41 TASK 807
WHCU1 - L FWD/R SIDE	WHCU-LRU (Window 2R)	30-41 TASK 807
WHCU1 - L FWD/R SIDE	WINDOW POWER (Window 1L)	30-41 TASK 814

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU1 - L FWD/R SIDE	WINDOW POWER (Window 2R)	30-41 TASK 814
WHCU2 - R FWD/L SIDE	P5-9 (Window 1R)	30-41 TASK 813
WHCU2 - R FWD/L SIDE	P5-9 (Window 2L)	30-41 TASK 813
WHCU2 - R FWD/L SIDE	SENSOR #1 (Window 1R)	30-41 TASK 812
WHCU2 - R FWD/L SIDE	SENSOR #1 (Window 2L)	30-41 TASK 811
WHCU2 - R FWD/L SIDE	SENSOR #2 (Window 1R)	30-41 TASK 812
WHCU2 - R FWD/L SIDE	SENSOR #2 (Window 2L)	30-41 TASK 811
WHCU2 - R FWD/L SIDE	WHCU-LRU (Window 1R)	30-41 TASK 807
WHCU2 - R FWD/L SIDE	WHCU-LRU (Window 2L)	30-41 TASK 807
WHCU2 - R FWD/L SIDE	WINDOW POWER (Window 1R)	30-41 TASK 814
WHCU2 - R FWD/L SIDE	WINDOW POWER (Window 2L)	30-41 TASK 814

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801. Wing Anti-Ice Valve is Slow to Open - Fault Isolation

A. Description

- (1) The WING ANTI-ICE L VALVE or WING ANTI-ICE R VALVE light is slow to go from bright to dim when the WING ANTI ICE switch is moved to the ON position.

B. Possible Causes

- (1) Wing anti-ice valve, V29 (left) or V30 (right)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - (a) If a VALVE OPEN light does not go bright for 1 to 6 seconds then go dim, then do the Fault Isolation Procedure.
 - (b) If the VALVE OPEN lights go bright for 1 to 6 seconds then go dim, then there was an intermittent fault. Put the WING ANTI-ICE switch in the OFF position.

F. Fault Isolation Procedure

- (1) Replace the applicable wing thermal anti-icing shutoff valve V29 (left) or V30 (right). These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
- (a) Do these steps to make sure the fault has been corrected:
 - 1) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the ON position.
 - 2) If the VALVE OPEN lights go bright for 1 to 6 seconds then go dim, then you corrected the fault.
- (b) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the OFF position.

———— **END OF TASK** ————

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802. Wing Anti-Ice Valve is Slow to Close - Fault Isolation

A. Description

- (1) The WING ANTI-ICE L VALVE or WING ANTI-ICE R VALVE light is slow to go from bright to dim when the WING ANTI ICE switch is moved to the OFF position.

B. Possible Causes

- (1) Wing anti-ice valve, V29 (left) or V30 (right)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - (a) Wait for the L VALVE OPEN and R VALVE OPEN lights to go dim.
- (2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the OFF position.
 - (a) If a VALVE OPEN light does not go bright for 1 to 6 seconds then go off, then do the Fault Isolation Procedure below.
 - (b) If the VALVE OPEN lights go bright for 1 to 6 seconds then go off, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Replace the applicable wing thermal anti-icing shutoff valve V29 (left) or V30 (right). These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
- (a) Do these steps to make sure the fault has been corrected:
 - 1) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the ON position.
 - 2) Wait for the L VALVE OPEN and R VALVE OPEN lights to go dim.
 - 3) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the OFF position.
 - 4) If the VALVE OPEN lights go bright for 1 to 6 seconds then go off, then you corrected the fault.

————— **END OF TASK** —————

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803. WING ANTI-ICE VALVE OPEN Light Stays On Bright - Fault Isolation

A. Description

- (1) The WING ANTI-ICE L VALVE or WING ANTI-ICE R VALVE light stays bright when the WING ANTI ICE switch is in the ON or OFF position.

B. Possible Causes

- (1) Wing anti-ice valve, V29 (left) or V30 (right)
- (2) Engine and wing anti-ice module, P5-11
- (3) Wiring Problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Make sure the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) is OFF.
 - (a) If either VALVE OPEN light is on bright, then do the Fault Isolation Procedure below.
NOTE: If you had to put the WING ANTI-ICE switch in the OFF position, the light will be bright for 1 to 6 seconds before it goes off.
 - (b) If both VALVE OPEN lights are off, then the system is displayed properly for this switch position.
- (2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - (a) If a VALVE OPEN light goes bright and does not go dim after 6 seconds, then do the Fault Isolation Procedure below.
 - (b) If the VALVE OPEN lights go bright for 1 to 6 seconds then go dim, then there was an intermittent fault. Put the WING ANTI-ICE switch in the OFF position.

F. Fault Isolation Procedure

- (1) Do this check of the wing anti-ice valve:
 - (a) Open the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
 - (b) If the valve is partially open, do these steps:
 - 1) Replace the wing thermal anti-icing shutoff valve. These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801

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- Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
- 2) Do the Repair Confirmation procedure below.
- 3) If the test operates correctly, then you corrected the fault.
- (c) If the valve is fully open, then continue.
- (2) Do these steps to make sure the wing anti-ice valve moves freely.
 - (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Remove the connector, D732 (left) or D734 (right) from the applicable wing anti-ice valve.
- (c) Use the manual valve lever to open and close the valve.
- (d) If the valve does not move freely, then do these steps:
 - 1) Replace the wing thermal anti-icing shutoff valve. These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
 - 2) Re-connect the connector on the wing thermal anti-icing shutoff valve.
 - 3) Do the Repair Confirmation procedure below.
 - 4) If the test operates correctly, then you corrected the fault.
- (e) If the valve moves freely, then continue.
- (3) Do this check for proper operation of the ENGINE AND WING ANTI-ICE module (P5-11):

NOTE: The test indications refer to the valve whose connector is removed. The other VALVE OPEN light should come on bright while the anti-ice valve moves.

- (a) Make sure that this circuit breaker is open and has safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

- (b) Remove the connector D732 (left) or D734 (right) from the applicable wing anti-ice valve.
- (c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (d) Make sure the L VALVE OPEN or R VALVE OPEN light comes on brightly.
- (e) Put the WING ANTI-ICE switch in the ON position.
- (f) Make sure the L VALVE OPEN or R VALVE OPEN light comes on dim.
- (g) Put the WING ANTI-ICE switch in the OFF position.
- (h) Make sure the L VALVE OPEN or R VALVE OPEN light stays off.
- (i) If the light comes on bright in either switch position, do these steps:

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- 1) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
- 2) Re-connect the connector D732 (left) or D734 (right) to the applicable wing anti-ice valve.
- 3) Do the Repair Confirmation procedure below.
- 4) If the test operates correctly, then you corrected the fault.
 - (j) If the light does not come on bright, then continue:
- (4) Replace the wing thermal anti-icing shutoff valve. These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
 - (a) Do the Repair Confirmation procedure below.
 - (b) If the test operates correctly, then you corrected the fault.
 - (c) If the test does not operate correctly, then continue.
- (5) Do this wiring test between the engine and wing anti-ice panel (P5-11) and the anti-ice valve connector, (WDM 30-11-11).
 - (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Do a check of the wiring between pins 1 and 2 of the anti-ice valve connector.
- (c) If there is continuity between the two pins, then do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.

G. Repair Confirmation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (2) Do this test of the wing anti-ice system.
 - (a) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the OFF position.
 - (b) Make sure both VALVE OPEN lights are off.
 - (c) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - (d) Make sure both VALVE OPEN lights go on bright, then go dim.
 - (e) If the test operates correctly, then you corrected the fault.

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- (f) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

- (g) If the test does not operate correctly, then continue the fault isolation.

END OF TASK

804. WING ANTI-ICE VALVE OPEN Light Does Not Go Bright During Valve Transition - Fault Isolation

A. Description

- (1) The WING ANTI-ICE L VALVE or WING ANTI-ICE R VALVE light does not go bright for 1 to 6 seconds when the WING ANTI ICE switch is put in the ON or OFF position. The light comes on dim when the switch is put in the ON position.

B. Possible Causes

- (1) VALVE OPEN lamp, L4 or L6
- (2) Wing thermal anti-icing valve, V29 (left) or V30 (right)
- (3) Engine and wing anti-icing module, P5-11
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Make sure the L VALVE OPEN and R VALVE OPEN lights come on bright when pushed.
 - (a) If a light does not come on bright, do this task: Lighted Pushbutton Switch - Lamp Replacement, AMM TASK 33-18-00-960-803.
- (2) Make sure the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) is OFF.
- (3) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the ON position.
 - (a) If a both the L VALVE OPEN and R VALVE OPEN lights do not go bright for 1 to 6 seconds then do the Fault Isolation Procedure - Both ANTI-ICE VALVE Lights Do Not Go Bright.
 - (b) If only one these lights: L VALVE OPEN or R VALVE OPEN lights goes bright for 1 to 6 seconds then do the Fault Isolation Procedure - Only One ANTI-ICE VALVE Light Goes Bright.

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- (c) If both the L VALVE OPEN and R VALVE OPEN lights come on bright for 1 to 6 seconds then go dim, then there was an intermittent fault. Put the WING ANTI-ICE switch in the OFF position.

F. Fault Isolation Procedure - Both ANTI-ICE VALVE Lights Do Not Go Bright

- (1) Do this check for 115 VAC power to the engine and wing anti-ice module.



THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do these steps to open the P5 overhead panel assembly.
- 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (b) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (c) Remove the connector D462 from the wing and engine anti-ice panel, P5-11:
- (d) Examine the connector and socket for damage and unwanted material.
- (e) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (f) Measure the voltage at pin 11 on the connector D462.
- (g) If there is not 115 VAC at the pin, then do these steps:
- 1) Do a wiring check between the engine, wing anti-ice module and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

- 2) If you find a problem with the wiring, then do these steps:
- a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- b) Repair the wiring.
- c) Re-connect the connector on the engine and wing anti-ice module.
- d) Do the Repair Confirmation procedure below.
- e) If the test operates correctly, then you corrected the fault.
- (h) If there is 115 VAC at the pin, then continue.
- (2) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
- (a) Do the Repair Confirmation procedure below.
- (b) If the test operates correctly, then you corrected the fault.

G. Fault Isolation Procedure - Only One ANTI-ICE VALVE light Goes Bright

- (1) Make sure the electrical connector is securely attached to the wing anti-ice valve.
 - (a) If it is not securely attached, then do these steps.
 - 1) Attach the electrical connector.
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.
 - (b) If it is secure, then continue.
- (2) Do this test of the wing anti-ice valve position indication circuit:
 - (a) Put the WING ANTI-ICE switch in the OFF position.
 - (b) Make sure the wing anti-ice valve indicator points to the closed position.
 - (c) Put the WING ANTI-ICE switch in the ON position.
 - (d) Make sure the wing anti-ice valve indicator points to the open position.
 - (e) If the wing anti-ice valve position matches the WING ANTI-ICE switch position, then do these steps:
 - 1) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.
 - (f) If the wing anti-ice valve position does not match the WING ANTI-ICE switch position, then continue.
- (3) Make sure the wing anti-ice valve moves freely.

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- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Remove the connector, D732 (left) or D734 (right) from the wing anti-ice valve.
- (c) Examine the connector and sockets for damage and unwanted material.
- (d) Use the manual valve lever to open and close the valve.
- (e) If the valve does not move freely, then do these steps:
- 1) Replace the wing thermal anti-icing shutoff valve. These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.
- (f) If the valve moves freely, then continue.
- (4) Do this check to make sure the wing anti-ice valve is properly grounded.
- (a) Measure for continuity between pin 3 on the anti-ice valve connector, D732 (left) or D734 (right) and ground.
- (b) If there is not continuity, then do these steps.
- 1) Repair the wiring.
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.
- (c) If there is continuity, then continue.
- (5) Do this check for 115 VAC power at the wing anti-ice valve connector.
- (a) Put the WING ANTI-ICE switch in the OFF position.
- (b) Make sure there is 115 VAC at pin 2 on wing anti-ice valve connector, D732 (left) or D734 (right).
- (c) Put the WING ANTI-ICE switch in the ON position.
- (d) Make sure there is 115 VAC at pin 1 on wing anti-ice valve connector, D732 (left) or D734 (right).
- (e) If 115 VAC was not found at pin 1 or pin 2, then do these steps:
- 1) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - 2) Do the Repair Confirmation procedure below.
 - 3) If the test operates correctly, then you corrected the fault.
- (f) If the test does not operate correctly, then continue.
- (6) Do this wiring check between the ENGINE AND WING ANTI-ICE module (P5-11) and the wing anti-ice valve connector:

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- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Remove the electrical connector from the anti-ice valve.



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Do these steps to open the P5 overhead panel assembly.

- 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.

- (d) Remove the connector D648 from the wing and engine anti-ice panel, P5-11.

- (e) Examine the connector and socket for damage and unwanted material.

- (f) For the right wing anti-icing valve, do a check of the wiring between these pins:

WING ANTI-ICING

pin 1 pin 6
pin 2 pin 5

ENGINE AND WING

- (g) For the left wing anti-icing valve, do a check of the wiring between these pins:

WING ANTI-ICING

pin 1 pin 4
pin 2 pin 3

ENGINE AND WING

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

- 1) Repair the wiring.
- 2) Re-connect the connector on the engine and wing anti-ice module.
- 3) Do the Repair Confirmation procedure below.
- 4) If the test operates correctly, then you corrected the fault.

H. Repair Confirmation

- (1) Do this test of the wing anti-ice system.

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- (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the OFF position.
- (c) Make sure both VALVE OPEN lights are off.
- (d) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
- (e) Make sure both VALVE OPEN lights go on bright, then go off.
- (f) If the test operates correctly, then you corrected the fault. Do these steps:

- 1) Make sure that these access panels are closed:

<u>Number</u>	<u>Name/Location</u>
521AB	Outboard Leading Edge Blowout Door - Slat Station 20.04
621AB	Outboard Leading Edge Blowout Door - Slat Station 20.04

- 2) If it is necessary, close the P5 panel.

- (g) If the test does not operate correctly, then continue the fault isolation.

END OF TASK

805. WING ANTI-ICE VALVE OPEN Light Does Not Come On - Fault Isolation

A. Description

- (1) The WING ANTI-ICE L VALVE or WING ANTI-ICE R VALVE light does not go on when the WING ANTI ICE switch is put in the ON position.

B. Possible Causes

- (1) Engine and wing anti-icing module, P5-11
- (2) Ground wing thermal anti-ice solenoid valve M1236 (engine 1) or M1237 (engine 2)
- (3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

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E. Initial Evaluation

- (1) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the ON position.
 - (a) If both the L VALVE OPEN and R VALVE OPEN lights do not go bright for 1 to 6 seconds, then do the Fault Isolation Procedure - Both Lights Do Not Come On.
 - (b) If only one these lights: L VALVE OPEN or R VALVE OPEN lights goes bright for 1 to 6 seconds, then do the Fault Isolation Procedure - One Light Does Not Come On.
 - (c) If both the L VALVE OPEN and R VALVE OPEN lights come on bright for 1 to 6 seconds then go dim, then there was an intermittent fault. Put the WING ANTI-ICE switch in the OFF position.
- (2) Make sure the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) is OFF.

F. Fault Isolation Procedure - One Light Does Not Come On

- (1) Do this test of the indicator light:
 - (a) Push the light that did not come on.
 - (b) If the light does not come on, then do these steps:
 - 1) Replace the indicator lamp. To replace the lamp, do this task: Indicator Light - Lamp Replacement, AMM TASK 33-18-00-960-801.
 - 2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - 3) If both VALVE OPEN lights come on bright for 1 to 6 seconds then go dim, then you corrected the fault.
 - 4) If the VALVE OPEN light does not come on bright for 1 to 6 seconds, then do these steps:
 - a) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - b) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - c) If both VALVE OPEN lights come on bright for 1 to 6 seconds then go dim, then you corrected the fault.
 - 5) Put the WING ANTI-ICE switch in the OFF position.
 - (c) If the VALVE OPEN light comes on, then continue.
- (2) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - (a) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - (b) If both VALVE OPEN lights come on bright for 1 to 6 seconds then go dim, then you corrected the fault.

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G. Fault Isolation Procedure - Both Lights Do Not Come On

- (1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (a) If this circuit breaker opens intermittently when the airplane is on the ground, replace the ground thermal anti-ice solenoid valve M1236 (engine 1) or M1237 (engine 2). These are the tasks:

- Ground Wing Thermal Anti-Icing Solenoid Valve Removal, AMM TASK 30-11-12-000-801
- Ground Wing Thermal Anti-Icing Solenoid Valve Installation, AMM TASK 30-11-12-400-801

- (2) Make sure the engine and wing anti-ice module receives 115 VAC power.



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do these steps to open the P5 overhead panel assembly:

- 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.

- (b) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (c) Remove the connector D462 from the wing and engine anti-ice panel, P5-11.
(d) Examine the connector and socket for damage and unwanted material.
(e) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (f) Measure for 115 VAC at pin 11 at connector D462.

- 1) If there is 115 VAC at the pin, then do these steps:

- a) Replace the engine and wing anti-ice panel. These are the tasks:

- Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801

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- Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
- b) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
- c) Make sure both VALVE OPEN lights go on bright, then go dim.
- d) If the test operates correctly, then you corrected the fault. Close the P5 panel.
- 2) If there is not 115 VAC at the pin, then continue.
- (3) Do a check of the wiring between the engine, the wing anti-ice module and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do these steps to open the P5 overhead panel assembly:
 - 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (b) Remove the connector D462 from the wing and engine anti-ice panel, P5-11.
- (c) Examine the connector and socket for damage and unwanted material.
- (d) Open this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

- (e) Do a check of the wiring between these pins:

**CIRCUIT
BREAKER
C00146**

pin 1 pin 11

**ENGINE AND
WING
ANTI-ICING
MODULE**

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Reconnect the connector on the anti-icing module.

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- 3) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

- 4) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
- 5) Make sure both VALVE OPEN lights go on bright, then go dim.
- a) If the test operates correctly, then you corrected the fault. Close the P5 panel.

END OF TASK

806. WING ANTI-ICE Switch Does Not Latch in the ON Position With Engines Not Running - Fault Isolation

A. Description

- (1) The WING ANTI-ICE switch does not stay on when the WING ANTI ICE switch is put in the ON position.

B. Possible Causes

- (1) Engine and wing anti-ice module, P5-11
- (2) Wing ground thermal anti-ice switch, S117 or S118
- (3) Autothrottle switch pack, M1766 or M1767
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (2) Make sure the throttle levers are in the idle position.
- (3) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) to the ON position.
- (a) If the switch returns to the OFF position, then do the Fault Isolation Procedure below.

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- (b) If the switch stays in the ON position, then you had an intermittent fault.
- (4) Make sure the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) is OFF.

F. Fault Isolation Procedure

- (1) Push one of the VALVE OPEN lights to make sure the engine and wing anti-ice module receives 28 VDC power.
 - (a) If the light does not come on, then do this check for electrical power:



THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Do these steps to open the P5 overhead panel assembly.
 - a) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- b) Release the panel safety latch.
- 2) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- 3) Remove the connector D462 from the wing and engine anti-ice panel, P5-11:
- 4) Examine the connectors and sockets for damage and unwanted material.
- 5) Do a wiring check between the engine, the wing anti-ice module, and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

**CIRCUIT
BREAKER
C00148**

**ENGINE AND
WING ANTI-
ICING MODULE**

pin 1 pin 31

- 6) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector on anti-icing module.

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- c) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- d) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
- e) If the WING ANTI-ICE switch remains latched, then you corrected the fault.
- f) If it is necessary, close the P5 panel.
- (b) If the light comes on, then continue:
- (2) Do this check to determine whether the WING ANTI-ICE switch is forced off by an airplane system.
- (a) Measure the resistance between pin 21 on connector D462 and ground.
- (b) If there is not continuity to ground, then an airplane system did not unlatch the switch. Do these steps:
- 1) Replace the engine and wing anti-ice panel, do this task: Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801.
 - 2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - 3) If the WING ANTI-ICE switch remains latched, then you corrected the fault.
 - 4) If it is necessary, close the P5 panel.
- (c) If there is continuity to ground, then continue.
- (3) Do this check to find whether a ground thermal anti-ice switch is closed.
- (a) Remove the connectors from each ground thermal anti-ice switch.
- (b) Measure the resistance between pin 1 on the switch and ground.
- (c) If there is continuity to ground, then do these steps:
- 1) Replace the wing ground thermal anti-ice switch. These are the tasks:
 - Wing Anti-Icing Ground Overheat Thermal Switch Removal, AMM TASK 30-11-21-000-801
 - Wing Anti-Icing Ground Overheat Thermal Switch Installation, AMM TASK 30-11-21-400-801
 - 2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - 3) If the WING ANTI-ICE switch remains latched, then you corrected the fault.
- (d) If there is not continuity to ground, then continue.
- (4) Do this check of the autothrottle switch pack:
- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (b) Re-connect the connectors on the ground thermal anti-ice switches.

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- (c) Remove the connectors D11128P and D11132P from the autothrottle switch packs.
 - (d) Measure the resistance between pin 10 on each switch and ground.
 - (e) If there is continuity to ground, then do these steps:
 - 1) Replace the engine throttle switch. These are the tasks:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00
 - 2) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - 3) If the WING ANTI-ICE switch remains latched, then you corrected the fault.
 - (f) If there is not continuity to ground, replace the connectors on the autothrottle switch packs and continue to the next step.
- (5) Do a wiring check between the engine and wing anti-ice panel, the ground thermal anti-ice switches, and autothrottle switch packs (WDM 30-11-11).
- (a) Remove the connector D462 from the engine and wing anti-ice panel.
 - (b) Do a check of the wiring between these pins:

	SENSOR VALVE	ENGINE AND WING ANTI-ICE PANEL
L WING GROUND TAI SWITCH	D736 PIN 1	D462 PIN 21
R WING GROUND TAI SWITCH	D738 PIN 1	D462 PIN 21
ENGINE 1 AUTO THROTTLE SWITCH	D11128P PIN 10	D462 PIN 21
ENGINE 2 AUTO THROTTLE SWITCH	D11132P PIN 10	D462 PIN 21

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- 2) Repair the wiring.
- 3) Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
- 4) If the WING ANTI-ICE switch remains latched, then you corrected the fault.
- 5) If it is necessary, close the P5 panel.

————— **END OF TASK** —————

807. WING ANTI-ICE Switch Unlatches When Engines Are Running - Fault Isolation

A. Description

- (1) The WING ANTI-ICE switch does not stay on when the airplane is on the ground and the engine is running. There is a delay between when the WING ANTI-ICE switch is put in the ON position and when the switch unlatches.
- (2) One or both ground thermal anti-ice switches detect a duct overheat.

B. Possible Causes

- (1) Precooler control valve
- (2) Bleed air problem
- (3) Wing ground thermal anti-ice switch, S117 (right) or S118 (left)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) Component Location (30-11 TASK SUPPORT Figure 301)
- (2) (SSM 30-11-11)
- (3) (WDM 30-11-11)

E. Initial Evaluation

- (1) Do this test of the bleed air precooler control valve system:
 - (a) Do this task: Precooler Control Valve System Health Check, AMM TASK 36-12-00-700-801.
 - (b) If the tests do not operate correctly, then do the repairs in the referenced procedure.
 - (c) If the tests operate correctly, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Replace the ground thermal anti-ice switches. These are the tasks:
 - Wing Anti-Icing Ground Overheat Thermal Switch Removal, AMM TASK 30-11-21-000-801
 - Wing Anti-Icing Ground Overheat Thermal Switch Installation, AMM TASK 30-11-21-400-801
- (a) If the problem does not recur on the subsequent flight, then you corrected the fault.

NOTE: Only one switch may have failed. The switches may be tested in the shop to determine which switch is failed.

———— **END OF TASK** ————

810. Circuit Breaker C148 Opens Intermittently When the Airplane Is on the Ground - Fault Isolation

A. Description

- (1) Circuit breaker C148 opens intermittently when the airplane is on the ground.

B. Possible Causes

- (1) Ground Wing Thermal Anti-Ice Solenoid Valve M1236 (Engine 1) or M1237 (Engine 2)
- (2) Electrical Harness, MW0311
- (3) Circuit Breaker, C148

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

D. Related Data

- (1) (SSM 30-11-11)
- (2) (WDM 30-11-11)
- (3) (SSM 30-21-11)
- (4) (WDM 30-21-11)

E. Initial Evaluation

- (1) Do the fault isolation procedures for any other existing wing or engine anti-ice faults first. If circuit breaker C148 continues to open intermittently when the airplane is on the ground, continue.

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F. Fault Isolation Procedure

- (1) Do these steps to do a check of the Engine Harness, MW0311 :

NOTE: MW0311 Engine Harnesses with part numbers 325-029-901-0 or 325-029-902-0 are susceptible to internal shorting which can cause the bleed air valve circuit breaker to trip and prevent the PRSOV from closing. This type of failure is not always a hard fault (always present). Therefore, if you find that the applicable circuit breaker has tripped or if it has tripped in the past, it is quite possible there is an intermittent short in the harness. A thorough check of the harness must be accomplished to determine if the harness must be replaced.

NOTE: A multimeter is required to perform the electrical checks in this procedure. If there is an intermittent short or the fault is not present at any point in the Fault Isolation Procedure, you will need to use a megohmmeter instead of the multimeter to perform a more thorough check of the electrical circuit.

- (a) If not already done, disconnect connector DP1104 at the firewall disconnect.
- (b) Do a visual examination of the Engine Harness, MW0311 for worn areas, deformed areas, loose or damaged connectors, and damaged pins and sockets:
- 1) If there is obvious damage to the harness that could cause a short or open circuit, then replace the harness. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 2) If there is no obvious damage to the harness, then continue.
- (c) Examine these circuits of the Engine Harness, MW0311 for continuity:

DP1103

pin 1 pin 14
pin 2 pin 5

DP1104

- 1) If any of the circuits fail the continuity check, then replace the Engine Harness, MW0311. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 2) If there is continuity in all of the circuits, then continue.
- (d) If the applicable circuit breaker C148 was tripped or has a history of tripping, do these steps:



CAUTION

MAKE SURE THAT YOU USE STANDARD WIRING MAINTENANCE PRACTICES WHEN YOU DO THE MEG CHECK. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Use a megohmmeter to examine the Engine Harness, MW0311 circuits listed below for internal shorts:

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DP1104	DP1104
pin 12	pin 1
pin 12	pin 2
pin 12	pin 5
pin 12	pin 10
pin 12	pin 11
pin 12	pin 14
pin 3	pin 1
pin 3	pin 2
pin 3	pin 5
pin 3	pin 10
pin 3	pin 11
pin 3	pin 12
pin 3	pin 14

- 2) Use a megohmmeter to do a check of pins 1 and 2 of connector DP1103 to the connector backshell.
 - 3) If any of the checks with the megohmmeter failed, replace the engine harness, MW0311. These are the tasks:
 - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
 - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
 - 4) If the checks with the megohmmeter are satisfactory, then continue.
 - 5) If the circuit breaker continues to trip open, use WDM 36-11-11 to perform additional checks for the source of the ground fault.
- (2) Replace the Ground Thermal Anti-Ice Solenoid Valve M1236 (Engine 1) or M1237 (Engine 2). These are the tasks:
- Ground Wing Thermal Anti-Icing Solenoid Valve Removal, AMM TASK 30-11-12-000-801
 - Ground Wing Thermal Anti-Icing Solenoid Valve Installation, AMM TASK 30-11-12-400-801
- (3) Replace the circuit breaker C148.
- (a) If circuit breaker C148 does not open when the airplane is on the ground, you corrected the fault.

———— **END OF TASK** ————

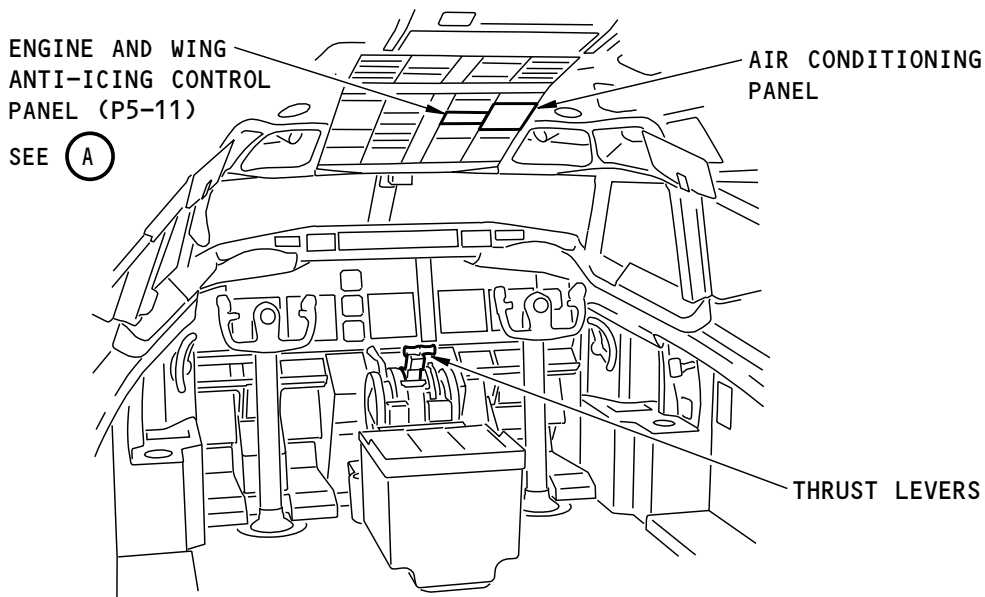
EFFECTIVITY
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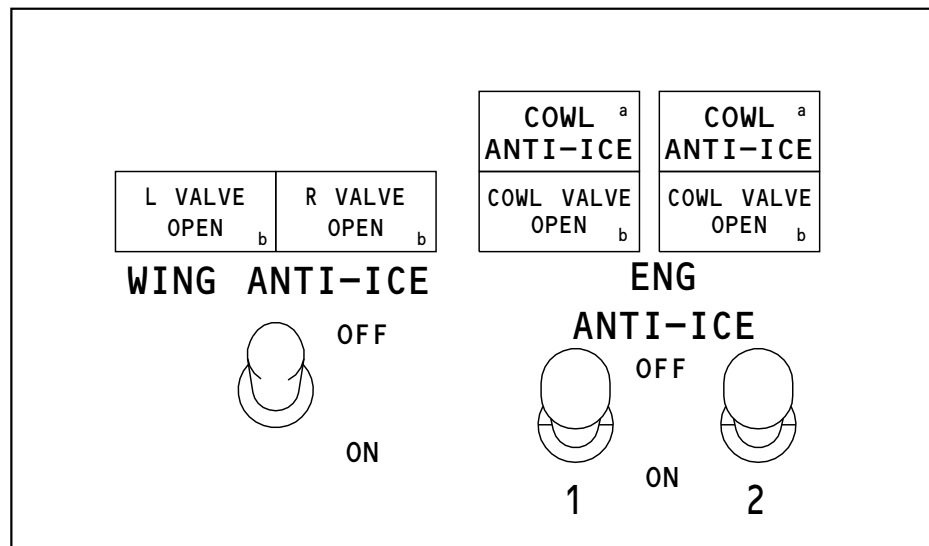
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FLIGHT COMPARTMENT



ENGINE AND WING ANTI-ICE CONTROL PANEL (P5-11)

(A)

G58113 S0006743212_V1

Wing Thermal Anti-Icing Component Location
Figure 301/30-11-00-990-801 (Sheet 1 of 2)

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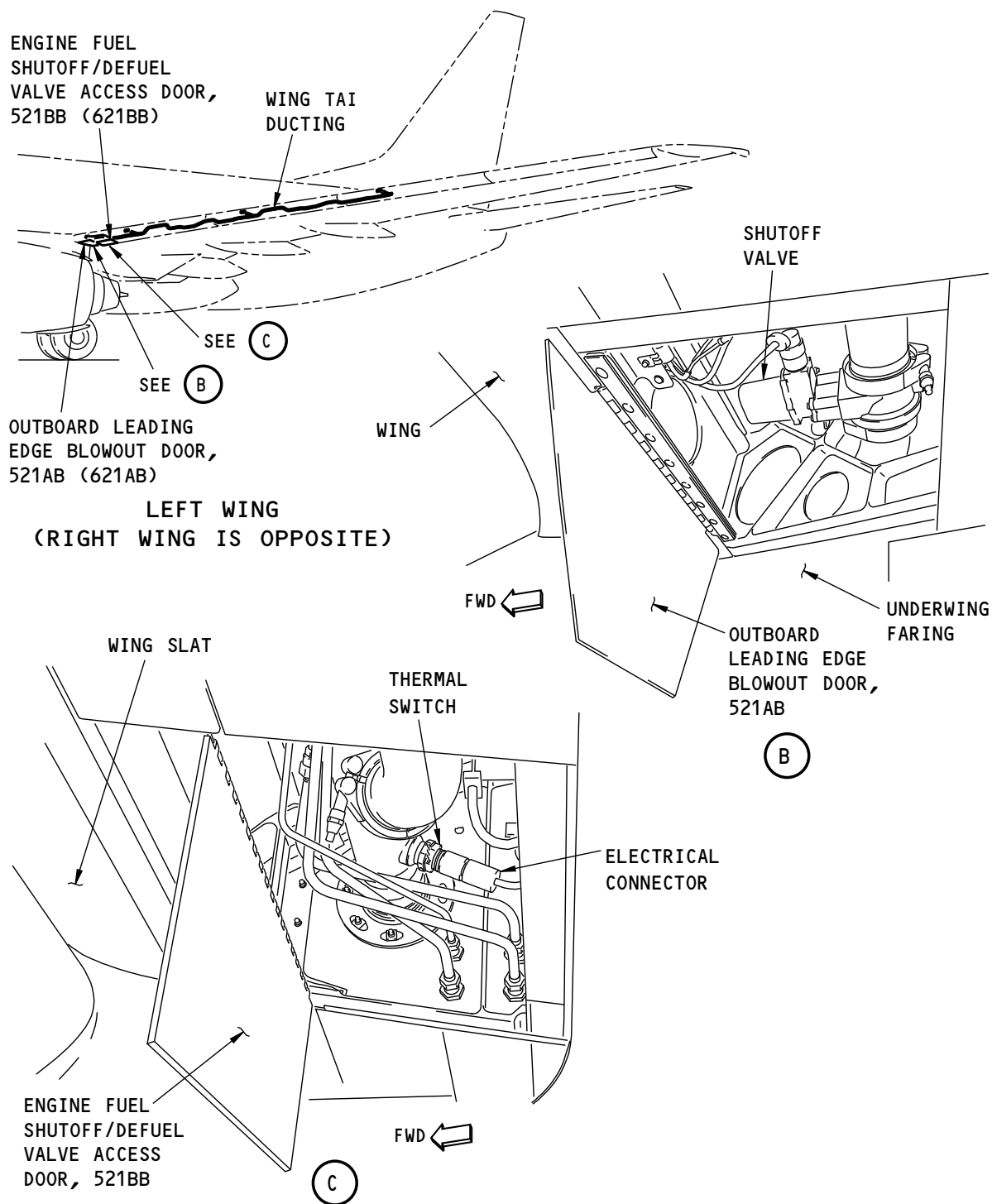
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G58114 S0006743213_V1

Wing Thermal Anti-Icing Component Location
Figure 301/30-11-00-990-801 (Sheet 2 of 2)

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801. COWL ANTI-ICE Light is On - Fault Isolation

A. Description

- (1) The COWL ANTI-ICE light is on.
- (2) The duct overpressure switch indicates a duct overpressure.

B. Possible Causes

- (1) CTAI duct overpressure switch, S806
- (2) Engine and wing anti-ice panel, P5-11
- (3) Wiring problem
- (4) Inlet cowl thermal anti-ice (TAI) valve

SIA ALL; AIRPLANES WITH ENGINE COWL TAI VALVE P/N 3215618-5

- (5) Contaminated removable honest orifice.

SIA ALL

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) (SSM 30-21-11)
- (3) (WDM 30-21-11)
- (4) (WDM 30-21-21)

E. Initial Evaluation

- (1) Look at the COWL ANTI-ICE light.
 - (a) If the light is on, then do the Fault Isolation Procedure below.
 - (b) If the light is not on, then there was an intermittent fault or there was an overpressure condition in the engine cowl thermal anti-ice duct.

NOTE: If N2 speed was exceeded, do this procedure to inspect the engine: (AMM TASK 71-00-00-800-804-F00).

SIA ALL; AIRPLANES WITH ENGINE COWL TAI VALVE P/N 3215618-5

- (c) If the light comes on only while the engine is running and not at high power, then there is an overpressure condition in the engine cowl thermal anti-ice duct possibly due to contamination in the honest orifice. Do this task: Honest Orifice - Cleaning, AMM TASK 30-21-11-100-801

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- (d) If the light comes on only while the engine is running at high power (takeoff or climb), then there is an overpressure condition in the engine cowl thermal anti-ice duct. Do this task: COWL ANTI-ICE Light is On at High Power (Takeoff or Climb) and goes out when Power is Reduced - Fault Isolation, 30-21 TASK 809.

F. Fault Isolation Procedure

- (1) Do these steps to prepare for fault isolation:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

- (b) Do these steps to get access to the CTAI duct overpressure switch:

- 1) For the right fan cowl panel on the applicable engine, do this task:

Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00

- a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Oil Tank Access Door, Engine 1
424AR	Oil Tank Access Door, Engine 2

- (2) Do this test of the overpressure switch:

- (a) Remove the electrical connector DP1302 from the CTAI duct overpressure switch.

- (b) Do a continuity check between pins 1 and 2 of the overpressure switch, S806.

- (c) If there is continuity between pins 1 and 2, then do these steps:

- 1) Replace the CTAI duct overpressure switch, S806. These are the tasks:

- Engine Anti-Ice Pressure Sensor Removal, AMM TASK 30-21-21-000-802
- Engine Anti-Ice Pressure Sensor Installation, AMM TASK 30-21-21-400-801

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

- (d) If there is not continuity between pins 1 and 2, then continue.

- (3) Do this test of the wiring between the engine and wing anti-ice panel and the overpressure switch:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

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THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
- 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove this connector from the wing and engine anti-ice panel, P5-11:
- 1) If the left COWL ANTI-ICE light was on, D462
 - 2) If the right COWL ANTI-ICE light was on, D648
- (d) For the left COWL ANTI-ICE light, do a wiring check between these pins of connector DP1302 at the overpressure switch and connector D462 at the P5-11 panel:

DP1302	D462
pin 1	pin 13

- (e) For the right COWL ANTI-ICE light, do a wiring check between these pins of connector DP1302 at the overpressure switch and connector D648 at the P5-11 panel:

DP1302	D648
pin 1	pin 11

- (f) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector D462 or D648 on the engine and wing anti-ice panel.
 - 3) Re-connect the connector DP1302 on the CTAI duct overpressure switch.
 - 4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- 5) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then re-connect the connector DP1302 on the CTAI duct overpressure switch and continue.
- (4) Replace the engine and wing anti-ice panel. These are the tasks:
- Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801

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

G. Repair Confirmation

- (1) If the COWL ANTI-ICE light is not on, then you corrected the fault.
- (2) If it is necessary, close the P5 panel.
- (3) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00154	ENGINE 2 START VALVE

————— **END OF TASK** —————

802. COWL VALVE OPEN Light Slow to go From Bright to Dim When Switch is ON - Fault Isolation

A. Description

- (1) A COWL VALVE OPEN Light is slow to go from bright to dim when the ENG ANTI-ICE switches are moved from the OFF position to the ON position.

B. Possible Causes

- (1) Engine Cowl Thermal Anti-Ice (TAI) Valve, V4

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) SSM 30-21-11
- (3) WDM 30-21-11
- (4) WDM 30-21-21

E. Initial Evaluation

- (1) Do these steps to provide pneumatic pressure for the ducts:

NOTE: The TAI ducts must be pressurized for the anti-ice system to operate correctly. If pneumatic pressure is removed to perform a task, you must do the steps to provide pneumatic pressure when you are finished.

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- (a) To use the Auxiliary Power Unit (APU) to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.
- (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802
- (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
- (d) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.
- (e) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.
- (f) If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- (g) Do these steps on the applicable engine to manually open the Pressure Regulating and Shutoff Valve (PRSOV):



WARNING

DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the left thrust reverser. This is the task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) Put the applicable engine BLEED switch, on the P5-10 panel, to the ON position.
- 3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS WHEN YOU CLOSE THE THRUST REVERSERS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the thrust reverser. This is the task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) If it is necessary, put the ENG ANTI-ICE switches in the OFF position.
 - (3) Put the applicable ENG ANTI-ICE switch in the ON position:
 - (a) The ENG ANTI-ICE 1 switch controls the left cowl TAI valve and left COWL VALVE OPEN Light.
 - (b) The ENG ANTI-ICE 2 switch controls the right cowl TAI valve and right COWL VALVE OPEN Light.
 - (4) Look at the engine and wing anti-ice panel to see if these results occur:
 - (a) The COWL VALVE OPEN Light comes on brightly for 1 to 6 seconds.

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- (b) The COWL VALVE OPEN Light is on dimly after 6 seconds.
- (c) If the light took more than 6 seconds to go dim, then do the Fault Isolation Procedure below.
- (d) If the lights operated as expected, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Replace the applicable Cowl TAI Valve, V4. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
- (a) If the valve passes the post installation check in the valve installation procedure, then you corrected the problem.
- (b) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

————— **END OF TASK** —————

803. COWL VALVE OPEN Light Slow to go From Bright to Off When Switch is OFF - Fault Isolation

A. Description

- (1) A COWL VALVE OPEN Light is slow to go from bright to off when the ENG ANTI-ICE switches are moved from the ON position to the OFF position.

B. Possible Causes

- (1) Engine Cowl TAI Valve, V4

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) SSM 30-21-11
- (3) WDM 30-21-11
- (4) WDM 30-21-21

E. Initial Evaluation

- (1) Do these steps to provide pneumatic pressure for the ducts:
 - NOTE:** The TAI ducts must be pressurized for the anti-ice system to operate correctly. If pneumatic pressure is removed to perform a task, you must do the steps to provide pneumatic pressure when you are finished.
 - (a) To use the APU to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.

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- (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802
- (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
- (d) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.
- (e) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.
- (f) If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- (g) Do these steps on the applicable engine to manually open the PRSOV:



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSERS: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the left thrust reverser. This is the task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) Put the applicable engine BLEED switch, on the P5-10 panel, to the ON position.
- 3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS WHEN YOU CLOSE THE THRUST REVERSERS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the thrust reverser. This is the task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) Put the applicable ENG ANTI-ICE switch in the ON position.
 - (a) The ENG ANTI-ICE 1 switch controls the left cowl TAI valve and left COWL VALVE OPEN Light.
 - (b) The ENG ANTI-ICE 2 switch controls the right cowl TAI valve and right COWL VALVE OPEN Light.
- (3) Put the ENG ANTI-ICE switch in the OFF position.
- (4) Make sure these results occur:
 - (a) The COWL VALVE OPEN Lights come on brightly for 1 to 3 seconds.
 - (b) The COWL VALVE OPEN Lights go off after 3 seconds.
 - (c) If a light took more than 3 seconds to go off, then do the Fault Isolation Procedure below.
 - (d) If the lights operated as expected, then there was an intermittent fault.

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F. Fault Isolation Procedure

- (1) Replace the applicable Cowl TAI Valve, V4. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
- (a) If the valve passes the post installation check in the valve installation procedure, then you corrected the problem.
- (b) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

————— **END OF TASK** —————

804. COWL VALVE OPEN Light Stays On Bright in the OFF Position - Fault Isolation

A. Description

- (1) A COWL VALVE OPEN light stays on bright when the ENG ANTI-ICE switches are in the OFF position.
- (2) The system indicates that there is a disagreement between the cowl TAI valve position and ENG ANTI-ICE switch position.

B. Possible Causes

- (1) Engine cowl thermal anti-Ice (TAI) valve, V4
- (2) Engine and wing anti-ice panel, P5-11
- (3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) (SSM 30-21-11)
- (3) (WDM 30-21-11)
- (4) (WDM 30-21-21)

E. Initial Evaluation

- (1) Do these steps to provide pneumatic pressure for the ducts:

NOTE: The TAI ducts must be pressurized for the anti-ice system to operate correctly. If pneumatic pressure is removed to perform a task, you must do the steps to provide pneumatic pressure when you are finished.

- (a) To use the APU to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.

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- (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802.
- (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
- (d) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.
- (e) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.
- (f) If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- (g) Do these steps on the applicable engine to manually open the PRSOV:



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) Put the applicable engine BLEED switch on the P5-10, forward overhead panel to the ON position.
- 3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the thrust reverser. To close it, do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) Make sure the ENG ANTI-ICE switches are in the OFF position.
- (3) Look at the COWL VALVE OPEN light.
 - (a) If the light is on, then do the Fault Isolation Procedure below.
 - (b) If the light is not on, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do these steps to get access to the engine cowl TAI valve:
 - (a) For the right fan cowl panel on the applicable engine, do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

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- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Oil Tank Access Door, Engine 1
424AR	Oil Tank Access Door, Engine 2

- (2) Do this check of the engine cowl TAI valve:

- (a) Look at the position indicator for the engine cowl TAI valve.

- (b) If the valve is neither open nor closed, then do these steps:

- 1) Replace the engine cowl TAI valve. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801

- 2) Do the post installation test in the valve installation procedure.

- 3) If the test operates correctly, then you corrected the fault.

- a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- b) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

- (c) If the valve is open, then do these steps:

- 1) Remove the electrical connector DP1303 from the engine cowl TAI valve.

- 2) If the valve stays open, then replace the engine cowl TAI valve, V4. These are the tasks:

- Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
- Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801

- 3) If the valve closes, then replace the engine and wing anti-ice panel, P5-11. These are the tasks:

- Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
- Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801

- 4) Do the post installation test in the applicable installation procedure.

- 5) If the test operates correctly, then you corrected the fault.

- 6) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

- 7) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

- (d) If the valve is closed, then do these steps:

- 1) Remove the electrical connector DP1303 from the engine cowl TAI valve.

- 2) Do a check for ground at pin 9 on the valve.

- 3) If the pin 9 is grounded, then do these steps:

- a) Replace the engine cowl TAI valve, V4. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801

- b) Do the post installation test in the installation procedure.

- c) If the test operates correctly, then you corrected the fault.

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- d) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- e) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- 4) If the pin 9 is not grounded, then continue.
- (3) Do this check of the engine and wing anti-ice panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
 - 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove this connector from the wing and engine anti-ice panel:
 - 1) If the left COWL VALVE OPEN light was on: D462
 - 2) If the right COWL VALVE OPEN light was on: D648
- (d) For the left COWL VALVE OPEN light, do a check for ground at pin 15 on the wing and engine anti-ice panel connector.
- (e) For the right COWL VALVE OPEN light, do a check for ground at pin 14 on the wing and engine anti-ice panel connector.
- (f) If the pin is not grounded, then do these steps:
 - 1) Replace the engine and wing anti-ice panel, P5-11. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - 2) Do the post installation test in the installation procedure.
 - 3) If the test passes, then you corrected the fault.
 - a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - b) If it is necessary, close the P5 panel.

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- c) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (g) If the pin is grounded, then do these steps:
- 1) Replace the applicable engine cowl TAI valve, V4. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
 - 2) Do the post installation test in the installation procedure.
 - 3) If the test passes, then you corrected the fault.
 - a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - b) If it is necessary, close the P5 panel.
 - c) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - 4) If the test fails, then continue.
- (4) Do this check of the wiring:
- (a) For the left COWL VALVE OPEN light, do a wiring check between these pins of the connector DP1303 at the engine cowl TAI valve and the connector D462 at the P5-11 panel:
- | | |
|-----------------|-------------|
| DP1303 | D462 |
| pin 9 | pin 15 |
- (b) For the right COWL VALVE OPEN light, do a wiring check between these pins of the connector DP1303 at the engine cowl TAI valve and the connector D648 at the P5-11 panel.
- | | |
|-----------------|-------------|
| DP1303 | D648 |
| pin 9 | pin 14 |
- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector on the engine and wing anti-ice panel.
 - 3) Re-connect the connector on the CTAI duct overpressure switch.
 - 4) Do the steps to supply pneumatic pressure to the TAI duct again.
 - 5) Remove the safety tags and close these circuit breakers:
- CAPT Electrical System Panel, P18-3**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------------------------|
| A | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| A | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| B | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| B | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |
- 6) If the COWL VALVE OPEN light does not come on, then you corrected the fault.
- a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

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- b) If it is necessary, close the P5 panel.
- c) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

————— **END OF TASK** —————

805. COWL VALVE OPEN Light Stays ON Bright in the ON Position - Fault Isolation

A. Description

- (1) A COWL VALVE OPEN Light stays ON bright when the ENG ANTI-ICE Switches are in the ON position.
- (2) The system indicates that there is a disagreement between the Cowl TAI Valve position and ENG ANTI-ICE Switch position.

B. Possible Causes

- (1) Engine Cowl Thermal Anti-Icing (CTAI) Valve, V4
- (2) Engine and Wing Anti-Ice Panel, P5-11
- (3) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) SSM 30-21-11
- (3) WDM 30-21-11
- (4) WDM 30-21-21

E. Initial Evaluation

- (1) Do these steps to supply Pneumatic Pressure to the ducts:

NOTE: The TAI Ducts must be pressurized for the Anti-Ice System to operate correctly.

If you remove Pneumatic Pressure to do a task, you must do the steps to provide Pneumatic Pressure when you are finished.

- (a) Pressurize the TAI Duct. These are the applicable tasks:
 - Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803
 - Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802
- (b) On the Air Conditioning Panel, put the BLEED 1 and 2 Switches in the OFF position.
- (c) Put the L PACK and R PACK Switches in the OFF position.
- (d) Make sure that the ISOLATION VALVE Switch is in the OPEN or the AUTO position.

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- (e) If you use the APU or an External Air to pressurize the TAI Duct, you must manually open the PRSOV Valves.
- (f) On the applicable engine, do these steps to manually open the PRSOV:



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THIS SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the Left (Right) Thrust Reverser. This is the task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) On the P5-10 Panel, put the applicable Engine BLEED Switch, to the ON position.
- 3) Use a wrench on the Manual Override Nut for the PRSOV to put it to the OPEN position.
- 4) Make sure that the PRSOV stays in the OPEN position.

NOTE: The PRSOV is spring-loaded to the CLOSED position.

If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the Sense Line(s).



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS WHEN YOU CLOSE THE THRUST REVERSERS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the applicable Thrust Reverser. This is the task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) Put the applicable ENG ANTI-ICE Switch in the ON position.
 - (3) Look at the COWL VALVE OPEN Light.
 - (a) If the light is ON dim, then there was an intermittent fault.
 - (b) If the light is ON bright, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) Do these steps to get access to the Engine Cowl TAI Valve:
 - (a) For the Right Fan Cowl Panel on the applicable engine, do this task:
Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00
Open these access panels:

Number	Name/Location
414AR	Oil Tank Access Door, Engine 1
424AR	Oil Tank Access Door, Engine 2

- (2) Do this check of the Engine Cowl TAI Valve:
 - (a) Look at the position indicator for the Engine Cowl TAI Valve.

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- (3) If the valve is neither open nor closed, then replace the Engine Cowl TAI Valve, V4. These are the tasks:
- Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
- (a) Do the Engine Cowl TAI Valve Installation Test.
- 1) If the test is satisfactory, then you corrected the problem.
 - 2) If Pneumatic Pressure is no longer necessary, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - 3) If necessary, close the Cowl Panel on the applicable engine. This is the task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (4) If the valve is open, then remove the electrical connector, DP1303 from the valve and do a continuity check between pin 4 on the Engine Cowl TAI Valve, V4 and Ground.
- (a) If you find continuity, then replace the Engine Cowl TAI Valve, V4. These are the tasks:
- Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
- 1) Do the Engine Cowl TAI Valve Installation Test.
 - a) If the test is satisfactory, then you corrected the problem.
 - b) If Pneumatic Pressure is no longer necessary, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - c) If necessary, close the Cowl Panel on the applicable engine. This is the task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
- (b) If you do not find continuity, then do this check of the Engine and Wing Anti-Ice Panel:



THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE THAT YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 Panel to open the Panel Assembly.



THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the Panel Safety Latch.
- 3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- 4) Remove the applicable connector from the Engine and Wing Anti-Ice Panel:

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- a) Left COWL VALVE OPEN Light: D462
 - b) Right COWL VALVE OPEN Light: D648
- 5) Do a check for Ground at pin 12 on the applicable Engine and Wing Anti-Ice Panel connector.
- a) If the pin is not grounded, replace the Engine and Wing Anti-Ice Panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801

<1> Do the Repair Confirmation at the end of this task.
 - b) If the pin is grounded, then examine the wiring as follows (WDM 30-21-11, WDM 30-21-21):

Left COWL VALVE OPEN Light ON

TAI VLV	P5-11
DP1303	D462
pin 4	pin 12

Right COWL VALVE OPEN Light ON

TAI VLV	P5-11
DP1303	D648
pin 4	pin 12

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Re-connect the applicable connector D462 (D648) on the Engine and Wing Anti-Ice Panel.
 - <c> Re-connect the connector DP1303 on the Engine Cowl TAI Valve.
 - <d> Do the Repair Confirmation at the end of this task.
- (5) If the valve is closed, then do these steps:
- (a) Remove the electrical connector DP1303 from the applicable Engine Cowl TAI Valve.
 - (b) Do a check for 28V DC at pin 1 of DP1303.
 - 1) If you find 28V DC, replace the Engine Cowl TAI Valve, V4. These are the tasks:
 - Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801
 - a) Do the Engine Cowl TAI Valve Installation Test.
 - <1> If the test is satisfactory, then you corrected the problem.
 - <2> If Pneumatic Pressure is no longer necessary, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - <3> If necessary, close the Cowl Panel on the applicable engine. This is the task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - 2) If you do not find 28V DC, then continue.
- (6) Do this check of the Engine and Wing Anti-Ice Panel:

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WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE THAT YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Loosen the quarter-turn fasteners on the bottom corners of the P5 Panel to open the Panel Assembly.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- (b) Release the Panel Safety Latch.
(c) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (d) Remove the applicable connector from the Engine and Wing Anti-Ice Panel:
- Left COWL VALVE OPEN Light: D462
 - Right COWL VALVE OPEN Light: D648
- 1) For the Left COWL VALVE OPEN Light, do a continuity check between pins 14 and 22 on the Engine and Wing Anti-Ice Panel connector.
 - 2) For the Right COWL VALVE OPEN Light, do a continuity check between pins 13 and 22 on the Engine and Wing Anti-Ice Panel connector.
 - 3) If you do not find continuity, replace the Engine and Wing Anti-Ice Panel, P5-11. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 4) If you find continuity, then continue.
- (7) Do this check for power to the Engine and Wing Anti-Ice Panel, P5-11:
- (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (b) Do a check for 28V DC at pin 22 of the applicable Engine and Wing Anti-Ice Panel connector D462 (D648).
- 1) If you do not find 28V DC, do these steps:
 - a) Repair the wiring.

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- b) Re-connect the connector on the engine and wing anti-ice panel.
 - c) Re-connect the connector on the engine and wing anti-ice panel.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you find 28V DC, then continue.
- (8) Examine the wiring as follows (WDM 30-21-11, WDM 30-21-21):

Left COWL VALVE OPEN Light ON

TAI VLV	P5-11
DP1303	D462
pin 1	pin 14

Right COWL VALVE OPEN Light ON

TAI VLV	P5-11
DP1303	D648
pin 1	pin 13

- (a) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the applicable connector D462 (D648) to the Engine and Wing Anti-Ice Panel.
 - 3) Re-connect the connector DP1303 to the applicable L (R) Engine Cowl TAI Valve.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (2) Put the applicable ENG ANTI-ICE 1 (2) Switch in the ON position.
- (3) Look at the COWL VALVE OPEN Light.
- (a) If the light is ON dim, then you corrected the problem.
- 1) If Pneumatic Pressure is no longer necessary, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - 2) If necessary, close the P5 Panel.
 - 3) If necessary, close the Cowl Panel on the applicable engine. This is the task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - 4) Put the ANTI-ICE Switch to OFF.
- (b) If the light is ON bright, continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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806. Green TAI Indication Does not Show on the CDS - Fault Isolation

A. Description

- (1) The common display system (CDS) does not display a green TAI indication when the COWL TAI valve is open.
- (2) This fault isolation procedure applies only if the corresponding COWL VALVE OPEN light is illuminated which indicates that the valve is open.
- (3) The display electronic unit (DEU) does not indicate that the COWL TAI valve is open.

B. Possible Causes

- (1) Wiring problem
- (2) Engine cowl thermal anti-ice (TAI) valve, V4
- (3) Display electronic unit, M1808 (DEU-1) or M1809 (DEU-2)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
- (2) (SSM 30-21-11)
- (3) (SSM 31-62-14)
- (4) (SSM 30-21-21)
- (5) (SSM 31-62-24)
- (6) (WDM 30-21-11)
- (7) (WDM 30-21-21)
- (8) (WDM 31-62-14)
- (9) (WDM 31-62-24)

E. Initial Evaluation

- (1) Do these steps to provide pneumatic pressure for the ducts:

NOTE: The TAI ducts must be pressurized for the anti-ice system to operate correctly. If pneumatic pressure is removed to perform a task, you must do the steps to provide pneumatic pressure when you are finished.

- (a) To use the APU to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.
- (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802.
- (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
- (d) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.

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- (e) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.
- (f) If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- (g) Do these steps on the applicable engine to manually open the PRSOV:



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) Put the applicable engine BLEED switch, on the P5-10 panel, to the ON position.
- 3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the thrust reverser. To close it, do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) Put the applicable ENG ANTI-ICE switch in the ON position.
 - (3) Look at the COWL VALVE OPEN light.
 - (a) If the light is on bright, then, do this task: COWL VALVE OPEN Light Stays ON Bright in the ON Position - Fault Isolation, 30-21 TASK 805.
 - (b) If the light on dim and the green TAI indication is on the CDS, then there was an intermittent fault.
 - (c) If the light is on dim and the green TAI indication is not on the CDS, then continue.
 - (4) Do these steps to determine whether either DEU is not getting an open indication from the TAI valve:
 - (a) Put the DISPLAYS switch on the instrument switching module in the ALL ON 1 position.
 - (b) Look at the CDS to see if the green TAI indication is on.
 - (c) Put the DISPLAYS switch on the instrument switching module in the ALL ON 2 position.
 - (d) Look at the CDS to see if the green TAI indication is on.
 - (e) If the TAI indication does not show in both DISPLAYS switch positions, then there is a problem with the TAI valve or wiring. Do these steps:
 - 1) Put the ENG ANTI-ICE switch in the OFF position.

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- 2) Remove pneumatic pressure from the TAI duct. To do this, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- 3) Do the Fault Isolation Procedure - TAI Valve or Wiring below.
- (f) If the TAI indication does not show in only one DISPLAYS switch position, then there is a problem with a DEU or wiring to the DEU. Do these steps:
 - 1) Put the ENG ANTI-ICE switch in the OFF position.
 - 2) Remove pneumatic pressure from the TAI duct. To do this, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - 3) Do the Fault Isolation Procedure - DEU or Wiring below.

F. Fault Isolation Procedure - TAI Valve or Wiring

- (1) Do these steps to get access to the engine cowl TAI valve:
 - (a) For the right fan cowl panel on the applicable engine, do this task:
Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00
Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Oil Tank Access Door, Engine 1
424AR	Oil Tank Access Door, Engine 2

- (2) Do these steps to put the applicable TAI valve in the OPEN position:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (b) Disconnect the connector, DP1303 from the TAI valve.
- (c) Loosen the retaining screw on the manual locking assembly.
- (d) Move the hex shaft to the OPEN position.
- (e) Slide the locking assembly up the shaft into the recess in the cover plate.
- (f) Tighten the retaining screw.
- (3) Do this check of the TAI valve:
 - (a) Do a continuity check between pins 6 and 5 on the engine cowl TAI valve, V4.
 - (b) If there is an open circuit, then do these steps:
 - 1) Replace the engine cowl TAI valve, V4.
These are the tasks:
Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801,
Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - a) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

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- (c) If there is continuity, then do this test of the wiring:
- 1) Do a check to make sure pin 5 of connector DP1303 for the TAI valve has continuity to ground.
 - 2) If there is not continuity to ground, then do these steps:
 - a) Repair the wiring.
 - b) Loosen the retaining screw on the manual locking assembly.
 - c) Slide the locking assembly down the shaft out of the recess in the cover plate.
 - d) Tighten the retaining screw.
 - e) Re-connect connector DP1303 to the engine cowl TAI valve.
 - f) Do the Repair Confirmation at the end of this task.
 - g) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - 3) If there is continuity to ground, then continue.
- (4) Do this check of the wiring to the DEU:
- (a) For the left TAI indication, do a wiring check between these pins of connector DP1303 for the left engine cowl TAI valve and terminal block TB3102:
- | DP1303 | TB3102 |
|--------|----------|
| pin 6 | term YB1 |
- (b) For the right TAI indication, do a wiring check between these pins of connector DP1303 for the right engine cowl TAI valve and terminal block TB3102:
- | DP1303 | TB3102 |
|--------|------------|
| pin 6 | term YB103 |
- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector DP1303 to the engine cowl TAI valve.
 - 3) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - DEU or Wiring

- (1) If the TAI indication did not show when the DISPLAYS switch was in the ALL ON 1 position, then do this check of the wiring to the DEU:
- (a) Remove DEU-1, M1808. To do this, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (b) Examine the connector for damage and unwanted material.
NOTE: Examine pin A11 closely.
 - (c) For the left TAI indication, do a wiring check between these pins of connector D3973A at the DEU and terminal block TB3102:
- | D3973A | TB3102 |
|---------|----------|
| pin A11 | term YB1 |
- (d) For the right TAI indication, do a wiring check between these pins of connector D3973D at the DEU and terminal block TB3102:

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D3973D

TB3102

pin A11 term YB103

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DEU-1. To do this, 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.
- (f) If you do not find a problem with the wiring, then do these steps:
 - 1) Install a new DEU-1. To do this, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (2) If the TAI indication did not show when the DISPLAYS switch was in the ALL ON 2 position, then do this check of the wiring to the DEU:
 - (a) Remove the DEU-2, M1809. To do this, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (b) Examine the connector for damage and unwanted material.
NOTE: Examine pin A11 closely.
 - (c) For the left TAI indication, do a wiring check between these pins of connector D3975A at the DEU and terminal block TB3102:

D3975A

TB3102

pin A11 term YB1

- (d) For the right TAI indication, do a wiring check between these pins of connector D3975D at the DEU and terminal block TB3102:

D3975D

TB3102

pin A11 term YB103

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install DEU-2. To do this, 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.
- (f) If you do not find a problem with the wiring, then do these steps:
 - 1) Install a new DEU-2. To do this, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do these steps to provide pneumatic pressure for the ducts:

NOTE: The TAI ducts must be pressurized for the anti-ice system to operate correctly. If pneumatic pressure is removed to perform a task, you must do the steps to provide pneumatic pressure when you are finished.

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- (a) To use the APU to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with the APU, AMM TASK 36-00-00-860-803.
- (b) To use an external air supply to pressurize the TAI duct, do this task: Supply Pressure to the Pneumatic System with an External Ground Air Source, AMM TASK 36-00-00-860-802.
- (c) Put the BLEED 1 and 2 switches on the air conditioning panel in the OFF position.
- (d) Put the L PACK and R PACK switches on the air conditioning panel in the OFF position.
- (e) Make sure the ISOLATION VALVE switch is in the OPEN or the AUTO position.
- (f) If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- (g) Do these steps on the applicable engine to manually open the PRSOV:



DO THESE SPECIFIED TASKS IN THE CORRECT SEQUENCE BEFORE YOU OPEN THE THRUST REVERSER: RETRACT THE LEADING EDGE, DO THE DEACTIVATION PROCEDURES FOR THE LEADING EDGE AND THE THRUST REVERSER (FOR GROUND MAINTENANCE), AND OPEN THE FAN COWL PANELS. IF YOU DO NOT OBEY THE ABOVE SEQUENCE, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 1) Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 2) Put the applicable engine BLEED switch, on the P5-10 panel, to the ON position.
- 3) Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 4) Make sure that the PRSOV stays in the open position.

NOTE: The PRSOV is spring-loaded to the closed position. If there is pressure supplied and the PRSOV does not stay open, there may be a leakage in the PRSOV or in the sense line(s).



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- 5) Close the thrust reverser. To close it, do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (3) Put the ENG ANTI-ICE switches in the ON position.
- (4) Do these steps to make sure the green TAI indication is generated by both DEU.

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- (a) Make sure both COWL VALVE OPEN indicator lights are on dim.
 - (b) Put the DISPLAYS switch on the instrument switching module in the BOTH ON 1 position.
 - (c) Put the DISPLAYS switch on the instrument switching module in the BOTH ON 2 position.
 - (d) If both green TAI indications are on the CDS in both DISPLAYS switch positions, then you corrected the fault.
- (5) Do these steps to return the airplane systems to their usual condition.
- (a) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- (b) Put the DISPLAYS switch on the instrument switching module in the NORMAL position.
- (c) Put the ENG ANTI-ICE switch in the OFF position.
- (d) If it is necessary, remove pneumatic pressure from the TAI duct. To do this, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- (e) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

— END OF TASK —

809. COWL ANTI-ICE Light is On at High Power (Takeoff or Climb) and goes out when Power is Reduced - Fault Isolation

A. Description

- (1) The COWL ANTI-ICE light is on at high power settings (takeoff or climb) and then goes out when the power is reduced.
- (2) The amber COWL ANTI-ICE light provides an indication that there is an over pressure condition downstream of the Engine Nose Cowl Thermal Anti-Ice valve. The duct overpressure switch indicates a duct overpressure.

B. Possible Causes

- (1) Inlet cowl thermal anti-ice (TAI) valve
 - (a) Failure Mode: valve reference regulator failure due to contamination or instability.

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- (2) Contaminated removable honest orifice.

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT
A	7	C01001	ANTI-ICE & RAIN ENG 1 COWL AI VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENG 2 COWL AI VALVE

D. Related Data

- (1) Component Location (30-21 TASK SUPPORT Figure 301, 30-21 TASK SUPPORT Figure 302)
(2) (SSM 30-21-11)
(3) (WDM 30-21-11)
(4) (WDM 30-21-21)

E. Initial Evaluation

- (1) Look at the COWL ANTI-ICE light.
(a) If the light is on, then do this Fault Isolation Procedure, do this task: COWL ANTI-ICE Light is On - Fault Isolation, 30-21 TASK 801.
(b) If the light is not on, then there was an intermittent fault or there was an overpressure condition in the engine cowl thermal anti-ice duct or a problem with the TAI valve.

NOTE: If N2 speed was exceeded, do this procedure to inspect the engine: (AMM TASK 71-00-00-800-804-F00).

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- (c) If the light comes on only while the engine is running, then there is an overpressure condition in the engine cowl thermal anti-ice duct possibly due to contamination in the honest orifice. Do this task: Honest Orifice - Cleaning, AMM TASK 30-21-11-100-801

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- (d) If the light comes on only while the engine is running, then there is an overpressure condition in the engine cowl thermal anti-ice duct. For an overpressure condition, do the Fault Isolation Procedure below:

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F. Fault Isolation Procedure

- (1) Replace the applicable cowl TAI valve, V4.

These are the tasks:

Engine Cowl TAI Valve - Removal, AMM TASK 30-21-11-000-801,

Engine Cowl TAI Valve - Installation, AMM TASK 30-21-11-400-801.

- (a) Do the post installation test in the valve installation procedure.
(b) If the test operates correctly, then you corrected the fault.
(c) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

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- (2) If replacing the applicable cowl TAI valve did not correct the fault, then do this task: COWL ANTI-ICE Light is On - Fault Isolation, 30-21 TASK 801

———— **END OF TASK** ————

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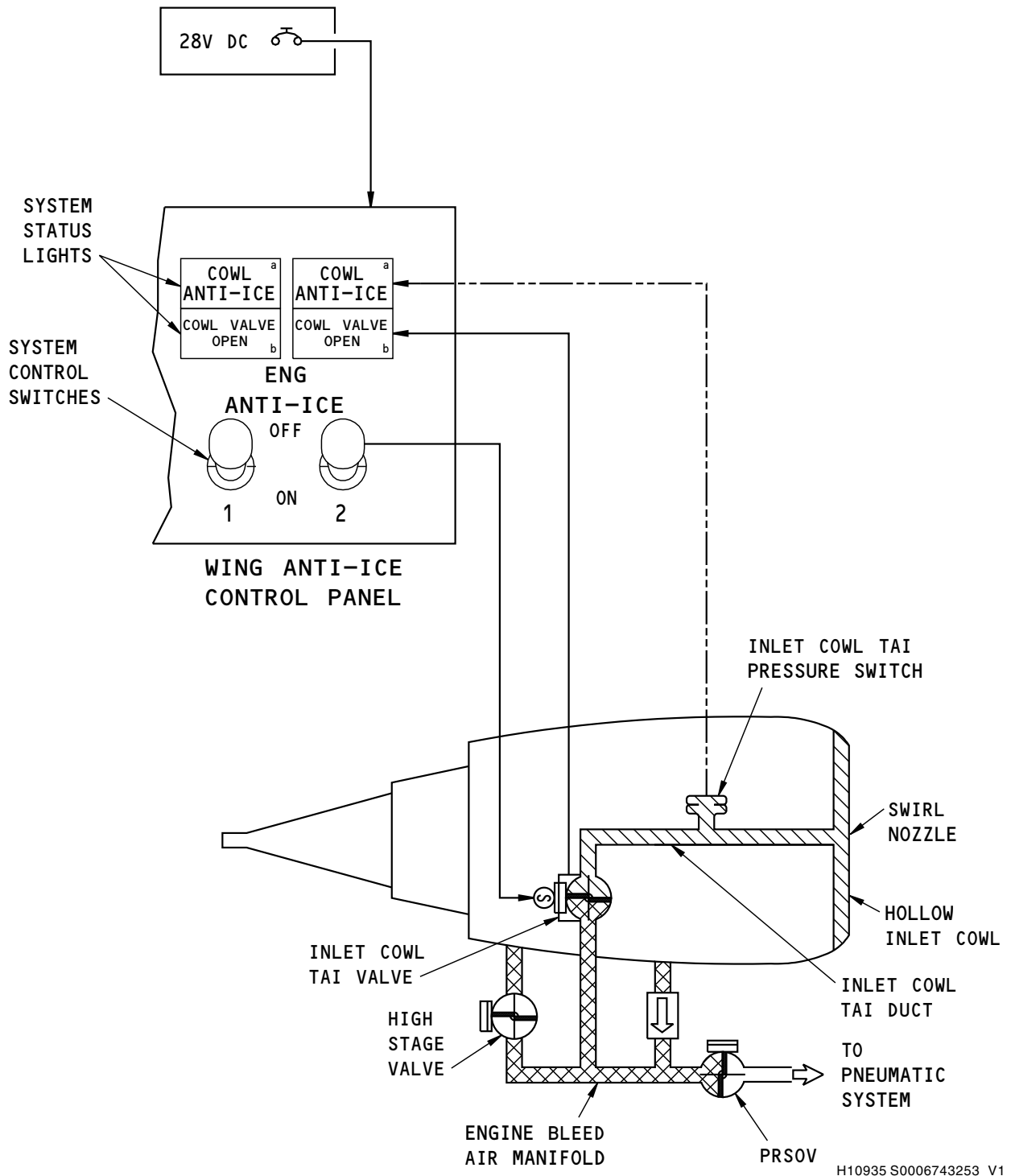
ECCN 9E991 BOEING PROPRIETARY - See title page for details

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Inlet Cowl TAI Schematic
Figure 301/30-21-00-990-801

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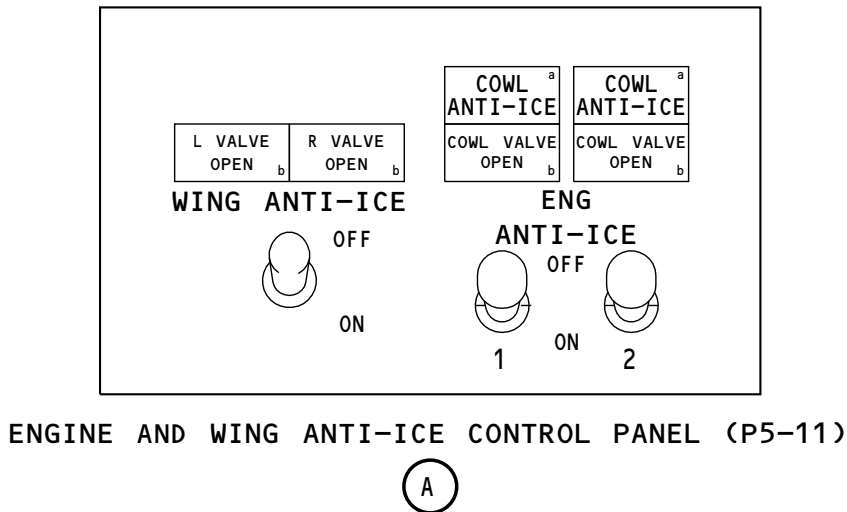
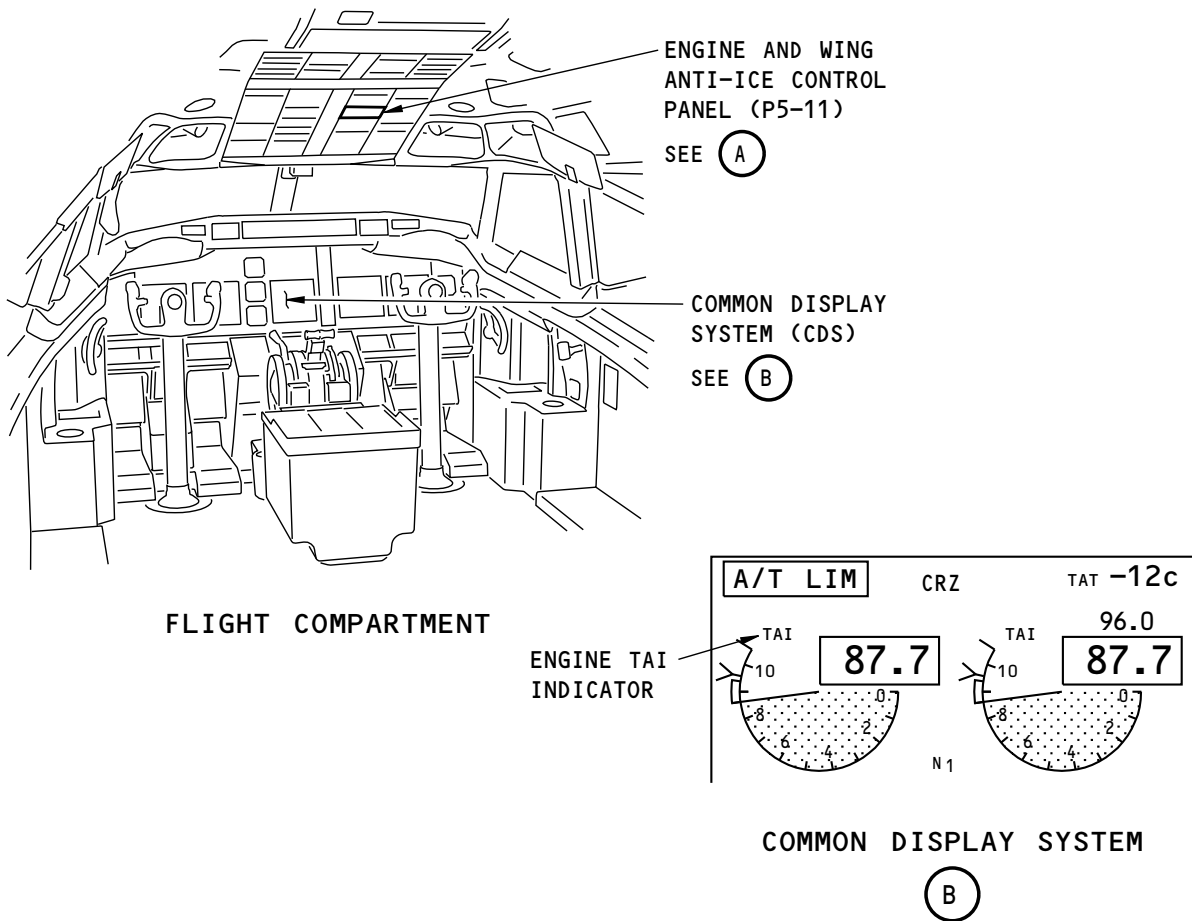
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Inlet Cowl TAI Components
Figure 302/30-21-00-990-802 (Sheet 1 of 2)

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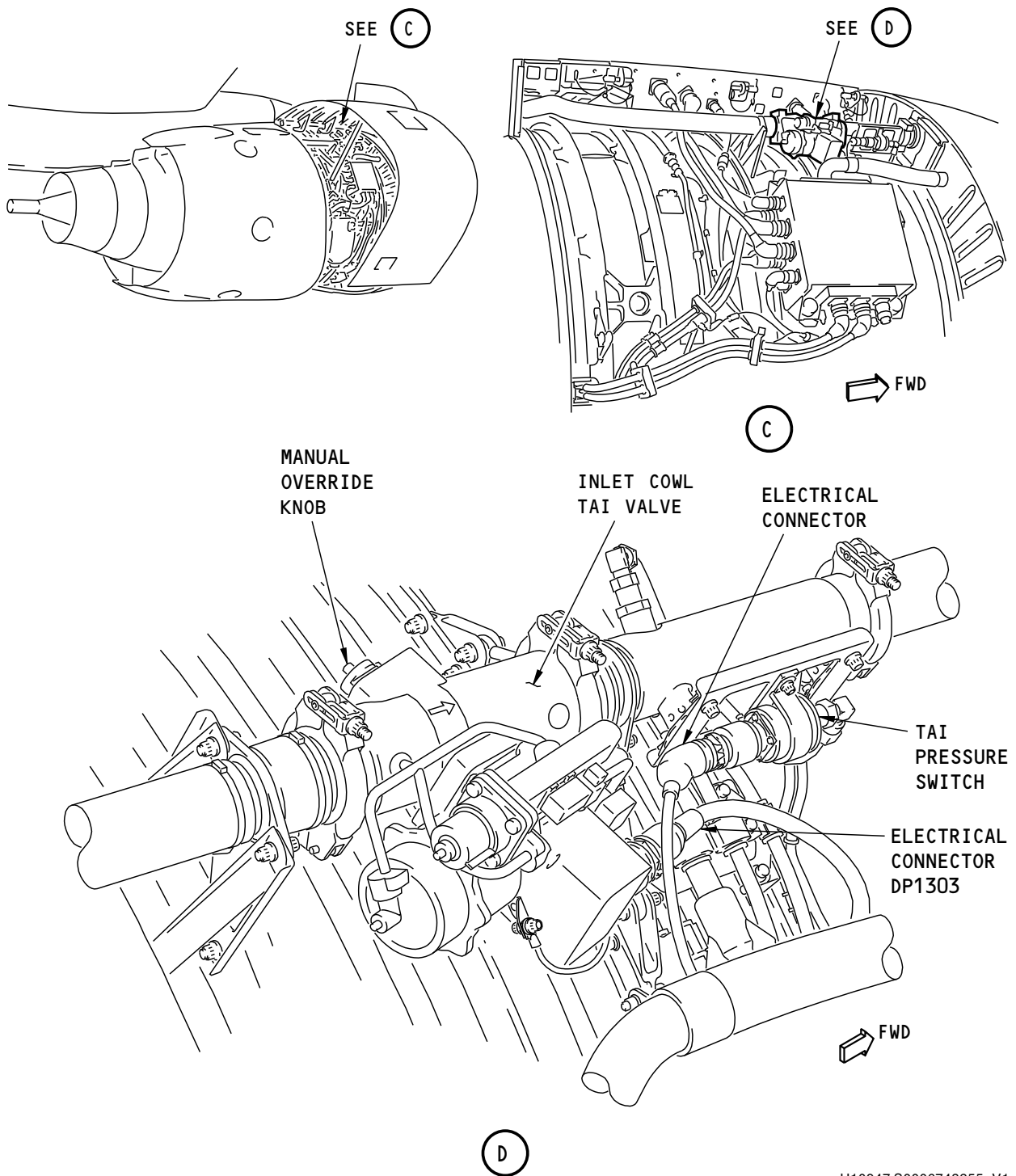
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Inlet Cowl TAI Components
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801. AUX PITOT or CAPT STATIC AUX PITOT Light is ON - Fault Isolation

A. Description

- (1) The AUX PITOT Light on the Window and Pitot Heat Module, P5-9 is ON.

B. Possible Causes

- (1) Lower Right Pitot Probe, A25
- (2) Window and Pitot Heat Panel, P5-9
- (3) Circuit Breaker
- (4) Wiring

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

D. Related Data

- (1) Component Location 30-31 TASK SUPPORT Figure 301
- (2) SSM 30-31-12
- (3) WDM 30-31-12
- (4) WDM 30-31-11

E. Initial Evaluation

- (1) Do these steps to make sure the fault is still active:
 - (a) Put the PROBE HEAT B Switch in the ON position.
 - (b) If the AUX PITOT Light does not come ON, then there was an intermittent problem.
 - (c) If the AUX PITOT Light comes ON, then do the Fault Isolation Procedure below.
 - (d) Put the PROBE HEAT B Switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do this check for 115 VAC power to the Window and Pitot Heat Panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT

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(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (b) Do these steps to open the P5 overhead panel assembly.
- 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.



THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.



THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Remove the connector D638 from the Window and Pitot Heat Panel.
- (d) Examine the connector and socket for damage and unwanted material.
- (e) Do a physical wiring check via visual and continuity tests between pins of connector D638 in the Flight Compartment and Circuit Breaker C524 in the P18-3 panel (WDM 30-31-12):

D638		D15514		C524
Pin 22		A1 and A2		C524

- 1) Repair any problems you find.
- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

- (g) Measure the voltage at pin 39 on the connector to the panel.
- (h) If you do not find 115 VAC at the pin, then do these steps:
- 1) Repair the wiring between pin 39 on connector D638 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

- 2) Re-connect the connector on the Window and Pitot Heat Panel.

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

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

(i) If you find 115 VAC at the pin, then continue.

- (2) Do a Resistance Check of the Lower Right Pitot Probe as follows:

NOTE: The Resistance values specified below are with the Probe at Normal Ambient Temperature of 68° F (20° C).

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00524	HEATERS AUX PITOT

**Window Pitot
and Heat PNL**

D638	Ground	Resistance
Pin 38	Ground	48 ± 8 Ohms

- (a) If the Resistance is not in the specified range, do these wiring checks:

- 1) Remove the Lower Right Pitot Probe. This is the task: Pitot Probe - Removal, AMM TASK 34-11-01-000-801

**Lower R Pitot
Probe**

D11298

Pin A Pin 38

**Window and
Pitot Heat PNL**

D638

Pin 38

**Lower R Pitot
Probe**

D11298

Pin B GD606-AC

Ground

- 1) If you find a problem with the wiring, repair it as necessary.

a) Install the Lower Right Pitot Probe. This is the task: Pitot Probe - Installation, AMM TASK 34-11-01-400-801

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

- 2) If the wiring is OK, continue.

- (c) Replace the Lower Right Pitot Probe. These are the tasks:

- Pitot Probe - Removal, AMM TASK 34-11-01-000-801
- Pitot Probe - Installation, AMM TASK 34-11-01-400-801

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

- (3) If the Resistance is in the specified range, continue.

- (4) Replace the Window and Pitot Heat Panel. These are the tasks:

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- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
- Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801

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

G. Repair Confirmation

- (1) If necessary, close the P5 Overhead Panel:
 - (a) Raise the P5 Overhead Panel Assembly.
 - (b) Make sure that the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 Panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT B Switch in the ON position.
 - (a) If the AUX PITOT Light does not come ON, then you corrected the problem.

————— **END OF TASK** —————

802. CAPT PITOT (CAPT P/S) Light is ON - Fault Isolation

A. Description

- (1) The CAPT PITOT Light on the Window/Pitot Heat Module, P5-9 is ON.

B. Possible Causes

- (1) Left Pitot Probe, A23
- (2) Window and Pitot Heat Panel, P5-9
- (3) Wiring
- (4) Circuit Breaker

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

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F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

- (1) Component Location: 30-31 TASK SUPPORT Figure 301
- (2) WDM 30-31-11
- (3) SSM 30-31-11

E. Initial Evaluation

- (1) Put the PROBE HEAT A Switch in the ON position.
 - (a) If the CAPT PITOT Light does not come ON, then there was an intermittent problem.
 - (b) If the CAPT PITOT Light comes ON, then do the Fault Isolation Procedure below.
- (2) Put the PROBE HEAT A Switch in the AUTO position.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (2) Do these steps to open the P5 Overhead Panel Assembly.
 - (a) Loosen the quarter-turn fasteners on the bottom corners of the P5 Panel.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- (b) Release the Panel Safety Latch.



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE THAT YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (3) Remove the connector D644 from the Window and Pitot Heat Panel.

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- (4) Examine the connector and socket for damage and unwanted objects.
- (5) Start the Engine 1 or Engine 2. This is the task Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.
- (6) Do this Voltage check at the Window and Pitot Heat Panel, P5-9:
 - (a) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

- (b) Do a check for 115V AC at:
 - Connector D644, pin 42
 - and at connector D644, pin 24 (Switch in AUTO).
- 1) If you do not find 115V AC, then do these steps:
 - a) Repair the wiring between pin 42 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

<1> Re-connect the connector on the Window and Pitot Heat Panel, P5-9.

<2> Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

<3> Do the Repair Confirmation at the end of this task.

- b) Also, repair the wiring between pin 24 of connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

<1> Re-connect the connector on the Window and Pitot Heat Panel, P5-9.

<2> Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

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<3> Do the Repair Confirmation at the end of this task.

- 2) If you find 115V AC, continue.
- 3) Stop Engine 1 or Engine 2 which is running. This is the task Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(7) Do a check of the Left Pitot Probe, A23 as follows:

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

- (b) Do a Resistance Check of the Left Pitot Probe, A23 as follows (WDM 30-31-11):

NOTE: The Resistance values specified below are with the Probe at Normal Ambient Temperature of 68° F (20° C).

WINDOW AND

PITOT HEAT

PNL

D644

	RESISTANCE
pin 41 GND	48 ± 8 Ohms

- 1) If the Resistance is not in the specified range, disconnect connector D11294 from the Left Pitot Probe, A23 and do the Resistance Check again at the probe as follows:

LEFT PITOT PROBE RECEPTACLE	LEFT PITOT PROBE RECEPTACLE	
pin A	pin B	48 ± 8 Ω

- a) If the Resistance is not in the specified range, replace the Left Pitot Probe, A23. These are the tasks:

- Pitot Probe - Removal, AMM TASK 34-11-01-000-801
- Pitot Probe - Installation, AMM TASK 34-11-01-400-801

<1> Do the Repair Confirmation at the end of this task.

- b) If the Resistance is in the specified range, then continue.

(8) Examine the wiring between the Window and Pitot Heat Panel, P5-9 and the Left Pitot Probe, A23 as follows (WDM 30-31-11):

WINDOW AND

PITOT HEAT

PNL

D644

pin 41	pin A
------------------	-------

LEFT PITOT

PROBE

D11294

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**LEFT PITOT
PROBE
D11294**

pin B AC GND

- (a) If you find a problem with the wiring, repair it as necessary.
 - 1) Connect the connector D11294 to the Left Pitot Heat Probe, A23.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If the wiring is OK, replace the Window and Pitot Heat Panel, P5-9. These are the tasks:
 - Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
 - 1) Connect the connector D11294 to the Left Pitot Heat Probe.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If necessary, close the P5 Overhead Panel:
 - (a) Raise the P5 Overhead Panel Assembly.
 - (b) Make sure that the safety latch is in the correct position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 Panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

————— **END OF TASK** —————

803. F/O PITOT or F/O P/S Light is On - Fault Isolation

A. Description

- (1) The F/O PITOT light on the Window/Pitot Heat Module (P5-9) is on.

B. Possible Causes

- (1) Upper Right Pitot Probe, A26
- (2) Window and Pitot Heat Panel, P5-9

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- (3) Circuit Breaker
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

D. Related Data

- (1) Component Location 30-31 TASK SUPPORT Figure 301
- (2) SSM 30-31-12
- (3) WDM 30-31-12

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

- (2) Put the PROBE HEAT B switch in the ON position.
 - (a) If the F/O PITOT light does not come on, then there was an intermittent problem.
 - (b) If the F/O PITOT light comes on, then do the Fault Isolation Procedure below.
- (3) Put the PROBE HEAT B switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do a check for 115 VAC power to the Window and Pitot Heat Panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

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(Continued)

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

- (b) Do these steps to open the P5 Overhead Panel Assembly.
- 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 Panel.



THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.



THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Remove the connector D638 from the Window and Pitot Heat Panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D638 in the flight compartment and Circuit Breaker C525 in the P18-3 panel (WDM 30-31-12):

D638	D155514	C525
Pin 23	B1 and B2	C525

- 1) Repair any problems you find.
- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

- (g) Measure the voltage at pin 42 on the connector to the panel.
- 1) If there is not 115 VAC at the pin, do these steps:
 - a) Repair the wiring between pin 42 on connector D638 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

- b) Re-connect the connector on the Window and Pitot Heat Panel.
- c) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

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

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- 2) If there is 115 VAC at the pin, then continue.
- (2) Do a Resistance Check of the Upper Right Pitot Probe as follows:
- NOTE:** The Resistance values specified below are with the Probe at Normal Ambient Temperature of 68° F (20° C).

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT

Window and

Pitot Heat PNL	D638	Ground	Resistance
Pin 41		Ground	48 ± 8 Ohms

- (a) If the Resistance is not in the specified range, do these wiring checks:
- 1) Remove the Upper Right Pitot Probe A-26. This is the task: Pitot Probe - Removal, AMM TASK 34-11-01-000-801

Upper Right Pitot Probe D11300	Window and Pitot Heat PNL D638
Pin A	Pin 41

Upper Right Pitot Probe D11300	Ground
Pin B	GD606-AC

- 1) If you find a problem with the wiring, repair it as necessary.
- a) Install the Upper Right Pitot Probe. This is the task: Pitot Probe - Installation, AMM TASK 34-11-01-400-801
- b) Do the Repair Confirmation at the end of this task.
- 2) If the wiring is OK, continue.
- (c) Replace the Upper Right Pitot Probe. These are the tasks:
- Pitot Probe - Removal, AMM TASK 34-11-01-000-801
 - Pitot Probe - Installation, AMM TASK 34-11-01-400-801
- 1) Do the Repair Confirmation at the end of this task.
- (3) If the Resistance is in the specified range, continue.
- (4) Replace the Window and Pitot Heat Panel. These are the tasks:
- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (5) Do the Repair Confirmation at the end of this task.

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G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT B switch in the ON position.
 - (a) If the F/O PITOT light does not come on, then you corrected the problem.

———— **END OF TASK** ————

804. L ALPHA VANE Light is On - Fault Isolation

A. Description

- (1) The L ALPHA VANE light on the window/pitot heat module (P5-9) is on.

B. Possible Causes

- (1) Left alpha vane heater, T433
- (2) Window and pitot heat panel, P5-9
- (3) Circuit breaker
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

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D. Related Data

- (1) Component Location (30-31 TASK SUPPORT Figure 301)
- (2) (SSM 30-31-11)
- (3) (WDM 30-31-11)

E. Initial Evaluation

- (1) Put the PROBE HEAT A switch in the ON position.
 - (a) If the L ALPHA VANE light does not come on, then there was an intermittent fault.
 - (b) If the L ALPHA VANE light comes on, then do the Fault Isolation Procedure below.
- (2) Put the PROBE HEAT A switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do a check for 115 VAC power to the window and pitot heat panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE THAT YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
 - 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove the connector D644 from the window and pitot heat panel.
- (d) Examine the connector and socket for damage and unwanted objects.

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- (e) Do a wiring check between the pins of connector D644 in the flight compartment and Circuit Breaker C1072 in the P18-3 panel (WDM 30-31-11):

D644	D15512	C1072
Pin 25	C1 and C2	C1072

- 1) Repair any problems you find.
- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

- (g) Measure the voltage at pin 46 on the connector to the panel.
- (h) If there is not 115 VAC at the pin, then do these steps:
- 1) Repair the wiring between pin 46 of connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT

- 2) Re-connect the connector on the window and pitot heat panel.
- 3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

- 4) Do the Repair Confirmation at the end of this task.
- (i) If there is 115 VAC at the pin, then continue.
- (2) Do this test of the window and pitot heat panel:
- (a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

- (b) Measure the resistance between pin 44 on the connector D644 and structure ground:
- (c) If the resistance is less than 200 ohms, then do these steps:
- 1) Replace the window and pitot heat panel.

These are the tasks:

Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801,
Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT

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- 3) Do the Repair Confirmation at the end of this task.
- (d) If the resistance is greater than 200 ohms, then continue.
- (3) Replace the left alpha vane:
 - (a) 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.
 - (b) Do the Repair Confirmation at the end of this task.
 - (c) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this check of the wiring:
 - (a) Remove the connector D644 from the window and pitot heat panel.
 - (b) Remove the left alpha vane. To remove the vane, do this task: Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801.
 - (c) Do a wiring check between these pins of connector D365 at the alpha vane and connector D644 in the flight compartment:

D365	D644
pin 8	pin 44
pin 9	pin 45

- (d) Make sure pin B of connector D365 goes to ground.
- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect the connector on the window and pitot heat panel.
 - 3) Re-install the alpha vane. To install the vane, do this task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.
 - 4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

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

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.

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- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT A switch in the ON position.
(a) If the L ALPHA VANE light does not come on, then you corrected the fault.

———— **END OF TASK** ————

805. L ELEV PITOT Light is On - Fault Isolation

A. Description

- (1) The L ELEV PITOT light on the window/pitot heat module (P5-9) is on.

B. Possible Causes

- (1) Left Elevator Pitot Probe, A24
(2) Window and Pitot Heat Panel, P5-9
(3) Circuit Breaker
(4) Wiring Problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

- (1) Component Location 30-31 TASK SUPPORT Figure 301
(2) SSM 30-31-11
(3) WDM 30-31-11

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E. Initial Evaluation

- (1) Put the PROBE HEAT A switch in the ON position.
 - (a) If the L ELEV PITOT light does not come on, then there was an intermittent problem.
 - (b) If the L ELEV PITOT light comes on, then do the Fault Isolation procedure below.
- (2) Put the PROBE HEAT A switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do a check for 115 VAC to the Window and Pitot Heat Panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
 - 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove the connector D644 from the Window and Pitot Heat Panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D644 in the flight compartment and Circuit Breaker C236 in the P18-3 panel (WDM 30-31-11):

D644	D15512	C236
Pin 36	D1 and D2	C236

- 1) Repair any problems you find.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

- (g) Measure the voltage at pin 43 on the connector to the panel.

- (h) If there is not 115 VAC at the pin, then do these steps:

- 1) Repair the wiring between pin 43 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

- 2) Re-connect the connector on the Window and Pitot Heat Panel.

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

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

- (i) If there is 115 VAC at the pin, then continue.

- (2) Do a Resistance Check of the Left Elevator Pitot Probe A-24 as follows:

NOTE: The Resistance values specified below are with the Probe at Normal Ambient Temperature of 68° F (20° C).

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	4	C00236	HEATERS ELEV PITOT LEFT

**Window Pitot
and Heat PNL**

D644	Ground	Resistance
Pin 40	Ground	48 ± 8 Ohms

- (a) If the Resistance is not in the specified range, do these wiring checks:

- 1) Remove the Left Elevator Pitot Probe A-24. This is the task: Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801

**Left Elevator
Pitot Probe**

D11296

Pin A

**Window and
Pitot Heat PNL**

D644

Pin 40

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Left Elevator Pitot Probe

D11296

Ground

Pin B GD1788-AC

- 1) If you find a problem with the wiring, repair it as necessary.
 - a) Install the Left Elevator Pitot Probe A-24. This is the task: Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - b) Do the Repair Confirmation at the end of this task.
- 2) If the wiring is OK, continue.
- (c) Replace the Left Elevator Pitot Probe A-24. These are the tasks:
 - Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (3) If the Resistance is in the specified range, continue.
- (4) Replace the Window and Pitot Heat Panel. These are the tasks:
 - Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT A switch in the ON position.

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- (a) If the L ELEV PITOT light does not come on, then you corrected the problem.

————— **END OF TASK** —————

806. Pitot Probe Does Not Get Hot - Fault Isolation

A. Description

- (1) A pitot probe does not get hot when the PROBE HEAT switches are put in the ON position.

B. Possible Causes

- (1) Pitot probe, A23, A24, A25, A26, A27
- (2) Window and pitot heat panel, P5-9
- (3) Circuit breaker
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

- (1) Component Location (30-31 TASK SUPPORT Figure 301)
- (2) (SSM 30-31-11)
- (3) (SSM 30-31-12)
- (4) (WDM 30-31-11)
- (5) (WDM 30-31-12)

E. Initial Evaluation

- (1) Make sure the PROBE HEAT A and B switches are not in the ON position.
 - (a) If any air data sensor heat light does not come on, do this task: Probe Heater Indicator Lights Do Not Come On When Air Data Sensor Switches Are OFF - Fault Isolation, 30-31 TASK 807
 - (b) If all the air data sensor heat lights come on, then continue.
- (2) Put the PROBE HEAT A and B switches in the ON position.

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- (a) If the AUX PITOT light comes on, do this task: AUX PITOT or CAPT STATIC AUX PITOT Light is ON - Fault Isolation, 30-31 TASK 801
 - (b) If the CAPT PITOT light comes on, do this task: CAPT PITOT (CAPT P/S) Light is ON - Fault Isolation, 30-31 TASK 802
 - (c) If the F/O PITOT light comes on, do this task: F/O PITOT or F/O P/S Light is On - Fault Isolation, 30-31 TASK 803
 - (d) If the L ALPHA VANE light comes on, do this task: L ALPHA VANE Light is On - Fault Isolation, 30-31 TASK 804
 - (e) If the L ELEV PITOT light comes on, do this task: L ELEV PITOT Light is On - Fault Isolation, 30-31 TASK 805
 - (f) If the R ALPHA VANE light comes on, do this task: R ALPHA VANE Light is On - Fault Isolation, 30-31 TASK 808
 - (g) If the R ELEV PITOT light comes on, do this task: R ELEV PITOT Light is On - Fault Isolation, 30-31 TASK 809
 - (h) If the TEMP PROBE light comes on, do this task: TEMP PROBE Light is On - Fault Isolation, 30-31 TASK 810
 - (i) If no air data sensor heat light comes on, then continue.
- (3) Make sure the applicable air data sensor gets hot:
- (a) Put the PROBE HEAT A and B switches in the ON position.



WARNING

THE AIR DATA SENSORS CAN GET VERY HOT. DO NOT TOUCH THE SENSORS. YOU MAY GET BURNED IF YOU TOUCH THE SENSOR.

- (b) Make sure the air data sensor heater gets hot.
NOTE: You can spray the air data sensor with water to check for heat.
 - (c) If any air data sensor does not get hot, then do the Fault Isolation Procedure below.
 - (d) If all the air data sensor gets hot, then there was an intermittent fault.
- (4) Put the PROBE HEAT A and B switches in the AUTO position.

F. Fault Isolation Procedure

- (1) Replace the window and pitot heat module.

These are the tasks:

Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801,

Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

- (a) Put the PROBE HEAT A and B switches in the ON position.



WARNING

THE AIR DATA SENSORS CAN GET VERY HOT. DO NOT TOUCH THE SENSORS. YOU MAY GET BURNED IF YOU TOUCH THE SENSOR.

- (b) Make sure the applicable air data sensor heater gets hot.
NOTE: You can spray the air data sensor with water to check for heat.

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- (c) If the air data sensor gets hot, then you corrected the fault.

END OF TASK

807. Probe Heater Indicator Lights Do Not Come On When Air Data Sensor Switches Are OFF - Fault Isolation

A. Description

- (1) A probe heater indicator light on the window/pitot heat module (P5-9) does not come on when the switches are off.

B. Possible Causes

- (1) Window and pitot heat panel, P5-9
(2) Circuit breaker
(3) Wiring problem

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

- (1) Component Location (30-31 TASK SUPPORT Figure 301)
(2) (SSM 30-31-11)
(3) (SSM 30-31-12)
(4) (WDM 30-31-11)
(5) (WDM 30-31-12)

E. Initial Evaluation

- (1) Make sure the PROBE HEAT A and B switches are not in the ON position.
(a) If an air data sensor light is not on, then do the Fault Isolation Procedure below.
(b) If all the lights are on, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) If only one light did not come on, then do these steps:
(a) Push the light that is not on.
(b) If the light comes on, then replace the window and pitot heat panel, P5-9.
These are the tasks:
Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801,
Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
(c) If the light does not come on, then replace the bulb.
(d) Do the Repair Confirmation at the end of this task.
(2) If more than one light did not come on, then do this check of the window and pitot heat panel:

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- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
- 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) If the left side lights are not on, then remove the connector D644 from the window and pitot heat panel.
- (d) If the right side lights are not on, then remove the connector D638 from the window and pitot heat panel.
- (e) Examine the connector and socket for damage and unwanted objects.
- (f) 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>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (g) Measure the voltage at pin 33 on the connector to the panel.
- (h) If there is not 28 VDC at the pin, then do these steps:

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- 1) Repair the wiring between pin 33 on connector D638 or D644 and the applicable circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- 2) Re-connect the connector on the window and pitot heat panel.
- 3) Do the Repair Confirmation at the end of this task.
 - (i) If there is 28 VDC at the pin, then continue.
- (3) Replace the window and pitot heat panel.

These are the tasks:

Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801,
Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

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

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT A and B switches in the AUTO position.
- (4) If all the air data sensor heat fault lights come on, then you corrected the fault.

———— **END OF TASK** ————

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808. R ALPHA VANE Light is On - Fault Isolation

A. Description

- (1) The R ALPHA VANE light on the window/pitot heat module (P5-9) is on.

B. Possible Causes

- (1) Right alpha vane, T437
- (2) Window and pitot heat panel, P5-9
- (3) Circuit breaker
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

D. Related Data

- (1) Component Location (30-31 TASK SUPPORT Figure 301)
- (2) (SSM 30-31-12)
- (3) (WDM 30-31-12)

E. Initial Evaluation

- (1) Put the PROBE HEAT B switch in the ON position.
 - (a) If the R ALPHA VANE light does not come on, then there was an intermittent fault.
 - (b) If the R ALPHA VANE light comes on, then do the Fault Isolation Procedure below.
- (2) Put the PROBE HEAT B switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do a check for 115 VAC to the window and pitot heat panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

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F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly.
- 1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove the connector D638 from the window and pitot heat panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D638 in the flight compartment and Circuit Breaker C1071 in the P18-3 panel (WDM 30-31-12):

D638	D155514	C1071
Pin 24	C1 and C2	C1071

- 1) Repair any problems you find.
- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

- (g) Measure the voltage at pin 46 on the connector to the panel.
- 1) If there is not 115 VAC at the pin, then do these steps:
 - a) Repair the wiring between pin 46 on connector D638 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

- b) Re-connect the connector on the window and pitot heat panel.
- c) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

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

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- 2) If there is 115 VAC at the pin, then continue.
- (2) Do this test of the window and pitot heat panel:
- (a) Open this circuit breaker and install safety tag:
- CAPT Electrical System Panel, P18-3**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|--------------------------|
| D | 3 | C01071 | HEATERS ALPHA VANE RIGHT |
- (b) Measure the resistance between pin 44 on the connector D638 and structure ground:
- (c) If the resistance is less than 200 ohms, then do these steps:

- 1) Replace the window and pitot heat panel.

These are the tasks:

Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801,

Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

- 3) Do the Repair Confirmation at the end of this task.
- (d) If the resistance is greater than 200 ohms, then continue.
- (3) Replace the right alpha vane:
- (a) 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.
- (b) Do the Repair Confirmation at the end of this task.
- (c) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this check of the wiring:
- (a) Remove the connector D638 from the window and pitot heat panel.
- (b) Remove the right alpha vane. To remove the vane, do this task: Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801.
- (c) Do a wiring check between these pins of connector D287 at the alpha vane and connector D638 in the flight compartment:

D287		D638
pin 8		pin 44
pin 9		pin 45

- (d) Make sure pin 10 of connector D287 goes to ground.
- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-connect the connector on the window and pitot heat panel.
- 3) Re-install the alpha vane. To install the vane, do this task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.

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- 4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

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

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
- (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT B switch in the ON position.
- (a) If the R ALPHA VANE light does not come on, then you corrected the fault.

————— **END OF TASK** —————

809. R ELEV PITOT Light is On - Fault Isolation

A. Description

- (1) The R ELEV PITOT light on the window/pitot heat module (P5-9) is on.

B. Possible Causes

- (1) Right Elevator Pitot Probe, A27
- (2) Window and Pitot Heat Panel, P5-9
- (3) Circuit Breaker
- (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, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

- (1) Component Location 30-31 TASK SUPPORT Figure 301
(2) SSM 30-31-12
(3) WDM 30-31-12

E. Initial Evaluation

- (1) Put the PROBE HEAT B switch in the ON position.
(a) If the R ELEV PITOT light does not come on, then there was an intermittent problem.
(b) If the R ELEV PITOT light comes on, then do the Fault Isolation Procedure below.
(2) Put the PROBE HEAT B switch in the AUTO position.

F. Fault Isolation Procedure

- (1) Do a check for 115 VAC to the Window and Pitot Heat Panel:
(a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the P5 overhead panel assembly:
1) Loosen the quarter-turn fasteners on the bottom corners of the P5 panel.

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THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
- (c) Remove the connector D638 from the Window and Pitot Heat Panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D638 in the flight compartment and Circuit Breaker C237 in the P18-3 panel (WDM 30-31-12):

D638		D15514		C237
Pin 25		D1 and D2		C237

- 1) Repair any problems you find.
- (f) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

- (g) Measure the voltage at pin 43 on the connector to the panel.
- (h) If there is not 115 VAC at the pin, then do these steps:
 - 1) Repair the wiring between pin 43 on connector D638 and this circuit breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

- 2) Replace the connector on the Window and Pitot Heat Panel.
- 3) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O

- 4) Do the Repair Confirmation at the end of this task.
- (i) If there is 115 VAC at the pin, then continue.
- (2) Do a Resistance Check of the Right Elevator Pitot Probe A-27 as follows:

NOTE: The Resistance values specified below are with the Probe at Normal Ambient Temperature of 68° F (20° C).

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00237	HEATERS ELEV PITOT RIGHT

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**Window Pitot
and Heat PNL**

D638

Ground

Resistance

Pin 40 Ground

48 ± 8 Ohms

- (a) If the Resistance is not in the specified range, do these wiring checks:
- 1) Remove the Right Elevator Pitot Probe A-27. This is the task: Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801

**Right Elevator
Pitot Probe**

D11302

Pin A Pin 40

**Window and
Pitot Heat PNL**

D638

**Right Elevator
Pitot Probe**

D11302

Ground

Pin B GD1788-AC

- 1) If you find a problem with the wiring, repair it as necessary.
 - a) Install the Right Elevator Pitot Probe A-27. This is the task: Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the wiring is OK, continue.
- (c) Replace the Right Elevator Pitot Probe A-27. These are the tasks:
- Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
- 1) Do the Repair Confirmation at the end of this task.
- (3) If the Resistance is in the specified range, continue.
- (4) Replace the Window and Pitot Heat Panel. These are the tasks:
- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.
 - (b) Make sure the safety latch is in the proper position.
 - (c) Tighten the quarter-turn fasteners on the bottom corners of the P5 panel.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE

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CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT B switch in the ON position.
(a) If the R ELEV PITOT light does not come on, then you corrected the problem.

————— **END OF TASK** —————

810. TEMP PROBE Light is On - Fault Isolation

A. Description

- (1) The TEMP PROBE Light on the Window/Pitot Heat Module, P5-9, is ON.

B. Possible Causes

- (1) Window/Pitot Heat Panel, P5-9
(2) Total Air Temperature (TAT) Probe, M171
(3) Wiring

C. Circuit Breakers

- (1) These are the primary Circuit Breakers related to the fault:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT

SIA 702-714

D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC

SIA ALL

D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

SIA 702-714

E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
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SIA 702-714 (Continued)

(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01650	WINDOW HEAT POWER L3

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01649	WINDOW HEAT POWER R3

D. Related Data

- (1) Component Location (30-31 TASK SUPPORT Figure 301)
- (2) WDM 30-31-11
- (3) SSM 30-31-11

E. Initial Evaluation

- (1) Put the PROBE HEAT A Switch in the ON position.
 - (a) If the TEMP PROBE Light does not turn ON, then there was an intermittent fault.
 - (b) If the TEMP PROBE Light turns ON, continue with the Initial Evaluation, then do the Fault Isolation Procedure below.
- (2) Put the PROBE HEAT B Switch in the AUTO position.
- (3) Make sure that the TEMP PROBE Light is OFF.
 - (a) If the TEMP PROBE Light is not OFF, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do a check for 115V AC to the Window/Pitot Heat Panel, P5-9:
 - (a) Open these Circuit Breakers and install Safety Tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT

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CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (b) Do these steps to open the Overhead Panel Assembly, P5.
- 1) Loosen the Quarter-Turn Fasteners on the bottom corners of the Overhead Panel Assembly, P5.



CAUTION

THE P5 PANEL IS HEAVY AND WILL MOVE FREELY WHEN YOU RELEASE THE LATCH. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel Safety Latch.
- (c) Remove the Connector, D644, from the Window/Pitot Heat Panel, P5-9.
- (d) Examine the Connector, D644, and Socket for damage and unwanted objects.
- 1) If damage is found, repair the Connector, D644, and Socket.
 - 2) If unwanted objects are found, clean the Connector, D644, and Socket.
- (e) In the Flight Compartment, do a wiring check at Connector, D644, and on the CAPT Electrical System Panel, P18-3, at Circuit Breaker HEATERS TEMP PROBE, C238, between these pins (WDM 30-31-11):

D644	D15512
pin 23	pin A1

D15512	P18-3
pin A2	C238

- 1) Repair any problems you find.
- (f) Remove the Safety Tag and close this Circuit Breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00238	HEATERS TEMP PROBE

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- (g) At the CAPT Electrical System Panel, P18-3, on Connector, D644, do a check for 115V AC at pin 39 (WDM 30-31-11).
- (h) If there is not 115V AC at pin 39, then do these steps:
- 1) Open this Circuit Breaker and install Safety Tag:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00238	HEATERS TEMP PROBE

- 2) Repair the wiring between Connector, D644, pin 39 and the HEATERS TEMP PROBE, C238.
- 3) Re-connect the Connector, D644, on the Window/Pitot Heat Panel, P5-9.
- 4) Remove the Safety Tag and close this Circuit Breaker:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00238	HEATERS TEMP PROBE

- 5) Do the Repair Confirmation at the end of this task.
 - (i) If there is 115V AC at pin 39, then continue.
- (2) Do the following check at the Window/Pitot Heat Panel, P5-9 (WDM 30-31-11):
- (a) Open this Circuit Breaker and install Safety Tag:
- CAPT Electrical System Panel, P18-3**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|--------------------|
| C | 2 | C00238 | HEATERS TEMP PROBE |
- (b) Measure the resistance between Connector, D644, pin 38 and Structure Ground.
 - (c) If the resistance is less than 200 Ω , then do these steps:
 - 1) Replace the Window/Pitot Heat Panel, P5-9. These are the tasks:
 - Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the resistance is greater than 200 Ω , then continue.
- (3) 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.
- (4) Do this check of the wiring (WDM 30-31-11):
- (a) Remove the Connector, D644, from the Window/Pitot Heat Panel, P5-9.
 - (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 between the TAT Probe Connector, D277, and Connector, D644:



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D277	D644
pin 1	pin 38
pin 6	GND

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the Connector, D644, on the Window/Pitot Heat Panel, P5-9.
 - 3) Re-install the TAT Probe, M171. This is the task: Total Air Temperature Probe - Installation, AMM TASK 34-21-06-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) If it is necessary, close the Overhead Panel Assembly, P5:
- (a) Raise the Overhead Panel Assembly, P5.
 - (b) Make sure the Safety Latch is in the proper position.
 - (c) Tighten the Quarter-Turn Fasteners on the bottom corners of the Overhead Panel Assembly, P5.
- (2) Make sure that these Circuit Breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	16	C00570	PROBE INDICATION F/O
F	18	C00569	PROBE INDICATION CAPT

- (3) Put the PROBE HEAT A Switch in the ON position.
- (a) If the TEMP PROBE Light does not turn ON, then you have corrected the problem.
 - (b) If the TEMP PROBE Light turns ON, continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
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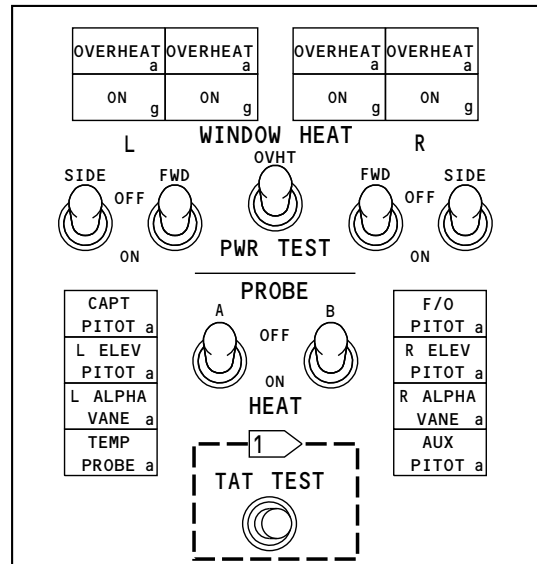
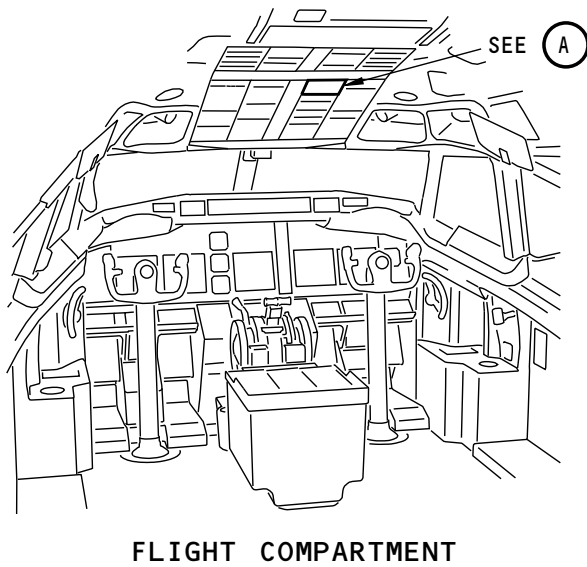
30-31 TASK 810

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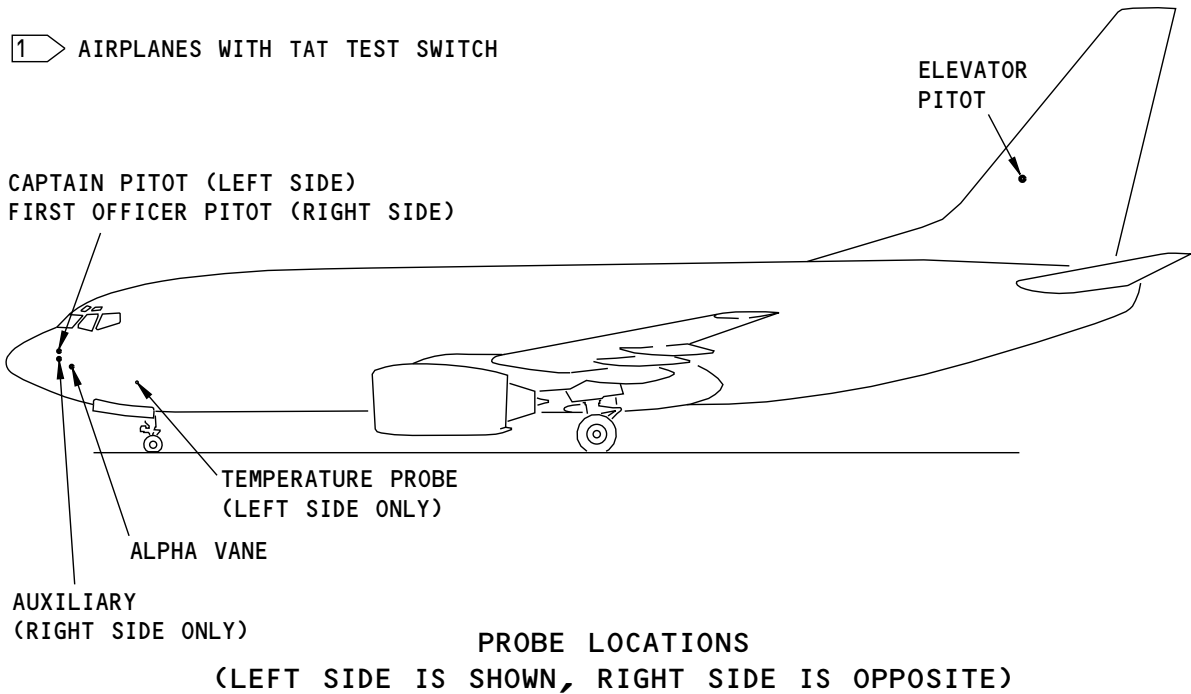
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WINDOW/PITOT HEAT MODULE
(P5-9)

(A)

1 AIRPLANES WITH TAT TEST SWITCH



G56883 S0006743283_V1

Air Data Sensor Heaters Component Location
Figure 301/30-31-00-990-801 (Sheet 1 of 2)

EFFECTIVITY
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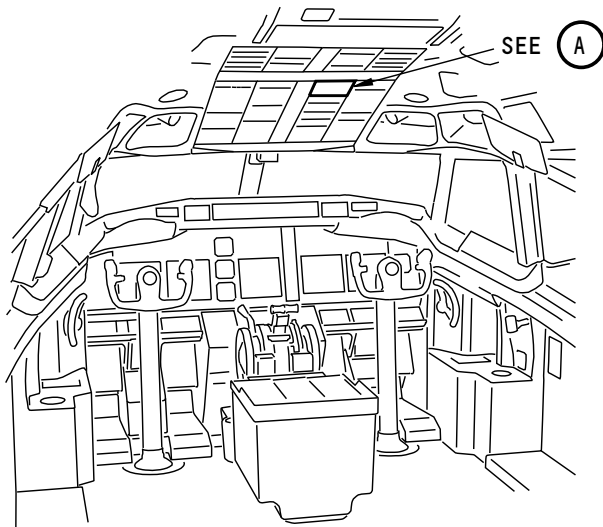
30-31 TASK SUPPORT

D633A103-SIA

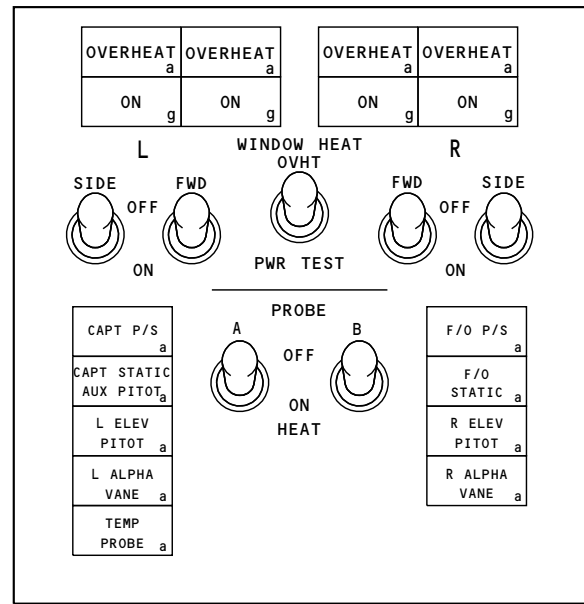
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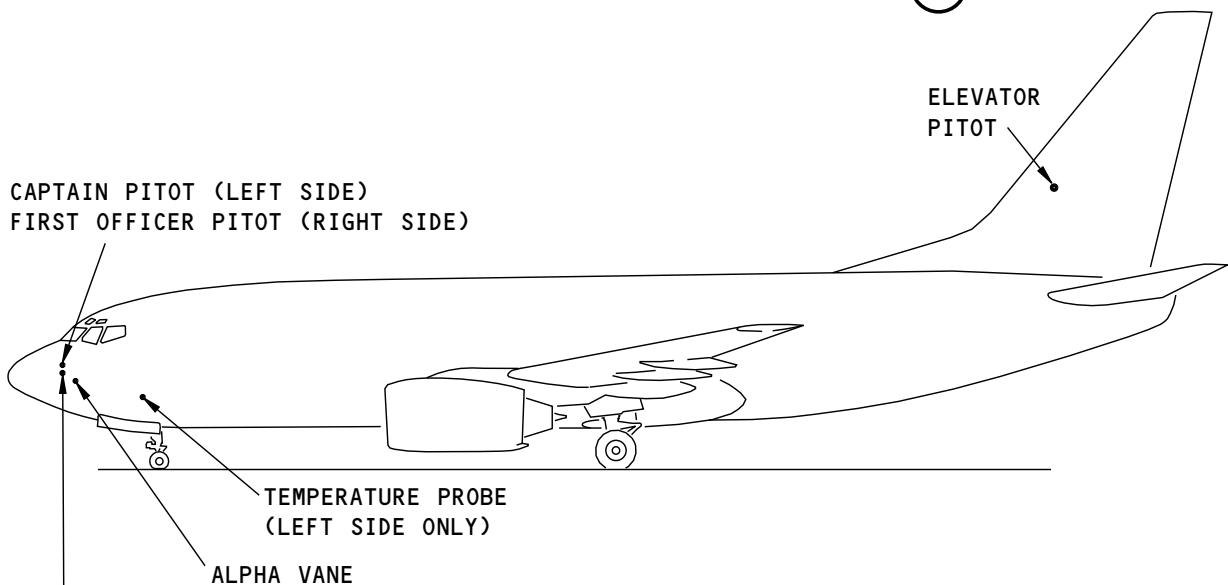
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FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE
(P5-9)



PROBE LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

L49486 S0006743286_V1

Air Data Sensor Heaters Component Location
Figure 301/30-31-00-990-801 (Sheet 2 of 2)

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FAULT ISOLATION MANUAL

801. Window Heat Control Unit (WHCU) BITE Procedure

A. General

- (1) This task isolates the faults for the Window Heat Control Unit (WHCU).
- (2) The BITE Module for the window heat control is at the front of the WHCU.
- (3) The WHCUs are on the E2-1 and E4-2 Shelves in the Electronic Equipment (EE) Bay.

B. Prepare for the BITE Test

- (1) Get access to the WHCUs.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (a) If one or more circuit breakers are open, examine the lugs.
 - 1) If the terminals are oxidized and corroded, replace the terminals per SWPM 20-30-11.
NOTE: Oxidation and corrosion is indicated by brown discoloration to the insulation on the terminal crimp barrel.
 - 2) Close the circuit breakers.
 - a) If a circuit breaker opens again, then do these steps:
 - <1> Replace the circuit breaker.
NOTE: Repeat nuisance tripping due to oxidized and corroded terminals can degrade the circuit breaker.
 - <2> Do a wiring check between the circuit breaker and the WHCU. This is the task: Window Heat Control Unit (WHCU) Power Problem - Fault Isolation, 30-41 TASK 806.
 - b) If the circuit breakers stay closed, then continue.
 - 3) Make sure that the WINDOW HEAT Switch is in the ON position.
 - 4) Set the applicable WINDOW HEAT Switch, on the Panel P5-9, to OFF and then ON to unlatch the fault.

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FAULT ISOLATION MANUAL**

C. BITE Procedure

- (1) Make sure that the WINDOW HEAT Switch is in the ON position.
- (2) At the WHCUs, find the Fault Light Emitting Diode (LED)s that are on.
 - (a) If the Fault LED(s) are on, then refer to the table at the end of this procedure to find the applicable Fault Isolation Manual (FIM) Task.
 - (b) If the Fault LED(s) are not on, then continue.
- (3) Push the BIT VERIFY Switch on the applicable WHCU.
 - (a) If the green BIT TEST OK Light is ON, then there is no active faults in the WHCU.

NOTE: The light will be on for approximately 15 seconds.

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- (b) If no LEDs on the front of the WHCU comes ON, then there may be a power problem.
 - 1) Do a check of the WHCU power. This is the task: Window Heat Control Unit (WHCU) Power Problem - Fault Isolation, 30-41 TASK 806.

SIA ALL

- (c) If Fault LED(s) are ON, then find the applicable FIM Task in the table at the end of this task.

NOTE: If there are multiple Fault LEDs ON, then do the FIM Task for the most probable fault symptom.

 - 1) If all Fault LEDs are ON, then do these steps:

NOTE: All BITE LEDs can come ON as a result of a man-made condition by holding the Window Heat PWR TEST Switch to the OVERHEAT position until the OVERHEAT Lights come on.

 - a) Reset the applicable WHCU. These are the tasks:
 - Control Cabin Window Heat - Deactivation, AMM TASK 30-41-00-040-801
 - Control Cabin Window Heat - Activation, AMM TASK 30-41-00-440-801
 - b) Do the WHCU BITE Procedure again.
- (4) Do these steps to get a list of previous window heat system faults:
 - (a) Push the FAULT HISTORY Switch on the applicable WHCU.

NOTE: The WHCU has a 10-register FAULT HISTORY memory storage capability, and it shows one fault at a time. Cycling through the faults show the faults from the most recent to the oldest fault registered in the WHCU.
- (5) If it is necessary, do this step to erase the faults.
 - (a) Push the two front panel BITE switches identified as LAMP TEST and BITE LAMP RESET at the same time. Hold for 4 seconds until the green BIT TEST OK light comes on.

NOTE: This will erase all faults that are in the WHCU memory.
- (6) Set the applicable WINDOW HEAT Switch, on the Panel P5-9, to the OFF position.

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU - L FWD	BUS POWER	30-41 TASK 806
WHCU - L FWD	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - L FWD	WHCU-LRU	30-41 TASK 807

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30-41 TASK 801

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU - L FWD	WINDOW POWER	30-41 TASK 814
WHCU - L FWD	WINDOW SENSOR	30-41 TASK 812
WHCU - L SIDE	BUS POWER	30-41 TASK 806
WHCU - L SIDE	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - L SIDE	WHCU-LRU	30-41 TASK 807
WHCU - L SIDE	WINDOW POWER	30-41 TASK 814
WHCU - L SIDE	WINDOW SENSOR	30-41 TASK 811
WHCU - R FWD	BUS POWER	30-41 TASK 806
WHCU - R FWD	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - R FWD	WHCU-LRU	30-41 TASK 807
WHCU - R FWD	WINDOW POWER	30-41 TASK 814
WHCU - R FWD	WINDOW SENSOR	30-41 TASK 812
WHCU - R SIDE	BUS POWER	30-41 TASK 806
WHCU - R SIDE	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - R SIDE	WHCU-LRU	30-41 TASK 807
WHCU - R SIDE	WINDOW POWER	30-41 TASK 814
WHCU - R SIDE	WINDOW SENSOR	30-41 TASK 811
WHCU1 - L FWD/R SIDE	P5-9 (Window 1L)	30-41 TASK 813
WHCU1 - L FWD/R SIDE	P5-9 (Window 2R)	30-41 TASK 813
WHCU1 - L FWD/R SIDE	SENSOR #1 (Window 1L)	30-41 TASK 812
WHCU1 - L FWD/R SIDE	SENSOR #1 (Window 2R)	30-41 TASK 811
WHCU1 - L FWD/R SIDE	SENSOR #2 (Window 1L)	30-41 TASK 812
WHCU1 - L FWD/R SIDE	SENSOR #2 (Window 2R)	30-41 TASK 811
WHCU1 - L FWD/R SIDE	WHCU-LRU (Window 1L)	30-41 TASK 807
WHCU1 - L FWD/R SIDE	WHCU-LRU (Window 2R)	30-41 TASK 807
WHCU1 - L FWD/R SIDE	WINDOW POWER (Window 1L)	30-41 TASK 814
WHCU1 - L FWD/R SIDE	WINDOW POWER (Window 2R)	30-41 TASK 814

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU2 - R FWD/L SIDE	P5-9 (Window 1R)	30-41 TASK 813
WHCU2 - R FWD/L SIDE	P5-9 (Window 2L)	30-41 TASK 813
WHCU2 - R FWD/L SIDE	SENSOR #1 (Window 1R)	30-41 TASK 812
WHCU2 - R FWD/L SIDE	SENSOR #1 (Window 2L)	30-41 TASK 811
WHCU2 - R FWD/L SIDE	SENSOR #2 (Window 1R)	30-41 TASK 812
WHCU2 - R FWD/L SIDE	SENSOR #2 (Window 2L)	30-41 TASK 811
WHCU2 - R FWD/L SIDE	WHCU-LRU (Window 1R)	30-41 TASK 807
WHCU2 - R FWD/L SIDE	WHCU-LRU (Window 2L)	30-41 TASK 807
WHCU2 - R FWD/L SIDE	WINDOW POWER (Window 1R)	30-41 TASK 814
WHCU2 - R FWD/L SIDE	WINDOW POWER (Window 2L)	30-41 TASK 814

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

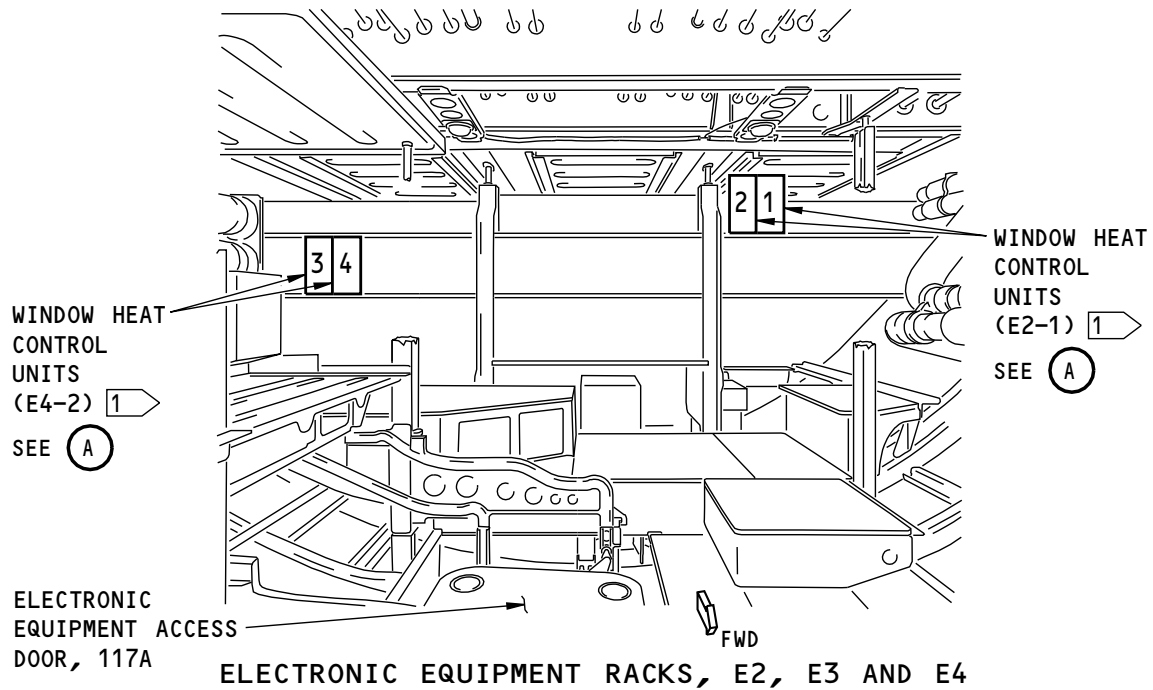
30-41 TASK 801

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD

BITE INSTRUCTION

- Press LAMP TEST Switch:
 - Verify all lights come on. (LED's: 5 Red & 1 Green)
 - If any light remains off, replace WHCU.
- Press BIT VERIFY Switch for 1 second:
 - Red light indicates fault in branch circuit.
 - Green light indicates NO FAULT in WINDOW HEAT SYST
- Press BIT LAMP RESET Switch:
 - Verify all lights go off.
- Press FAULT HISTORY Switch (10 Registers Available):
 - Retrieves last system fault first.
 - Compare fault history with Step 2a. existing fault
- Remove system fault or replace WHCU and repeat Step 2
 - Continue troubleshooting until Step 2b. is true.

(R) WHCU-LRU

(R) WINDOW POWER

LAMP TEST

SW

(R) WINDOW SENSOR

(R) P5-9/CONTROL POWER

BIT VERIFY

SW

(R) BUS POWER

(G) BIT TEST OK

FAULT HISTORY

SW

BIT LAMP RESET

SW

SERIAL NO. _____

DATE OF MFR. _____

WINDOW HEAT CONTROL UNIT

A

G82128 S0000146990_V1

Window Heat Control Unit BITE
Figure 201/30-41-00-990-805

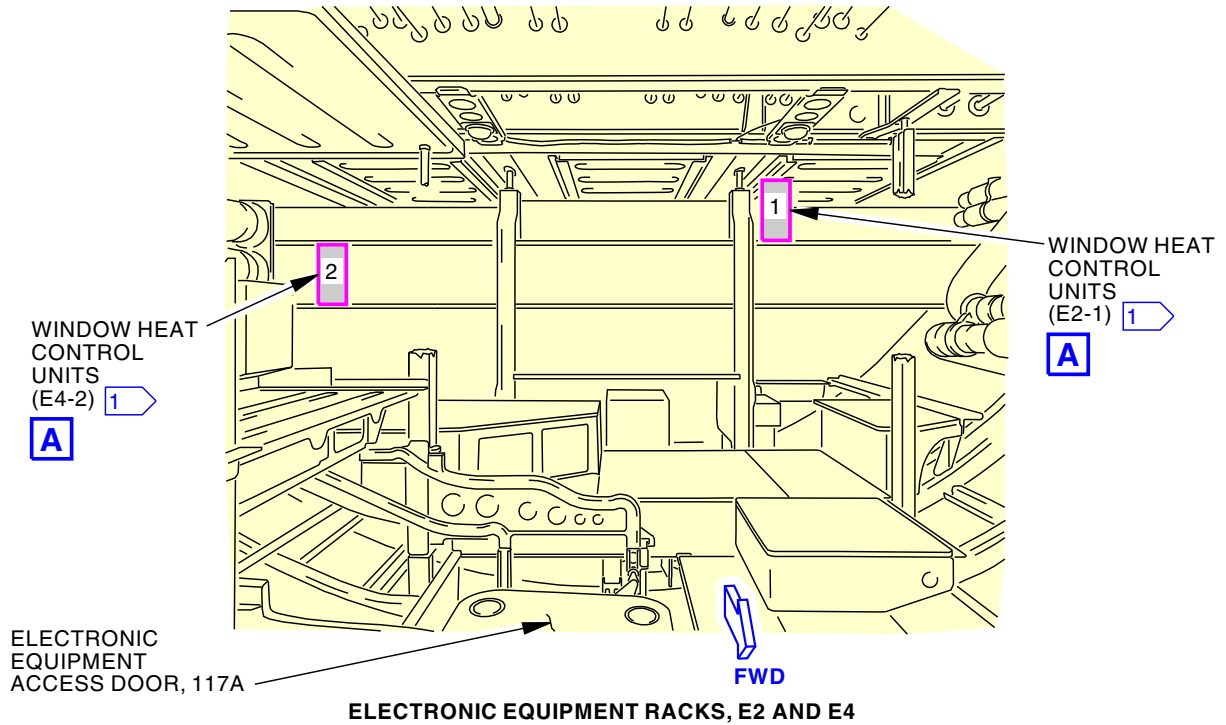
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UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M321	L FWD AND R SIDE
2	M323	R FWD AND L SIDE

BITE INSTRUCTIONS

- LAMP TEST - All lights ON OK
- If not replace LRU
- BIT VERIFY - Red light on - circuit fault
- Green light on - no fault
- FAULT HISTORY - Retrieves last fault
- BIT LAMP RESET - Lights off
- LAMP TEST AND BIT LAMP RESET FOR NVRAM ERASE
- LAMP TEST AND BIT VERIFY FOR #1 WINDOW OVERRIDE MODE
- FAULT HISTORY AND BIT LAMP RESET FOR #2 WINDOW OVERRIDE MODE

#1 Window Override		#2 Window Override	
Lamp Test	BIT VERIFY	Fault History	BIT LAMP RESET

Window #1	Window #2
SENSOR #1	SENSOR #1
SENSOR #2	SENSOR #2
WINDOW POWER	WINDOW POWER
WHCU-LRU	WHCU-LRU
PS-9	PS-9
BIT TEST OK	BIT TEST OK
ON - OVERRIDE MODE	ON - OVERRIDE MODE

Single sensor Mode-Override indication and sensor 2 not operational
Normal - overheat indication when sensor fails
Override - auto sensor selection - only indicate after both sensors fail

Name Plate

A

2368189 S0000542194_V4

Window Heat Control Unit BITE
Figure 202/30-41-00-990-808

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802. Windshield Does Not Heat Properly - Fault Isolation

A. Description

- (1) A windshield does not heat properly. The fault lights on the WHCU are not on.

NOTE: The windshield can also be called:

- Front window
- Window #1

- (2) The WHCU will keep the windows between 107°F (42°C) to 125°F (52°C).

- (a) The window heat system's green ON indication on the P5-9 Panel is only on when the WHCU is applying power to the window.
- (b) During weather conditions that allow the window to be in the temperature range above, it is normal for the green ON light to turn off.

B. Possible Causes

- (1) Window and Pitot Heat Module, P5-9
- (2) Wiring problem
- (3) Left Front (Right Front) Windshield, A6 (A10)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

SIA 702-714

D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

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

SIA ALL

B	9	C00228	WINDOW HEAT POWER LEFT FRONT
---	---	--------	------------------------------

F/O Electrical System Panel, P6-12

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

B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
---	---	--------	-------------------------------

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

- (1) Do a test of the window heat system (Window Heat System - Operational Test, AMM TASK 30-41-00-710-801).
- (a) If the test operates correctly, then there was an intermittent fault

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(b) If the test does not operate correctly, then do the Fault Isolation procedure below.

F. Fault Isolation Procedure

(1) Open and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

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

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NOTE: The WHCU alternates between the primary and the spare sensor each time it is powered on. When one sensor has failed, the OVERRIDE Mode can be activated on the WHCU to keep using only the serviceable sensor.

SIA ALL

(2) Do the WHCU Built-In-Test Equipment (BITE) procedure (Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801).

(a) If you find a problem with the WHCU, then refer to the table at the end of the BITE procedure to correct the problem that you find.

(b) If you do not find a problem with the WHCU, then continue.

(3) Do a check of the lights on the Window and Pitot Heat Module, P5-9 (Master Dim and Test - Operational Test, AMM TASK 33-18-00-710-802).

(a) If there is a problem with the P5-9 panel lights, then repair it (Flight Compartment Lighting Problem - Fault Isolation, 33-10 TASK 801).

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

(b) If there is not a problem with the P5-9 panel lights, then continue.

(4) Do this check for power to the WHCU:

(a) Remove the WHCU (Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803).

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

CAPT Electrical System Panel, P18-3

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

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SIA 702-714 (Continued)

(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

- (c) Measure for 115 VAC at the applicable pin on the WHCU connector (WDM 30-41-11, WDM 30-41-12):

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Table 201

WHCU	WHCU CONNECTION	PIN
LEFT FRONT WHCU - M321	D1044B	pin 2
RIGHT FRONT WHCU - M323	D1048B	pin 2

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Table 202

WHCU	WHCU CONNECTION	PIN
LEFT FRONT WHCU - M321	D16230	pin A1
RIGHT FRONT WHCU - M323	D16232	pin A1

SIA ALL

- 1) If you do not measure 115 VAC at the pin, then do a check of the wiring between the WHCU and the circuit breaker.
 - a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

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F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- b) Do a wiring check between these pins on the WHCU connector and the applicable circuit breaker (WDM 30-41-11, WDM 30-41-12):

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Left Front
WHCU, M321 **C228**
D1044B **C228**
pin 2 =L

Right Front
WHCU, M323 **C394**
D1048B **C394**
pin 2 =L

SIA 716-999

Left Front
WHCU, M321 **C228**
D16230 **C228**
pin A1 =L

Right Front
WHCU, M323 **C394**
D16232 **C394**
pin A1 =L

SIA ALL

- c) If you find a problem with the wiring, then do these steps:
- <1> Repair the wiring.
 - <2> Re-install the WHCU (Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803).
 - <3> Do the Repair Confirmation at the end of this task.
- d) If you did not find a problem with the wiring, then continue.

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- 2) If you measure 115 VAC at the pin, then continue.
- (5) Do this test of the window heater resistance at the Left Front (Right Front) Windshield, A6 (A10):
- (a) Remove the terminal lugs from the windshield terminals.
- (b) Do a resistance check between these pins of the windshield heater (WDM 30-41-11, WDM 30-41-12):

Windshield, A6 (A10)	Windshield, A6 (A10)	
Terminal	Terminal	
terminal 3	terminal 1	between 31.4 to 52 ohms

- 1) If the resistance is not between 31.4 and 52 ohms, then replace the applicable windshield. These are the tasks:
- No. 1 Window Removal, AMM TASK 56-11-11-000-801
 - No. 1 Window Installation, AMM TASK 56-11-11-400-801
- a) Do the Repair Confirmation at the end of this task.
- 2) If the resistance is between 31.4 and 52 ohms, then install the lugs on the windshield heater and continue.

SIA 702-714

- (6) Do these steps to make sure the window heat terminals are connected to the correct WHCU transformer taps:
- (a) Do this task: Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-000-801.
- (b) If the impedance of the window heater and WHCU transformer do not match, then do these steps.
- 1) Do a wiring check between the windshield and the WHCU's E2-1 (E4-2) Shelf (WDM 30-41-11, WDM 30-41-12):

Left Front Windshield, A6	E2-1 Shelf
Terminal	D40070P
terminal 4	pin F
terminal 3	pin F
terminal 2	Ground
terminal 1	Ground

Right Front Windshield, A10	E4-2 Shelf
Terminal	D40068P
terminal 4	pin F
terminal 3	pin F
terminal 2	Ground
terminal 1	Ground

- a) If necessary, then repair the wiring.

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SIA 702-714 (Continued)

- 2) Do the steps in the referenced task to rewire the WHCU.
- 3) Do the Repair Confirmation at the end of this task.

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- (7) Check the wiring between the Windshields and the WHCU:
 - (a) Do a wiring check between these pins (WDM 30-41-11, WDM 30-41-12):

Left Front Windshield, A6	Left Front WHCU, M321
Terminals	D16230
Terminal 4	pin 1
Terminal 3	pin 1
Terminal 2	Ground
Terminal 1	Ground

Right Front Windshield, A10	Right Front WHCU, M323
Terminals	D16232
Terminal 4	pin 1
Terminal 3	pin 1
Terminal 2	Ground
Terminal 1	Ground

- 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.

SIA ALL

G. Repair Confirmation

- (1) If necessary, then re-install the WHCU (Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803).
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

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

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D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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B	9	C00228	WINDOW HEAT POWER LEFT FRONT
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F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

- (3) Do a test of the window heat system (Window Heat System - Operational Test, AMM TASK 30-41-00-710-801).
 - (a) If the test operates correctly, then you have corrected the fault
 - (b) If the test does not operate correctly, then continue the Fault Isolation procedure at the subsequent step.

————— END OF TASK —————

806. Window Heat Control Unit (WHCU) Power Problem - Fault Isolation

A. Description

SIA 702-714

- (1) This task is for these Fault LED(s) maintenance messages:
 - (a) BUS POWER (left side window)
 - (b) BUS POWER (right side window)
 - (c) BUS POWER (left forward window)
 - (d) BUS POWER (right forward window)

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- (2) This task is for these Fault LED(s) maintenance messages:
 - (a) No LEDs come ON (Left Side Window)
 - (b) No LEDs come ON (Right Side Window)
 - (c) No LEDs come ON (Left Forward Window)
 - (d) No LEDs come ON (Right Forward Window)

SIA ALL

- (3) The window heat control unit (WHCU) detects a loss of power to the windows.

B. Possible Causes

- (1) Wiring problem

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- (2) Right Side (Left Front, Left Side, Right Front) Window heat control unit (WHCU), M320 (M321, M322, M323)

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- (3) Left Front and Right Side (Right Front and Left Side) Window heat control unit (WHCU), M321 (M323)

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C. Circuit Breakers

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

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

SIA 702-714

- (2) Make sure the WHCU fault is active:
- (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the Fault LED goes out, then there was an intermittent fault.
 - (c) If the Fault LED still stays on, then do the Fault Isolation Procedure below.

SIA 716-999

- (3) Make sure the WHCU fault is active:
- (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If a BITE Fault LED comes ON, then do the Fault Isolation Procedure for that fault.
 - (c) If none of the BITE Fault LEDs come ON, then do the Fault Isolation Procedure below.

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F. Fault Isolation Procedure

- (1) Do a check of the wiring between the circuit breaker and WHCU:
 - (a) Remove the WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.
 - (b) Do a wiring check between these pins on the WHCU connector and the applicable circuit breaker (WDM 30-41-11, WDM 30-41-12):

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Right Side WHCU, M320 D1042B	C393 Terminals
pin 2	=L
pin 5	Ground
pin 7	Ground

Left Front WHCU, M321 D1044B	C228 Terminals
pin 2	=L
pin 5	Ground
pin 7	Ground

Left Side WHCU, M322 D1046B	C392 Terminals
pin 2	=L
pin 5	Ground
pin 7	Ground

Right Front WHCU, M323 D1048B	C394 Terminals
pin 2	=L
pin 5	Ground
pin 7	Ground

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Right Side WHCU, M321 D16230	C393 Terminals
pin A2	=L
pin 4	Ground

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Left Front	
WHCU, M321	C228
D16230	Terminals
pin A1	=L
pin A3	Ground
pin A4	Ground

Left Side	
WHCU, M323	C392
D16232	Terminals
pin A2	=L
pin 4	Ground

Right Front	
WHCU, M323	C394
D16232	Terminals
pin A1	=L
pin A3	Ground
pin A4	Ground

SIA ALL

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
<1> 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 this check for power to the WHCU K1 relay:
- (a) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (b) Measure for 115 VAC at the applicable pin on the WHCU connector (WDM 30-41-11, WDM 30-41-12):

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Table 203

WHCU	WHCU CONNECTION	PIN
RIGHT SIDE WHCU - M320	D1042B	pin 2
LEFT FRONT WHCU - M321	D1044B	pin 2
LEFT SIDE WHCU - M322	D1046B	pin 2
RIGHT FRONT WHCU - M323	D1048B	pin 2

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Table 204

WHCU	WHCU CONNECTION	PIN
RIGHT SIDE WHCU - M321	D16230	pin A2
LEFT FRONT WHCU - M321	D16230	pin A1
LEFT SIDE WHCU - M323	D16232	pin A2
RIGHT FRONT WHCU - M323	D16232	pin A1

SIA ALL

- 1) If you measure 115 VAC at the pin, then do these steps:
 - a) Install a new WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
 - b) Do the Repair Confirmation at the end of this task.
- 2) If you do not measure 115 VAC at the pin, then do these steps:
 - a) Replace the applicable Circuit Breaker

G. Repair Confirmation

SIA 702-714

- (1) Do this test of the WHCU:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the Fault LED goes out, then you have corrected the problem.
 - (c) If the Fault LED still stays on, then continue the Fault Isolation Procedure at the subsequent step.

SIA 716-999

- (2) Do this test of the WHCU:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If a BITE Fault LED comes ON, then do the Fault Isolation Procedure for that fault.
 - (c) If none of the LEDs come ON, then continue the Fault Isolation Procedure at the subsequent step.

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END OF TASK

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807. Window Heat Control Unit (WHCU) Internal Fault - Fault Isolation

A. Description

- (1) This task is for these Fault LEDs maintenance messages:
 - (a) WHCU LRU (Left Side Window)
 - (b) WHCU LRU (Right Side Window)
 - (c) WHCU LRU (Left Forward Window)
 - (d) WHCU LRU (Right Forward Window)
- (2) There is a fault internal to the WHCU.
- (3) A problem with the window heater could cause this fault light to illuminate. Do the Initial Evaluation to isolate this problem.

B. Possible Causes

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- (1) Right Side (Left Front, Left Side, Right Front) WHCU, M320 (M321, M322, M323)

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- (2) Left Front And Right Side (Right Front And Left Side) WHCU, M321 (M323)

SIA ALL

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

SIA 702-714

D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

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

SIA ALL

B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11

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(5) WDM 30-41-12

E. Initial Evaluation

- (1) If only the WHCU-LRU Fault LED is ON, then do these steps:
 - (a) Push the FAULT HISTORY Switch only one time on the WHCU.
 - 1) If other than the WHCU-LRU Fault LED is ON, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - 2) If only the WHCU LRU Fault LED is ON, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) If the OVERHEAT Light on the P5-9 Panel is ON, then do these steps:

NOTE: The new WHCU Part Number (P/N) 83000-27901/83000-27904 goes through an initialization process every time the Window Heat System is activated which could be mistaken for an abnormal indication.

NOTE: Selecting a different source of electrical power with the Window Heat Switches in the ON position can potentially illuminate the amber OVERHEAT Lights due to electrical current spikes.

- (a) Select the WINDOW HEAT Switch for the affected window to OFF.
- (b) Wait 2 - 5 minutes.
- (c) Select the WINDOW HEAT Switch for the affected window to ON.

NOTE: On airplanes with WHCU P/N 83000-27901/83000-27904; The Master Caution and ANTI-ICE System Annunciator Lights will momentarily turn ON then turn OFF within 5 seconds.

- (d) Verify that the OVERHEAT Light is OFF.

- 1) If the OVERHEAT Light is OFF, then do this step:
 - a) Do a BITE test for the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - <1> If WHCU-LRU is the only Fault LED shown in the Fault History, the WHCU does not need to be replaced. Refer to the steps in the WHCU BITE Procedure to erase the fault.
- 2) If the OVERHEAT Light did not extinguish, then continue.

SIA ALL

- (2) Do these steps to verify the operation of the Window Heat System with the P5-9 Panel.

NOTE: For a warm window, the Window Heat Test Switch can cause the window OVERHEAT Light to come ON.

- (a) Make sure that the Window Heat Switches are in the ON position.
- (b) Hold the Window Heat Test Switch to the PWR TEST position.
- (c) Make sure that the green ON indications on the P5-9 Panel come on.

NOTE: When the ON indications comes on, release the PWR TEST Switch or you can overheat the windows and activate the overheat protection circuitry.

- 1) If the window heat ON indications do not come on, or the WHCU LRU fault is active, then replace the WHCU. These are the tasks:

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- Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803
- Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803
 - a) Do the post installation test in the installation procedure.
 - b) If the test passes, then you corrected the problem.

————— **END OF TASK** —————

809. Side Window Does Not Heat Properly - Fault Isolation

A. Description

- (1) A side window does not heat properly. There are no fault lights illuminated on the WHCU.

NOTE: The side window can also be called:

- Sliding window
- Window #2

- (2) The WHCU will keep the windows between 107°F (42°C) to 125°F (52°C).

(a) The window heat system's green ON indication on the P5-9 Panel is only on when the WHCU is applying power to the window

(b) During weather conditions that allow the window to be in the temperature range above, it is normal for the green ON light to turn off.

B. Possible Causes

- (1) Window and Pitot Heat Module, P5-9
- (2) Wiring problem
- (3) Right Side (Left Side) Sliding Window, A9 (A13)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

SIA 702-714

D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

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

SIA ALL

B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
---	---	--------	------------------------------

F/O Electrical System Panel, P6-12

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

B	9	C00392	WINDOW HEAT POWER LEFT SIDE
---	---	--------	-----------------------------

D. Related Data

- (1) Component Location 30-41 TASK SUPPORT Figure 301
- (2) SSM 30-41-11

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- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

- (1) Do a test of the window heat system (Window Heat System - Operational Test, AMM TASK 30-41-00-710-801).
 - (a) If the window heat system operates correctly, then there was an intermittent fault.
 - (b) If the window heat system does not operate correctly, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Open and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

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

SIA 716-999

NOTE: On airplanes using dual sensors, the WHCU alternates between the primary and the spare sensor each time it is powered on. An OVERRIDE Mode can be activated on the WHCU to keep using only the serviceable sensor.

In order to use the second sensor on the side window, a WHCU program pin (P1-5) should be grounded and a section of wire is added inside the window frame. Adding the wire to the window frame makes that window incompatible with an airplane which is not configured for the dual sensor operation.

SIA ALL

- (2) Do the WHCU BITE procedure (Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801).
 - (a) If you find a problem with the WHCU, then refer to the table at the end of the BITE procedure to correct the problem that you find.
 - (b) If you do not find a problem with the WHCU, then continue.
- (3) Do a check of the lights on the Window and Pitot Heat Module, P5-9 (Master Dim and Test - Operational Test, AMM TASK 33-18-00-710-802).

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- (a) If there is a problem with the P5-9 panel lights, then repair it (Flight Compartment Lighting Problem - Fault Isolation, 33-10 TASK 801).

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

- (b) If there is not a problem with the P5-9 panel lights, then continue.

- (4) Do this check for power to the WHCU:

- (a) Remove the WHCU (Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803).

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

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (c) Measure for 115 VAC at the applicable pin on the WHCU connector (WDM 30-41-11, WDM 30-41-12):

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Table 205

WHCU	WHCU CONNECTION	PIN
RIGHT SIDE WHCU - M320	D1042B	pin 2
LEFT SIDE WHCU - M322	D1046B	pin 2

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Table 206

WHCU	WHCU CONNECTION	PIN
RIGHT SIDE WHCU - M321	D16230	pin A2
LEFT SIDE WHCU - M323	D16232	pin A2

SIA ALL

- (d) If you do not measure 115 VAC at the pin, then do a check of the wiring between the WHCU and the circuit breaker.

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

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

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- 2) Do a wiring check between these pins on the WHCU connector and the applicable circuit breaker (WDM 30-41-11, WDM 30-41-12):

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Right Side
WHCU, M320 **C393**
D1042B **C393**
pin 2 =L

Left Side
WHCU, M322 **C392**
D1046B **C393**
pin 2 =L

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Right Side
WHCU, M321 **C393**
D16230 **C393**
pin A2 =L

Left Side
WHCU, M323 **C392**
D16232 **C392**
pin A2 =L

SIA ALL

- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-install the WHCU (Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803).
 - c) Do the Repair Confirmation at the end of this task.
- 4) If you did not find a problem with the wiring, then continue.
- a) Re-install the WHCU (Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803).
- (e) If you measure 115 VAC at the pin, then continue.
- (5) Do this test of the window heater resistance:
- (a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

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F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (b) Remove the lugs from the window heater terminals.
- (c) Do a resistance check of these pins at the Left (Right) Side Window, A13 (A9) (WDM 30-41-11, WDM 30-41-12).

**Left Side
Window, A13
Terminals**

term A

**Left Side
Window, A13
Terminals**

term B between 55.7 to 100 ohms

**Right Side
Window, A9
Terminals**

term A

**Right Side
Window, A9
Terminals**

term B between 55.7 to 100 ohms

- 1) If the window resistance is not between 55.7 and 100 ohms, then do these steps:
- a) Replace the Side Window. These are the tasks:
- No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801
 - No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801
- <1> Do the Repair Confirmation at the end of this task.
- 2) If the window resistance is between 55.7 and 100 ohms, then replace the lug on the window heater and continue.

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- (6) Do these steps to make sure the window heat terminals are connected to the correct WHCU transformer taps:
- (a) Do this task: Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-000-801.
- (b) If the impedance of the window heater and WHCU transformer do not match, then do these steps.
- 1) Do a wiring check between the Side Windows and the WHCU's E2-1 (E4-2) Shelf (WDM 30-41-11, WDM 30-41-12):

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Left Side

Window, A13

Terminal

terminal A	pin A3
terminal B	Ground

E4-2 Shelf

D40068P

Right Side

Window, A9

Terminal

terminal A	pin A3
terminal B	Ground

E2-1 Shelf

D40070P

- a) If necessary, then repair the wiring.
- 2) Do the steps in the referenced task above to rewire the WHCU.
- 3) Do the Repair Confirmation at the end of this task.

SIA 716-999

- (7) Check the wiring between the Side Windows and the WHCU:
 - (a) Do a wiring check between these pins (WDM 30-41-11, WDM 30-41-12):

**Left Side
Window, A13**

Terminals

Terminal A	pin 3
Terminal B	Ground

**Left Side
WHCU, M323**

D16232

**Right Side
Window, A9**

Terminals

Terminal A	pin 3
Terminal B	Ground

**Right Side
WHCU, M321**

D16230

- 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.

SIA ALL

G. Repair Confirmation

- (1) If necessary, then re-install the WHCU (Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803).
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (3) Do a test of the window heat system (Window Heat System - Operational Test, AMM TASK 30-41-00-710-801).
- (a) If the window heat system operates correctly, then you corrected the fault.
 - (b) If the window heat system does not operate correctly, then continue the Fault Isolation procedure at the subsequent step.

————— **END OF TASK** —————

811. WINDOW SENSOR Fault Light for a Side Window is on - Fault Isolation

A. Description

SIA 702-714

- (1) This task is for this maintenance message on a WHCU:
- (a) WINDOW SENSOR

SIA 716-999

- (2) This task is for these maintenance messages on a WHCU:
- (a) SENSOR #1
 - (b) SENSOR #2

NOTE: On airplanes using dual sensors, the WHCU alternates between the primary and the spare sensor each time it is powered on. An OVERRIDE Mode can be activated on the WHCU to keep using only the serviceable sensor.

In order to use the second sensor on the side window, a WHCU program pin (P1-5) should be grounded and a section of wire is added inside the window frame. Adding the wire to the window frame makes that window incompatible with an airplane which is not configured for the dual sensor operation.

SIA ALL

- (3) The WHCU detects a shorted or open condition in the wiring between the control unit and the window temperature sensor on a side window.

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- (4) This task applies to the side windows. A different fault isolation procedure applies for the front windows.

NOTE: The side window can also be called:

- Sliding window
- Window #2

B. Possible Causes

- (1) Wiring problem
(2) Right Side (Left Side) No. 2 Window, A9 (A13)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
(2) SSM 30-41-11
(3) SSM 30-41-12
(4) WDM 30-41-11
(5) WDM 30-41-12

E. Initial Evaluation

- (1) Do this check of the WHCU:
(a) Push the BIT VERIFY switch on the WHCU.
(b) If the Sensor Fault LED does not show, then there was an intermittent fault.
(c) If the Sensor Fault LED shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the side window's temperature sensor:
(a) Measure the resistance of the sensors. This is the task:
 - Measure the Resistance of the Window Temperature Sensors, AMM TASK 30-41-21-760-801 or Measure the Resistance of the Window Temperature Sensors, AMM TASK 30-41-21-760-803.

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- (b) If one sensor resistance does not agree with the permitted limits, then do these steps:
- 1) Put a mark on the defective sensor to show that it no longer operates.
 - 2) Repair the window temperature sensor. This is the task:
 - Control Cabin Window Temperature Sensor - Repairs, AMM TASK 30-41-00-420-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (c) If the two sensor resistances do not agree with the permitted limits, then do these steps:
- 1) Replace the applicable window. These are the tasks:
 - No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801,
 - No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If the two sensor resistances agree with the permitted limits, then continue.

SIA 702-714

- (2) Do a wiring check between the WHCU and side window temperature sensor (WDM 30-41-11, WDM 30-41-12).

NOTE: The following wiring check steps do an end-to-end check of the wiring between the WHCU and Window Sensor. For airplanes with "quick disconnect" plugs installed, refer to the Wiring Diagram Manual (WDM) and follow your airline's procedures and/or best practices to do these steps.

- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (b) Do a wiring check between these connections on the WHCU and window temperature sensor:

Right Side Window, A9 TEMP SENSOR	Right Side WHCU, M320 D1042A
Terminal C	pin 13
Terminal D	pin 26

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Left Side	Left Side
Window, A13	WHCU, M322
TEMP SENSOR	D1046A
Terminal C	pin 13
Terminal D	pin 26

- 1) Make sure that there are no shorts to ground in the wiring.
- (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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- (3) Do a wiring check between the WHCU and side window temperature sensor (WDM 30-41-11, WDM 30-41-12).

NOTE: The following wiring check steps do an end-to-end check of the wiring between the WHCU and Window Sensor. For airplanes with "quick disconnect" plugs installed, refer to the WDM and follow your airline's procedures and/or best practices to do these steps.

- (a) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

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- (b) If the primary sensor is being used, then do a wiring check between these connections on the WHCU and window temperature primary sensor:

Right Side	Right Side
Window, A9	WHCU, M321
TEMP SENSOR	D16230
Terminal C	pin 17
Terminal D	pin 18

Left Side	Left Side
Window, A13	WHCU, M323
TEMP SENSOR	D16232
Terminal C	pin 17
Terminal D	pin 18

- 1) Make sure that there are no shorts to ground in the wiring.

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- (c) If the spare sensor is being used, then do a wiring check between these connections on the WHCU and window temperature spare sensor:

Right Side	Right Side
Window, A9	WHCU, M321
TEMP SENSOR	D16230
Terminal C	pin 17
Terminal D	pin 18

Left Side	Left Side
Window, A13	WHCU, M323
TEMP SENSOR	D16232
Terminal C	pin 17
Terminal D	pin 18

- 1) Make sure that there are no shorts to ground in the wiring.

SIA 716-999; AIRPLANES WITH THE DUAL SENSOR OPERATION MODE

- (d) If the primary and spare (secondary) sensors are being used, then do a wiring check between these connections on the WHCU and window temperature sensors:

Right Side	Right Side
Window, A9	WHCU, M321
TEMP SENSOR	D16230
Terminal C	pin 17
Terminal D	pin 16 (primary sensor)
Terminal D	pin 18 (secondary sensor)

Left Side	Left Side
Window, A13	WHCU, M323
TEMP SENSOR	D16232
Terminal C	pin 17
Terminal D	pin 16 (primary sensor)
Terminal D	pin 18 (secondary sensor)

- 1) Make sure that there are no shorts to ground in the wiring.

SIA 716-999

- (e) 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.

SIA ALL

G. Repair Confirmation

- (1) Do this test of the Window Heat System:
- (a) Push the BIT VERIFY Switch on the WHCU.
 - (b) If the Fault LED does not show, then you corrected the problem.

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- (c) If the Fault LED shows, then continue the Fault Isolation procedure at the subsequent step.

————— **END OF TASK** —————

812. WINDOW SENSOR Fault Light for a Windshield is ON - Fault Isolation

A. Description

SIA 702-714

- (1) This task is for this Fault LED maintenance message on a WHCU:
(a) WINDOW SENSOR

SIA 716-999

- (2) This task is for these Fault LEDs maintenance messages on a WHCU:
(a) SENSOR #1
(b) SENSOR #2

NOTE: The WHCU changes the power between the primary sensor and the spare sensor each time that it comes on. When one sensor is defective, start the OVERRIDE Mode on the WHCU. This will make sure that you only use the serviceable sensor.

SIA ALL

- (3) The WHCU finds a short condition in the wires between the control unit and the window temperature sensor.
(4) This task applies to the front windows. A different fault isolation procedure applies for the side windows.

NOTE: The windshield can also be called:

- Front window
- Window #1

B. Possible Causes

- (1) Wire problem
(2) Left Front (Right Front) Windshield, A6 (A10)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

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F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

SIA 702-714

- (1) Do this quick check of the window temperature sensors:
 - (a) Change the position of the sensor select switch.
 - (b) Find if the fault continues:
 - 1) Push the BIT VERIFY switch on the WHCU.
 - 2) If the Fault LED stays ON, then the sensor is not the source of the fault. Do a check the related wires and the WHCU.

NOTE: If the other sensor was previously identified to be a failed sensor, this quick check may not work. Check the sensor and wiring between the sensor select switch and window temperature sensor.
 - 3) If the Fault LED goes OFF, the sensor, or wires between the sensor and the sensor select switch and sensor are defective.
 - (c) Do the Fault Isolation Procedure below.

SIA 716-999

- (2) Do this quick check of the window temperature sensors:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the Sensor Fault LED goes OFF, then there was an intermittent fault.
 - (c) If the Sensor Fault LED stays ON, then do the Fault Isolation Procedure below.

SIA ALL

F. Fault Isolation Procedure

- (1) Do a check of the Window Temperature Sensors:
 - (a) Measure the resistances of the sensors. This is the task:
 - Measure the Resistance of the Window Temperature Sensors, AMM TASK 30-41-21-760-801 or Measure the Resistance of the Window Temperature Sensors, AMM TASK 30-41-21-760-803.
 - (b) If one sensor resistance does not agree with the permitted limits, then do these steps:
 - 1) Put a mark on the defective sensor to show that it no longer operates.
 - 2) Repair the window temperature sensor. This is the task:
 - Control Cabin Window Temperature Sensor - Repairs, AMM TASK 30-41-00-420-801.

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- 3) Do the Repair Confirmation at the end of this task.
- (c) If the two sensor resistances do not agree with the permitted limits, then do these steps:
 - 1) Replace the applicable window. These are the tasks:
 - No. 1 Window Removal, AMM TASK 56-11-11-000-801,
 - No. 1 Window Installation, AMM TASK 56-11-11-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If the two sensor resistances agree with the permitted limits, then continue.

SIA 702-714

- (2) Do this check of the wires between the Windshield and the Sensor Switch.
 - (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

- (b) Do a check of the wires between these connectors on the windshield temperature sensor and the sensor select switch (WDM 30-41-11, WDM 30-41-12):

NOTE: Make sure that there are no shorts to ground in the wires.

LEFT FRONT WINDSHIELD

**Left Front 1
Windshield
Sensor Switch,
S1078**

**Windshield, A6
PRIMARY
SENSOR**

TERMINAL

terminal 6 terminal A
terminal 3 terminal B

SPARE SENSOR

TERMINAL

terminal 1 terminal C
terminal 4 terminal D

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RIGHT FRONT WINDSHIELD

**Right Front 1
Windshield
Sensor Switch,
S1079**

**Windshield, A10
PRIMARY
SENSOR**

TERMINAL

terminal 6 terminal A
terminal 3 terminal B

TERMINAL

SPARE SENSOR

terminal 1 terminal C
terminal 4 terminal D

- (c) If you find a problem with the wires, then do these steps:
- 1) Repair the wires.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem with the wires, then continue.
- (3) Do this check of the wires between the Sensor Switch and the WHCU.
- (a) Remove the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.
- (b) Do a check of the wires between these pins (WDM 30-41-11, WDM 30-41-12):
- NOTE: Make sure that there are no shorts to ground in the wires.

LEFT FRONT WHCU

**Left Front 1
Windshield
Sensor Switch,
S1078**

**Left Front
WHCU, M321
D1044A**

TERMINAL

terminal 2 pin 13
terminal 5 pin 26

RIGHT FRONT WHCU

**Right Front 1
Windshield
Sensor Switch,
S1079**

**Right Front
WHCU, M323
D1048A**

TERMINAL

terminal 2 pin 13
terminal 5 pin 26

- (c) If you find a problem with the wires, then do these steps:
- 1) Repair the wires.

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- 2) Install the WHCU again. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.
- 3) Do the Repair Confirmation at the end of this task.

SIA 716-999

- (4) Do this check of the wires between the Windshield and the WHCU.
 - (a) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

- (b) Remove the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.
- (c) Do a check of the wires between these pins (WDM 30-41-11, WDM 30-41-12):

NOTE: Make sure that there are no shorts to ground in the wires.

LEFT FRONT WHCU

Left Front Windshield, A6	Left Front WHCU, M321
PRIMARY SENSOR	D16230
terminal A	pin 25
terminal B	pin 19
SPARE SENSOR	D16230
terminal C	pin 26
terminal D	pin 27

RIGHT FRONT WHCU

Right Front Windshield, A10	Right Front WHCU, M323
PRIMARY SENSOR	D16232
terminal A	pin 25
terminal B	pin 19
SPARE SENSOR	D16232
terminal C	pin 26
terminal D	pin 27

- (d) If you find a problem with the wires, then do these steps:
 - 1) Repair the wires.

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- 2) Install the WHCU again. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
- 3) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) Do this test of the window heat system:
 - (a) Push the BIT VERIFY switch on the applicable WHCU.
 - (b) If the Fault LED goes OFF, then you corrected the fault.
 - (c) If the Fault LED stays ON, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

813. P5-9 Control Panel Fault - Fault Isolation

A. Description

SIA 702-714

- (1) This task is for this Fault LED maintenance message on the WHCUs:
 - (a) P5-9/CONTROL POWER

SIA 716-999

- (2) This task is for this Fault LED maintenance message on the WHCU:
 - (a) P5-9

SIA ALL

- (3) The WHCU detects a no control power condition due to an open circuit breaker, control switch turned off, P5-9 failure, or a wiring problem.

B. Possible Causes

- (1) Wiring problem
- (2) Window and Pitot Heat Module, P5-9

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- (3) WHCU:
 - Right Side WHCU, M320
 - Left Front WHCU, M321
 - Left Side WHCU, M322
 - Right Front WHCU, M323

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- (4) WHCU:
 - Left Front and Right Side WHCU, M321
 - Right Front and Left Side WHCU, M323

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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>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

- (1) Component Location (30-41 TASK SUPPORT Figure 301)
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

- (1) Do this test of the WHCU:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the Fault LED did not come on, then there was an intermittent fault.
 - (c) If the Fault LED comes on, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

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- (1) Do this check of the wiring between the P5-9 panel and the WHCU.
 - (a) Remove the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801.
 - (b) Remove the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.
 - (c) Do a wiring check between these pins (WDM 30-41-11, WDM 30-41-12):

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Right Side WHCU, M320

P5-9	M320
D638	D1042A
pin 48	pin 5
pin 1	pin 24
pin 2	pin 25
pin 9	pin 11
58	Ground
Ground	pin 10

Left Front WHCU, M321

P5-9	M321
D638	D1044A
pin 47	pin 5
pin 7	pin 24
pin 6	pin 25
pin 8	pin 11
pin 5	pin 19
pin 4	pin 12
pin 55	Ground
Ground	pin 10

Left Side WHCU, M322

P5-9	M322
D644	D1046A
pin 48	pin 5
pin 1	pin 24
pin 2	pin 25
pin 9	pin 11
pin 58	Ground
Ground	pin 10

Right Front WHCU, M323

P5-9	M323
D644	D1048A
pin 47	pin 5
pin 7	pin 24
pin 6	pin 25
pin 8	pin 11
pin 5	pin 19
pin 4	pin 12
Ground	pin 10

- 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 WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.
 - c) Re-install the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue
- (2) Do this check for voltage at the P5-9 panel:
- (a) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

- (b) Measure the voltage at the applicable pin on the P5-9 connector (WDM 30-41-11, WDM 30-41-12):

Right Side WHCU, M320

P5-9	P5-9	
D638	D638	
pin 51	Ground	115V AC

Left Front WHCU, M321

P5-9	P5-9	
D638	D638	
pin 50	Ground	115V AC

Left Side WHCU, M322

P5-9	P5-9	
D644	D644	
pin 51	Ground	115V AC

Right Front WHCU, M323

P5-9	P5-9	
D644	D644	
pin 50	Ground	115V AC

- 1) If you measure 115 VAC at the pin, then install a new P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
- a) Do the Repair Confirmation at the end of this task.
- 2) If you do not measure 115 VAC at the pin, then continue.
- (3) Do a check of the wiring between the P5-9 Panel and the applicable circuit breaker:

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- (a) Open these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

- (b) Do a wiring check between these pins (WDM 30-41-11, WDM 30-41-12):

Right Side WHCU, M320

P5-9	C00227
D638	C00227
pin 51	=L

Left Front WHCU, M321

P5-9	C00224
D638	C00224
pin 50	=L

Left Side WHCU, M322

P5-9	C00225
D644	C00225
pin 51	=L

Right Front WHCU, M323

P5-9	C00226
D644	C00226
pin 50	=L

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (4) Do a voltage check at the WHCU.
- (a) Re-install the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801..
 - (b) Remove the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (d) Make sure that the applicable Window Heat Switch is in the ON position.
(e) Do a check of the voltage at the WHCU (WDM 30-41-11, WDM 30-41-12):

Right Side WHCU, M320

<u>E2-1</u>	<u>E2-1</u>	
D1042A	D1042A	
pin 5	Ground	115V AC
D1042B	D1042B	
pin 2	Ground	115V AC

Left Front WHCU, M321

<u>E2-1</u>	<u>E2-1</u>	
D1044A	D1044A	
pin 5	Ground	115V AC
D1044B	D1044B	
pin 2	Ground	115V AC

Left Side WHCU, M322

<u>E4-2</u>	<u>E4-2</u>	
D1046A	D1046A	
pin 5	Ground	115V AC
D1046B	D1046B	
pin 2	Ground	115V AC

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Right Front WHCU, M323

E4-2	E4-2	
D1048A	D1048A	
pin 5	Ground	115V AC
D1048B	D1048B	
pin 2	Ground	115V AC

- 1) If there is 115 VAC at the pins, then install a new WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If there is not 115 VAC at the pins, then continue.
- (5) Replace the P5-9 Panel. These are the tasks:
- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (a) Do the repair confirmation at the end of this task.
- (6) Replace the WHCU. These are the tasks:
- Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801
 - Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801
- (a) Do the repair confirmation at the end of this task.

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- (7) Do this check of the wiring between the P5-9 panel and the applicable WHCU.
- (a) Remove the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801.
 - (b) Remove the applicable WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.
 - (c) Do a wiring check as follows (WDM 30-41-11, WDM 30-41-12):

Right Side WHCU, M321

P5-9	M321
D638	D16230
pin 48	pin 20
pin 1	pin 15
pin 2	pin 21
pin 9	pin 14
pin 51	Ground
pin 58	Ground
Ground	pin 9

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Left Front WHCU, M321

P5-9	M321
D638	D16230
pin 47	pin 13
pin 7	pin 11
pin 6	pin 10
pin 8	pin 12
pin 5	pin 8
pin 4	pin 22
pin 50	Ground
pin 55	Ground
Ground	pin 24

Left Side WHCU, M323

P5-9	M323
D644	D16232
pin 48	pin 20
pin 1	pin 15
pin 2	pin 21
pin 9	pin 14
pin 51	Ground
pin 58	Ground
Ground	pin 9

Right Front WHCU, M323

P5-9	M323
D644	D16232
pin 47	pin 13
pin 7	pin 11
pin 6	pin 10
pin 8	pin 12
pin 5	pin 8
pin 4	pin 22
pin 50	Ground
Ground	pin 24

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
 - c) Re-install the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you did not find a problem with the wiring, then continue.

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- (8) Do a wiring check of the P5-9 Window Heat switch (WDM 30-41-11, WDM 30-41-12).
- (a) Re-install the P5-9 Panel. This is the task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.
- (b) Make sure that the applicable Window Heat switch is in the ON position.
- (c) Do a resistance check at the applicable WHCU:

Left Front

WHCU, M321

D16230

D16230

pin 13 Ground

less than 1K Ohms

Right Side

WHCU, M321

D16230

D16230

pin 20 Ground

less than 1K Ohms

Right Front

WHCU, M323

D16232

D16232

pin 13 Ground

less than 1K Ohms

Left Side

WHCU, M323

D16232

D16232

pin 20 Ground

less than 1K Ohms

- (d) Set the applicable Window Heat switch to the OFF position.
- (e) Do a resistance check at the applicable WHCU again:

Left Front

WHCU, M321

D16230

D16230

pin 13 Ground

more than 1K Ohms

Right Side

WHCU, M321

D16230

D16230

pin 20 Ground

more than 1K Ohms

Right Front

WHCU, M323

D16232

D16232

pin 13 Ground

more than 1K Ohms

Left Side

WHCU, M323

D16232

D16232

pin 20 Ground

more than 1K Ohms

- (f) If you find a problem with the Window Heat switch, then replace the P5-9 Panel. These are the tasks:
- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- 1) Do the repair confirmation at the end of this task.

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- (9) Replace the WHCU. These are the tasks:
- Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803
 - Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803
- (a) Do the repair confirmation at the end of this task.

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G. Repair Confirmation

- (1) Do this test of the WHCU:
- (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the Fault LED does not come on, then you have corrected the fault.
 - (c) If the Fault LED comes on, then continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

814. WINDOW POWER Fault Light is ON - Fault Isolation

A. Description

- (1) This task is for this Fault LED maintenance message on the WHCU:
- (a) WINDOW POWER
- (2) The WINDOW POWER light ON shows that there is no window power, or there is over current to the window.
- (3) There is fault with a window heater, wiring, or Window Heat Control Unit (WHCU).

B. Possible Causes

- (1) Left Front (Right Side, Right Front, Left Side) Window, A6 (A9, A10, A13)
- (2) Wiring problem

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- (3) Right Side (Left Front, Left Side, Right Front)WHCU, M320 (M321, M322, M323)

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

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D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

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

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B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
---	---	--------	------------------------------

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F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

- (1) Component Location 30-41 TASK SUPPORT Figure 301
- (2) SSM 30-41-11
- (3) SSM 30-41-12
- (4) WDM 30-41-11
- (5) WDM 30-41-12

E. Initial Evaluation

- (1) Do this check of the current status of the WHCU:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the BIT TEST OK light comes on, then there was an intermittent fault.
 - (c) If the WINDOW POWER Fault LED stays on, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (2) Do a check of the applicable windshield heater resistance:
 - (a) Remove the terminal lugs from the windshield heater.

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- (b) Measure the resistance between terminals 3 and 1 of the windshield heater.
 - (c) If the resistance is not between 31.4 and 52 ohms, then do these steps:
 - 1) Replace the windshield. These are the tasks:
 - No. 1 Window Removal, AMM TASK 56-11-11-000-801
 - No. 1 Window Installation, AMM TASK 56-11-11-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the resistance is between 31.4 and 52 ohms, then re-install the lugs on the windshield heater and continue.
- (3) Do a check of the applicable side window heater resistance:
- (a) Remove the terminal lugs from the window heater.
 - (b) Measure the resistance between pins A and B of the window heater.
 - (c) If the window resistance is not between 55.7 and 100 ohms, then do these steps:
 - 1) Replace the sliding window. These are the tasks:
 - No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801
 - No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the window resistance is between 55.7 and 100 ohms, then replace the lug on the window heater and continue.
- (4) Do this check of the wiring between the applicable window heater and the applicable WHCU.
- (a) Remove the WHCU. This is the task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

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- (b) Do a wiring check between these connectors on the window heater and the WHCU:

NOTE: The table below lists several pins on the WHCU connector. Only one of the pins will be connected to the window heater. Which pin is connected is determined by the window resistance. For more details see the applicable schematic or refer to this task: Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-000-801.

WHCU - M320

WINDOW RIGHT SIDE	WHCU CONNECTION D1042A
terminal A	pin 1
terminal A	pin 7
terminal A	pin 8
terminal A	pin 14
terminal A	pin 20
terminal A	pin 21
terminal B	ground

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WHCU - M321

WINDOW	WHCU
LEFT FRONT	CONNECTION
	D1044A
terminal 3	pin 7
terminal 3	pin 8
terminal 3	pin 14
terminal 3	pin 20
terminal 3	pin 21
terminal 4	pin 7
terminal 4	pin 8
terminal 4	pin 14
terminal 4	pin 20
terminal 4	pin 21
terminal 1	ground
terminal 2	ground

WHCU - M322

WINDOW	WHCU
LEFT SIDE	CONNECTION
	D1046A
terminal A	pin 1
terminal A	pin 7
terminal A	pin 8
terminal A	pin 14
terminal A	pin 20
terminal A	pin 21
terminal B	ground

WHCU - M323

WINDOW	WHCU
RIGHT FRONT	CONNECTION
	D1048A
terminal 3	pin 7
terminal 3	pin 8
terminal 3	pin 14
terminal 3	pin 20
terminal 3	pin 21
terminal 4	pin 7
terminal 4	pin 8
terminal 4	pin 14
terminal 4	pin 20
terminal 4	pin 21
terminal 1	ground
terminal 2	ground

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- (c) Do a wiring check between these connections on the window heater and the WHCU:

WHCU - M321

WINDOW	WHCU
RIGHT SIDE	CONNECTION
	D16230
terminal A	pin 3
terminal B	ground

WHCU - M321

WINDOW	WHCU
LEFT FRONT	CONNECTION
	D16230
terminal 3	pin 1
terminal 4	pin 1
terminal 1	ground
terminal 2	ground

WHCU - M323

WINDOW	WHCU
LEFT SIDE	CONNECTION
	D16232
terminal A	pin 3
terminal B	ground

WHCU - M323

WINDOW	WHCU
RIGHT FRONT	CONNECTION
	D16232
terminal 3	pin 1
terminal 4	pin 1
terminal 1	ground
terminal 2	ground

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- (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.

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- (5) Do these steps to make sure the window heat terminals are connected to the correct WHCU transformer taps:
- (a) Do a check of the window heater wiring to the WHCU. This is the task: Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-000-801.

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- (b) If the impedance of the window heater and WHCU transformer do not match, then do these steps.
 - 1) Do the steps in the referenced task to rewire the WHCU.
 - 2) Do the Repair Confirmation at the end of this task.
- (c) If the window heater impedance and the WHCU transformer match, then continue.
- (6) Install a new WHCU. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

SIA ALL

G. Repair Confirmation

- (1) If necessary, then re-install the WHCU that was removed. This is the task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
- (2) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 702-714			
D	1	C00226	WINDOW HEAT CONTROL RIGHT FRONT AC
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC
E	1	C00224	WINDOW HEAT CONTROL LEFT FRONT AC
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA ALL			
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

- (3) Do a test of the window heat system:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the BIT TEST OK light comes on, then you have corrected the fault.
 - (c) If the WINDOW POWER Fault LED stays on, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

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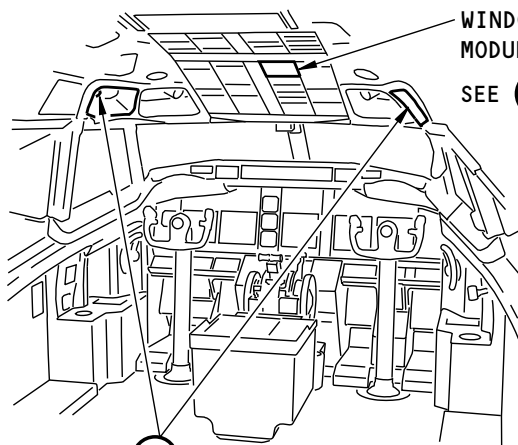
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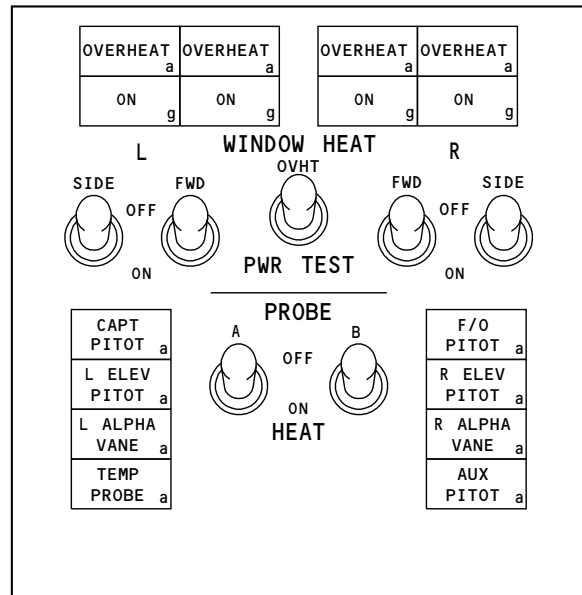


WINDOW/PITOT HEAT
MODULE (P5-9)

SEE (A)

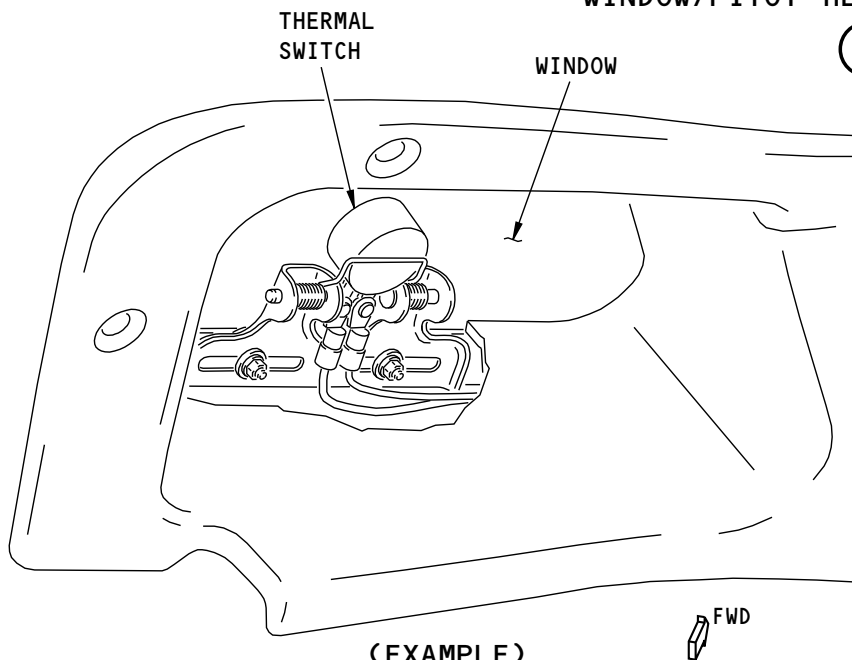
SEE (B)

FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE (P5-9)

(A)



(EXAMPLE)

(B)

G58102 S0006743320_V1

Control Cabin Window Anti-Icing Component Location
Figure 301/30-41-00-990-801 (Sheet 1 of 4)

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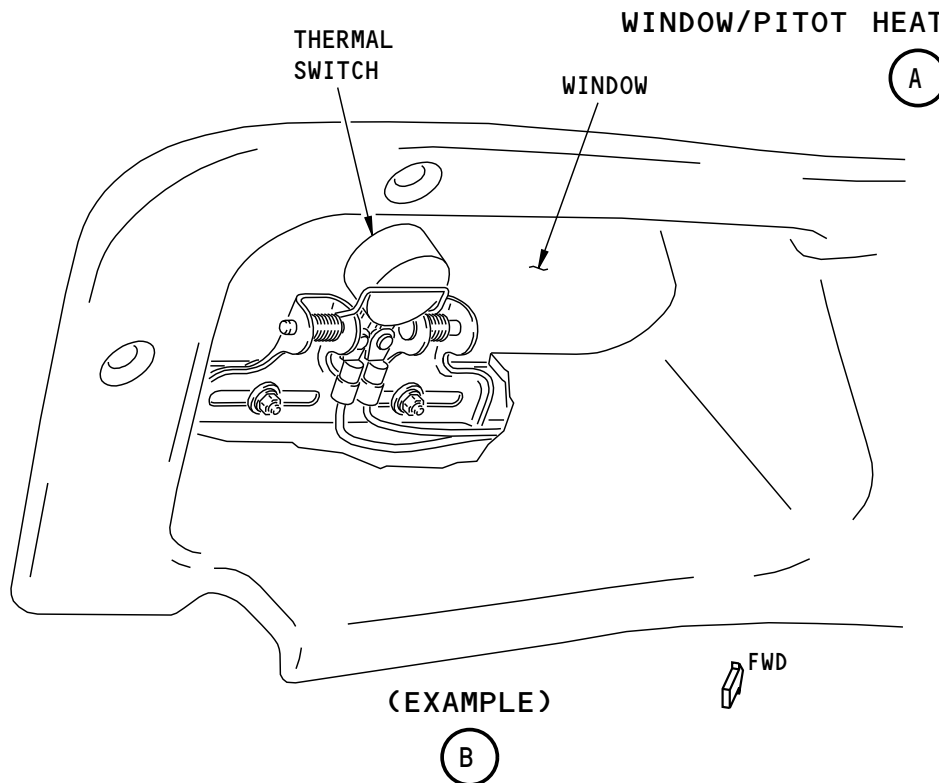
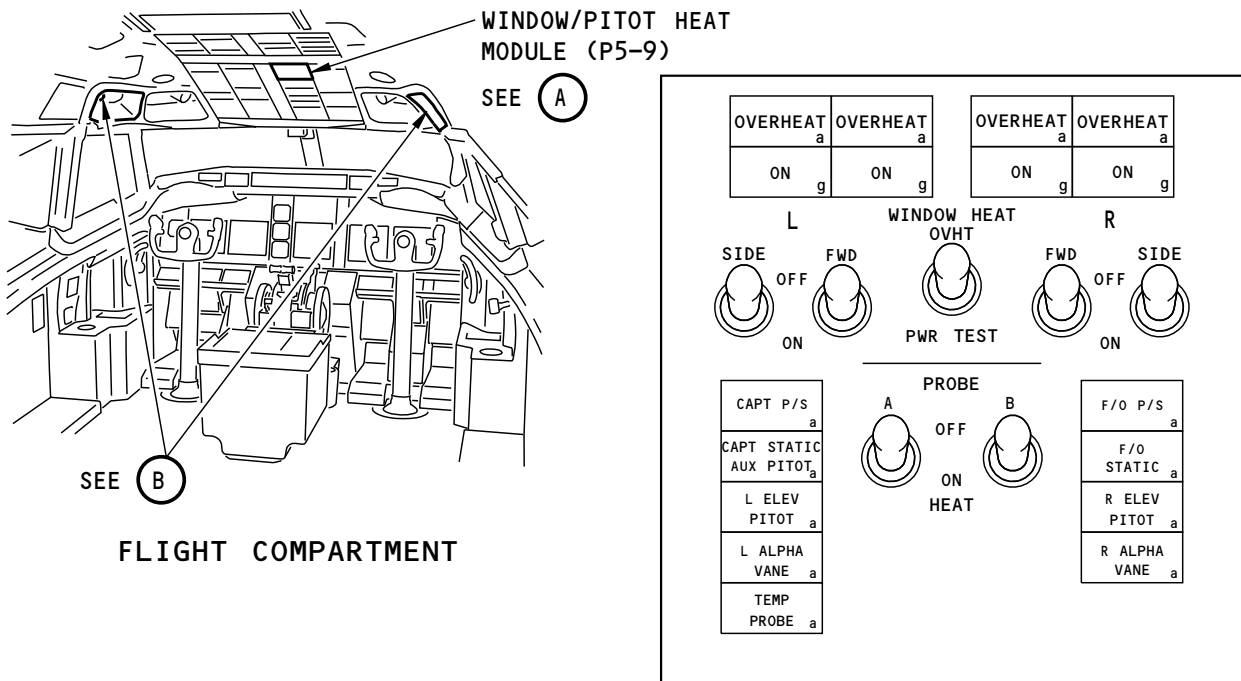
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WINDOW/PITOT HEAT MODULE (P5-9)

L49488 S0006743323_V1

Control Cabin Window Anti-Icing Component Location
Figure 301/30-41-00-990-801 (Sheet 2 of 4)

EFFECTIVITY
SIA ALL

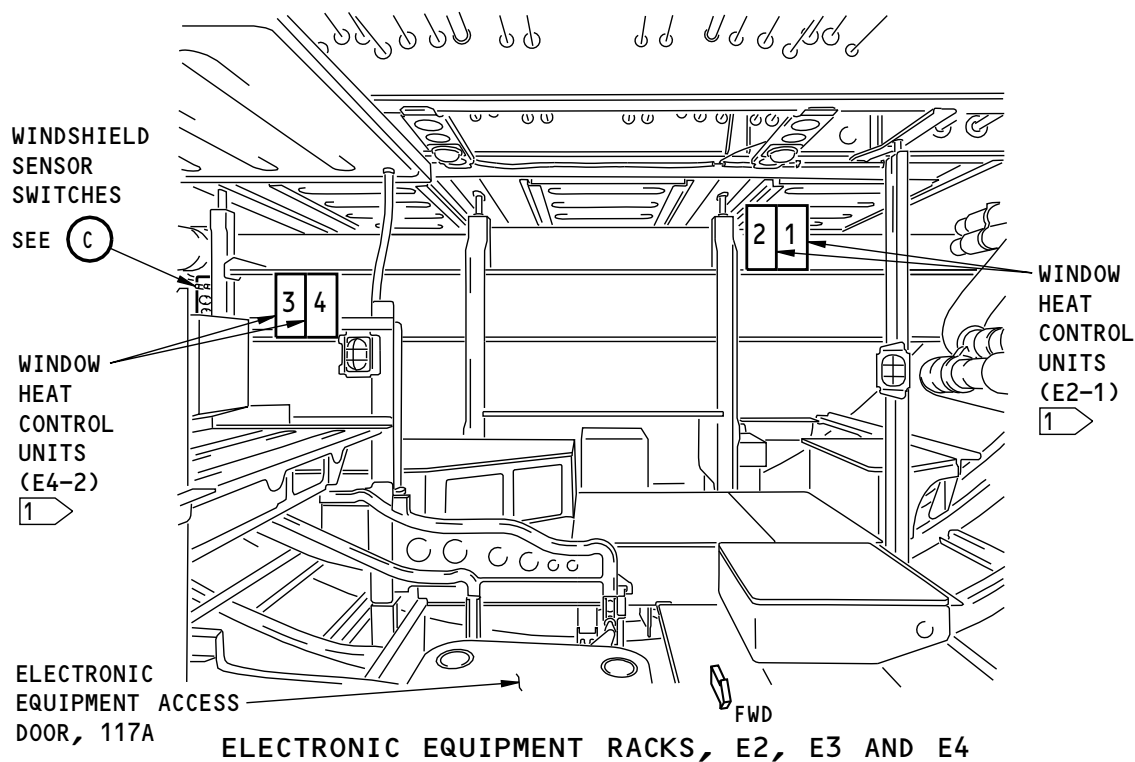
30-41 TASK SUPPORT

D633A103-SIA

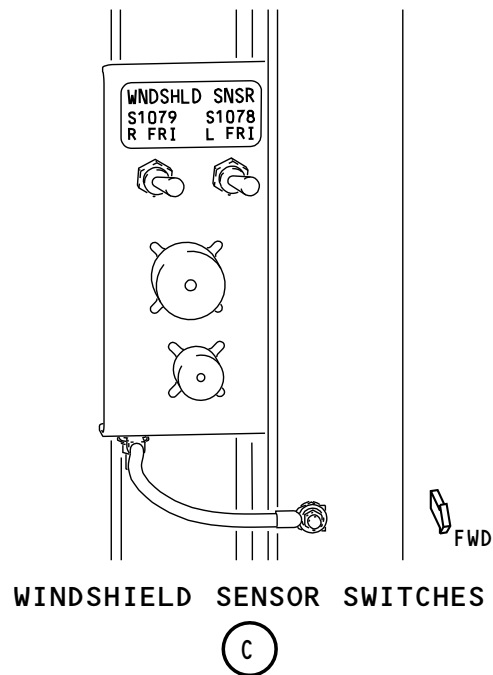
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UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD



G58103 S0006743324_V1

Control Cabin Window Anti-Icing Component Location
Figure 301/30-41-00-990-801 (Sheet 3 of 4)

EFFECTIVITY
SIA 702-714

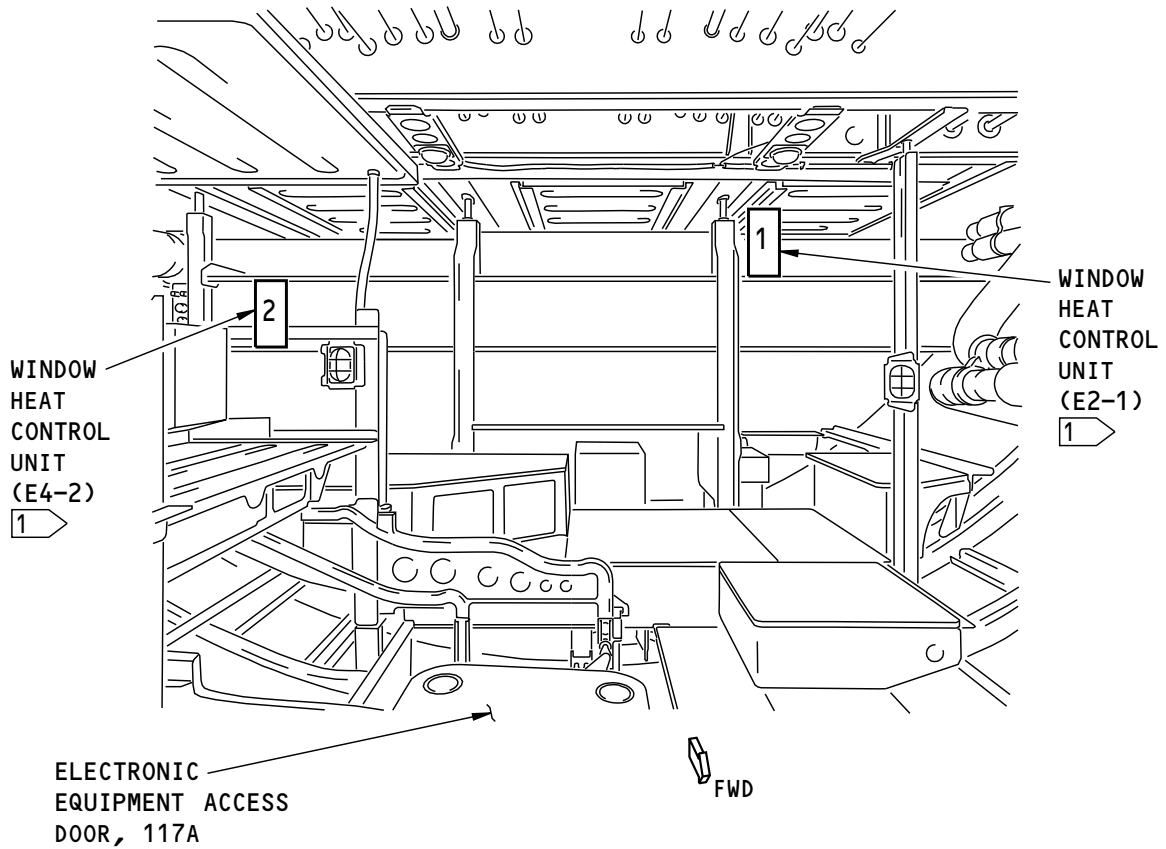
30-41 TASK SUPPORT

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ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1	UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1		M321	L FWD AND R SIDE
2		M323	R FWD AND L SIDE

2841472 S0000662857_V1

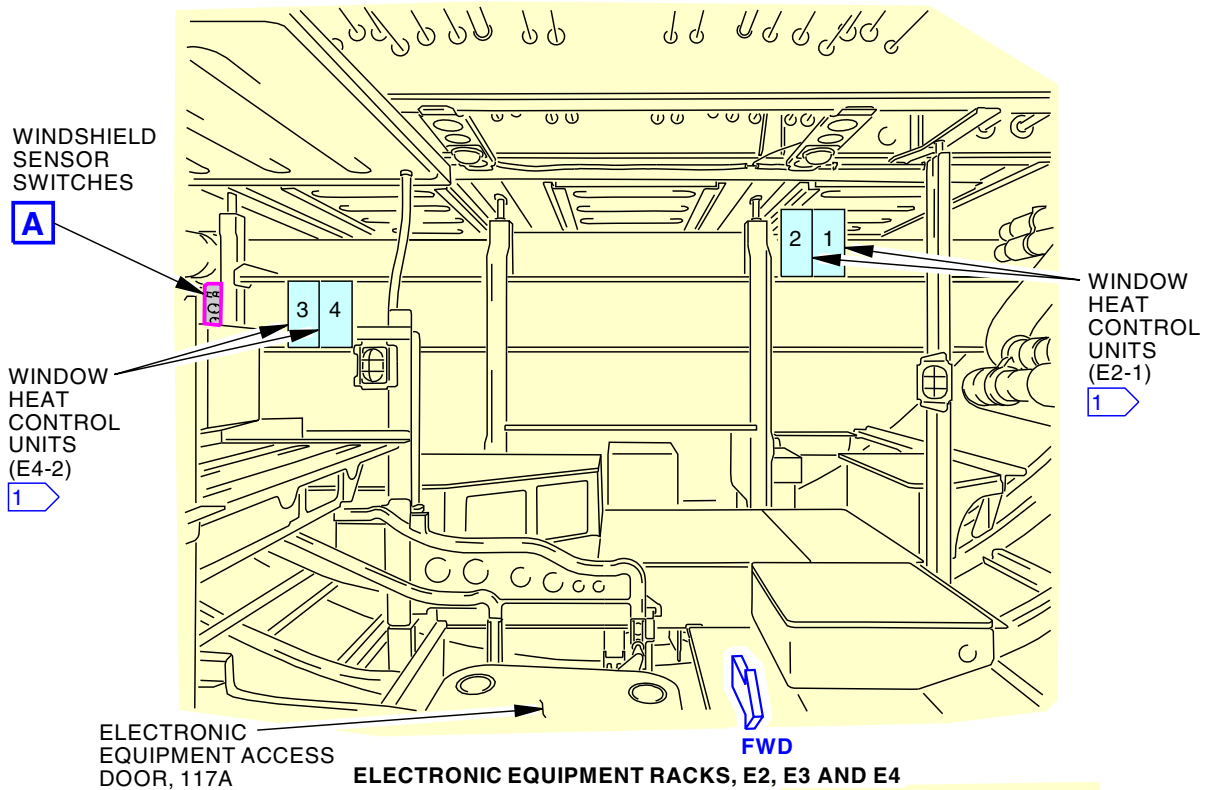
Control Cabin Window Anti-Icing Component Location
Figure 301/30-41-00-990-801 (Sheet 4 of 4)

EFFECTIVITY
SIA 716-999

30-41 TASK SUPPORT

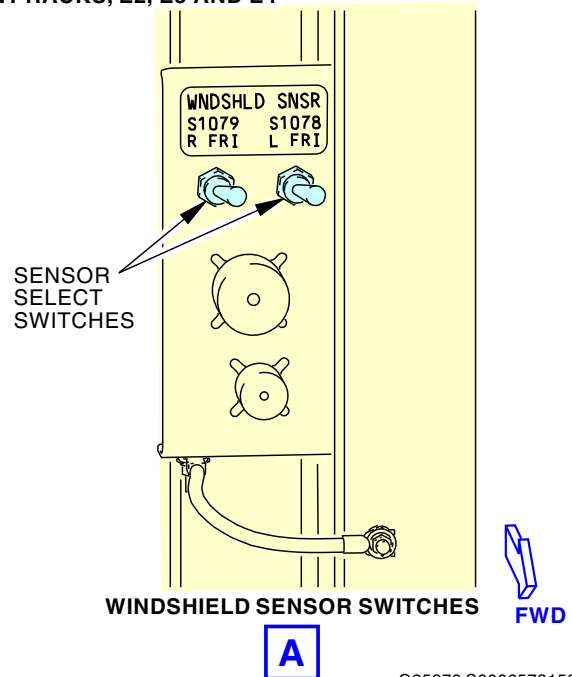
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1

UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1	M320	R SIDE
2	M321	L FWD
3	M322	L SIDE
4	M323	R FWD

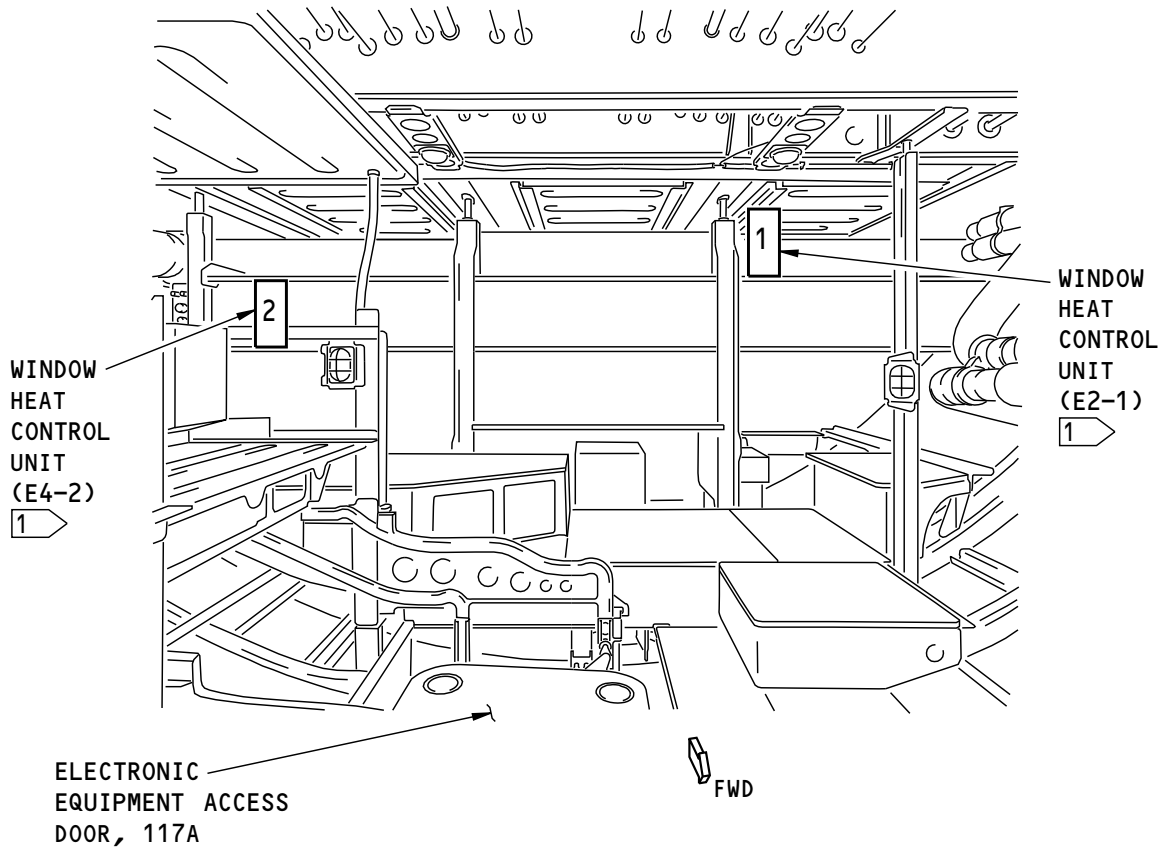


G25279 S0006573159_V2

Windshield Sensor Switches
Figure 302/30-41-00-990-806 (Sheet 1 of 2)



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FAULT ISOLATION MANUAL



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1	UNIT	ELECTRICAL EQUIPMENT NO.	WINDOW
1		M321	L FWD AND R SIDE
2		M323	R FWD AND L SIDE

2841473 S0000662861_V1

Windshield Sensor Switches
Figure 302/30-41-00-990-806 (Sheet 2 of 2)

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SIA 716-999

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801. Windshield Wiper Does Not Operate in Any Switch Position - Fault Isolation

A. Description

- (1) The windshield wiper does not run in any switch position.

B. Possible Causes

- (1) Windshield wiper motor, M21 (left) or M22 (right)
- (2) Windshield wiper control switch, S22
- (3) Windshield wiper control switch, S7 (left) or S22 (right)
- (4) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)
- (3) (WDM 30-42-11)

E. Initial Evaluation

- (1) Do a test of the windshield wiper operation:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPERS ON A DRY WINDSHIELD. THE WIPERS WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the applicable windshield wiper control switch (P5 overhead panel) to INT, LOW, and HIGH.
 - 1) If a windshield wiper does not operate in any position, then do the Fault Isolation Procedure below.
 - 2) If a windshield wiper operates in all but one position, then, do this task: Windshield Wiper Does Not Operate in One Switch Position - Fault Isolation, 30-42 TASK 802.
 - 3) If the windshield wiper operates in all positions, then there was an intermittent fault.
- (c) Set the windshield wiper control switch to PARK.

F. Fault Isolation Procedure

- (1) Do this check for electrical power at the windshield wiper motor:
 - (a) To get access to the wiper motor and connector, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.
 - (b) Remove the electrical connector from the windshield wiper motor.
 - (c) Put the applicable windshield wiper switch (left or right) in the HIGH position.

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- (d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (e) Do a check of these pins on the left (D62) or right (D64) connector:

D62 OR D64	CONDITION
pin 1	ground
pin 2	20 to 28 VDC
pin 3	14.7 to 19.2 VDC

- (f) If the pin conditions are correct, then do these steps:

- 1) Reconnect the applicable left (D62) or right (D64) connector.
- 2) Do the initial evaluation:

- a) If the windshield wiper operation has returned to normal, then it is likely that the wiper motor thermal switch had opened and caused the wiper motor to shutdown. Do this task: Windshield Wiper Arm Force - Check/Adjustment, AMM TASK 30-42-31-820-801.

NOTE: The internal thermal switch, in the motor assembly, is a self-resetting protective function that prevents excessive motor temperatures. The automatic shutdown may be caused by high wiper arm force, dry windshield operation, or damage to the wiper motor drive mechanism.

- <1> If the wiper force requires to be reduced, then do the repair confirmation at the end of this task. Otherwise, replace the windshield wiper motor in the step below.

- b) If the windshield wiper operation remains inoperative, then continue.

- 3) Replace the windshield wiper motor. To replace the motor,

These are the tasks:

Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,

Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.

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

- (g) If pin 1 is not grounded, then do these steps:

- 1) Repair the wiring between pin 1 on the connector and airplane ground (WDM 30-42-11).
- 2) Connect the electrical connector to the wiper motor.
- 3) Do the Repair Confirmation at the end of this task.

- (h) If pin 2 does not have 20 to 28 VDC, then do these steps (WDM 30-42-11):

- 1) Repair the wiring between pin 2 on the connector and the applicable circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

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(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- 2) Connect the electrical connector to the wiper motor.
 - 3) Do the Repair Confirmation at the end of this task.
 - (i) If pin 3 does not have 14.7 to 19.2 VDC, then continue.
- (2) Do this check of the wiring between the wiper select switch and wiper motor:



WARNING

THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do these steps to access the electrical connections to the windshield wiper control switch.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- 2) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 3) Release the panel safety latch.
 - 4) The terminals are on the rear of the windshield wiper control switch.
- (b) Check for continuity between these pins on the applicable windshield wiper control switch and the wiper motor:

WIPER MOTOR	WIPER CONTROL SWITCH
GROUND	PIN 21
PIN 2	PIN 22
PIN 3	PIN 23

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring (WDM 30-42-11).
 - 2) Connect the electrical connector on the wiper motor.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you did not find a problem with the wiring, then continue.
- (3) Do these steps to repair a problem with the windshield wiper selector switch:

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- (a) Replace the windshield wiper selector switch.
- (b) Connect the electrical connector on the windshield wiper motor.
- (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (2) Do a test of the windshield wiper operation:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the WIPER selector switch to each position.
 - (c) If the windshield wiper operates correctly in all positions, then you corrected the fault.
 - (d) Set the windshield wiper control switch to PARK.
- (3) Close the P5 panel.
- (4) Re-install the display unit. To install the unit, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

———— **END OF TASK** ————

802. Windshield Wiper Does Not Operate in One Switch Position - Fault Isolation

A. Description

- (1) The windshield wiper does not run in either the INT, LOW, or HIGH switch position. The windshield wiper runs in the other switch positions.

B. Possible Causes

- (1) Windshield wiper control switch, S22
- (2) Windshield wiper control switch, S7 (left) or S22 (right)
- (3) Windshield wiper motor, M21 (left) or M22 (right)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)

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(3) (WDM 30-42-11)

E. Initial Evaluation

- (1) Do an operational test of the windshield wiper:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPERS ON A DRY WINDSHIELD. THE WIPERS WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the applicable windshield wiper control switch (P5 overhead panel) to INT, LOW, and HIGH.
- (c) If the windshield wiper does not operate in any position, then, do this task: Windshield Wiper Does Not Operate in Any Switch Position - Fault Isolation, 30-42 TASK 801.
- (d) If a windshield wiper does not operate in one position, then do the Fault Isolation Procedure below.

NOTE: Make a note of the failed switch position.

- (e) If the windshield wipers operate in all positions, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the windshield wiper control switch:
 - (a) To get access to the wiper motor and connector, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.
 - (b) Remove the electrical connector from the windshield wiper motor.
 - (c) Measure the voltage at pin 3 on the wiper motor connector for each switch position.
 - (d) Compare the measured voltages to this table:

WIPER SWITCH POSITION	VOLTAGE AT PIN 3
PARK	3.6 to 4.8 VDC
INT	7.2 to 9.6 VDC
LOW	10.7 to 14.4 VDC
HIGH	14.7 to 19.2 VDC

- (e) If any of the voltages is outside the range on the table, then do these steps:
 - 1) Replace the wiper control switch.
 - 2) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- 3) Set the WIPER selector switch to each of the switch positions.
 - 4) If the windshield wiper operates correctly, then you corrected the problem.
- (f) If all the voltages are correct, then continue
- (2) Do these steps to replace the wiper motor.

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- (a) These are the tasks:
 - Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,
 - Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.
- (b) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (c) Set the WIPER selector switch to each of the switch positions.
- (d) If the windshield wiper operates correctly, then you corrected the problem.

END OF TASK

803. Windshield Wiper Sweep is Incorrect - Fault Isolation

A. Description

- (1) The windshield wiper does not sweep across the windshield correctly. Refer to the task support illustration for the correct sweep pattern.

B. Possible Causes

- (1) Windshield wiper motor, M21 (left) or M22 (right)
- (2) Windshield wiper rigging

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)
- (3) (WDM 30-42-11)

E. Initial Evaluation

- (1) Do an operational test of the windshield wiper:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switches (P5 overhead panel) to LOW.
- (c) Compare the two wiper sweep patterns.
- (d) If the sweep of the wipers are different, then do the Fault Isolation Procedure below.

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- (e) If the sweep of the wipers are the same, then there was an intermittent fault.
NOTE: It is possible that both wipers are not rigged correctly. You can do the Fault Isolation Procedure below.
- (f) Set the wiper control switch to the PARK position.

F. Fault Isolation Procedure

- (1) Inspect the wiper arm for damage:
 - (a) If there is damage, then do these steps:
 - 1) Replace the wiper arm.
These are the tasks:
Windshield Wiper Arm - Removal, AMM TASK 30-42-31-000-801,
Windshield Wiper Arm - Installation, AMM TASK 30-42-31-400-801.
 - 2) If the post installation check operates correctly, then you corrected the fault.
 - (b) If there is no damage, then continue.
- (2) Do this check of the windshield wiper arm position.
 - (a) Do this task: Windshield Wiper Arm Position - Check/Adjustment, AMM TASK 30-42-31-820-802.
 - (b) If the wiper arm sweep is not adjusted properly, then do these steps:
 - 1) Do the adjustment and test in the procedure (AMM TASK 30-42-31-820-802).
 - 2) If the test operates correctly, then you corrected the fault.
 - (c) If the wiper arm sweep cannot be adjusted, then continue.
- (3) Do these steps to replace the wiper motor.
 - (a) These are the tasks:
Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,
Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.
 - (b) Do the adjustments and tests in the installation procedure.
 - (c) If the tests operate correctly, then you corrected the fault.

————— **END OF TASK** —————

804. Windshield Wiper Speed is Incorrect - Fault Isolation

A. Description

- (1) The windshield wiper speed is incorrect.

B. Possible Causes

- (1) Windshield wiper motor, M21 (left) or M22 (right)
- (2) Windshield wiper control switch, S22
- (3) Windshield wiper rigging

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT

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CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)
- (3) (WDM 30-42-11)

E. Initial Evaluation

- (1) Do an operational test of the wiper:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to INT, LOW, and HIGH.
 - 1) If the windshield wiper speed is incorrect in one position, then do the Fault Isolation Procedure below.

POSITION	SPEED
HIGH	225 to 275 strokes /min
LOW	135 to 185 strokes/min
INT	2 complete strokes every 6 to 8 seconds

- 2) If the windshield wiper speed is correct in all positions, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this task: Windshield Wiper Arm Force - Check/Adjustment, AMM TASK 30-42-31-820-801.
 - (a) If the wiper blade force is incorrect, then do the adjustment in the procedure that checks the force.
 - (b) If the wiper blade force was correct, then continue.
- (2) Do this check of the windshield wiper control switch:
 - (a) To get access to the wiper motor and connector, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801.
 - (b) Remove the electrical connector from the windshield wiper motor.
 - (c) Measure the voltage at pin 3 on the wiper motor connector for each switch position.
 - (d) Compare the measured voltages to this table:

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WIPER SWITCH POSITION	VOLTAGE AT PIN 3
PARK	3.6 to 4.8 VDC
INT	7.2 to 9.6 VDC
LOW	10.7 to 14.4 VDC
HIGH	14.7 to 19.2 VDC

- (e) If any of the voltages is outside the range on the table, then do these steps:
 - 1) Replace the wiper control switch.
 - 2) Do the Repair Confirmation at the end of this task.
- (f) If all the voltages are correct, then continue
- (3) Do these steps to replace the wiper motor:
 - (a) Replace the wiper motor.
These are the tasks:
Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,
Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.
 - (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do a test of the windshield wiper operation:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to INT, LOW, HIGH, and then PARK.
- (c) If the windshield wiper speed is correct in all positions, then you corrected the fault.
- (2) If it is necessary, close the P5 panel.
- (3) Re-install the display unit. To install the unit, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

————— **END OF TASK** —————

805. Windshield Wiper Parks in the Incorrect Location - Fault Isolation

A. Description

- (1) The windshield wiper parks in the incorrect location when the wiper switch is put in the PARK position. The sweep pattern of the windshield wiper appears to be correct.

B. Possible Causes

- (1) Wiring problem
- (2) Windshield wiper motor, M21 (left) or M22 (right)

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)
- (3) (WDM 30-42-11)

E. Initial Evaluation

- (1) Do an operational test of the windshield wiper:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to LOW.
- (c) Make sure the sweep pattern is correct.
 - 1) If the sweep pattern is not correct, then, do this task: Windshield Wiper Sweep is Incorrect - Fault Isolation, 30-42 TASK 803.
 - 2) If the sweep pattern is correct, then continue.
- (d) Set the wiper control switch to the PARK position while the wiper is away from the normal parked position.
- (e) If the windshield wiper does not return to the parked position, then do the Fault Isolation Procedure below.

NOTE: The parked position is on the glass near the bottom of the windshield.
- (f) If the windshield wiper returns to the parked position, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the wiper motor power input (WDM 30-42-11):
 - (a) To get access to the wiper motor and connector, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801
 - (b) Remove the electrical connector from the windshield wiper motor.
 - (c) Measure the voltage at pin 2 on the wiper motor connector.
 - (d) If there is not 20 to 28 VDC at the pin, do these steps:
 - 1) Repair the wiring between the connector and the applicable circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

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- 2) Re-connect the electrical connectors.
- 3) Do the Repair Confirmation at the end of this task.
- (e) If there is 20 to 28 VDC at the pin, then continue
- (2) Do these steps to replace the windshield wiper motor:
 - (a) Replace the windshield wiper motor.

These are the tasks:
Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,
Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.
 - (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation



DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (1) Make sure the windshield wipers operate properly.
- (2) If the windshield wiper operates, then you corrected the fault.
- (3) Re-install the display unit. To install the unit, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

————— END OF TASK —————

806. Windshield Wiper Does Not Stop - Fault Isolation

A. Description

- (1) The windshield wiper keeps running when the wiper switch is put in the PARK position.

B. Possible Causes

- (1) Windshield wiper motor, M21 (left), M22 (right)
- (2) Windshield wiper control switch, S7 (left) or S22 (right)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Related Data

- (1) Component Location (30-42 TASK SUPPORT Figure 301)
- (2) (SSM 30-42-11)
- (3) (WDM 30-42-11)

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E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

- (2) Do an operational test of the windshield wiper:

- (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to LOW.
(c) Set the wiper control switch to the PARK position.
(d) If the windshield wiper does not return to the parked position and stop, do the Fault Isolation Procedure below.
(e) If the windshield wiper returns to the parked position and stops, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the wiper motor ground:

- (a) To get access to the wiper motor and connector, do this task: Display Unit Removal, AMM TASK 31-62-11-000-801
(b) Remove the electrical connector from the windshield wiper motor.
(c) Measure for continuity between pin 1 on the wiper motor and structure ground.
(d) If pin 1 is not grounded, then do these steps:
 1) Repair the wiring between the connector and structure ground.
 2) Re-connect the electrical connector.
 3) Do the Repair Confirmation at the end of this task.
(e) If pin 1 is grounded, then continue.

- (2) Do this check of the windshield wiper motor:

- (a) Measure the voltage at pin 3 on the wiper motor connector.
(b) If there is 3.6 to 4.8 VDC at the pin, then do these steps:
 1) Replace the windshield wiper motor.
 These are the tasks:
 Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,
 Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.
 2) Do the Repair Confirmation at the end of this task.
(c) If there is not 3.6 to 4.8 VDC at the pin, then continue.

- (3) Do this test of the wiper switch and wiring:

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THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN OCCUR.

- (a) Do these steps to access the electrical connections to the windshield wiper control switch.
 - 1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel.



CAUTION

THE P5 PANEL IS VERY HEAVY AND WILL MOVE FREELY WHEN THE LATCH IS RELEASED. SUPPORT THE P5 PANEL BEFORE YOU RELEASE THE SAFETY LATCH.

- 2) Release the panel safety latch.
 - 3) The terminals are on the rear of the windshield wiper control switch.
- (b) Measure the voltage between pin 23 on the applicable wiper switch and structure ground.
- (c) If you measure 3.6 to 4.8 VDC at the pin, then do these steps:
 - 1) Repair the wiring between the switch and wiper motor.
 - 2) Re-connect the connectors.
 - 3) Do the Repair Confirmation at the end of this task.
- (d) If there is not 3.6 to 4.8 VDC at the pin, then continue.
- (4) Do these steps to replace the windshield wiper control switch:
 - (a) Replace the windshield wiper control switch.
 - (b) Re-connect the connectors.
 - (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do a test of the windshield wiper operation:
 - (a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to LOW.
 - (c) Set the wiper control switch to the PARK position.
 - (d) If the windshield wiper returns to the correct parked position and stops, then you corrected the fault.
- (2) Close the P5 panel.
- (3) Re-install the display unit. To install the unit, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

————— **END OF TASK** —————

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807. Windshield Wiper Does Not Remove Water Sufficiently - Fault Isolation

A. Description

- (1) The windshield wiper does not adequately clear water from the windshield.

B. Possible Causes

- (1) Windshield wiper
(2) Windshield wiper rigging

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
B	3	C00054	ANTI-ICE & RAIN WSHLD WIPER LEFT

D. Initial Evaluation

- (1) Do an operational test of the windshield wiper:
(a) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (b) Set the windshield wiper control switch (P5 overhead panel) to LOW.
(c) If the windshield wiper does not properly clear water from the windshield, then do the Fault Isolation procedure below.
(d) If the windshield wiper properly clears water from the windshield, then there may have been debris on the wiper or windshield.
(e) Set the wiper control switch to the PARK position.

E. Fault Isolation Procedure

- (1) Examine the wiper arm for damage:
(a) If there is damage, then do these steps:
1) Replace the wiper arm.
These are the tasks:
Windshield Wiper Arm - Removal, AMM TASK 30-42-31-000-801,
Windshield Wiper Arm - Installation, AMM TASK 30-42-31-400-801.
2) Supply a continuous water spray to the windshield.



CAUTION

DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- 3) Set the windshield wiper control switch (P5 overhead panel) to LOW.

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- 4) If the windshield wiper properly clears water from the windshield, then you corrected the fault.
- 5) If the windshield wiper does not properly clear water from the windshield, then continue.
- 6) Set the wiper control switch to the PARK position.
- (b) If there is no damage, then continue.
- (2) Examine the wiper blade for damage.
 - (a) If there is damage, then do these steps:
 - 1) Replace the wiper blade.

These are the tasks:
Windshield Wiper Blade Removal, AMM TASK 30-42-11-020-801,
Windshield Wiper Blade Installation, AMM TASK 30-42-11-400-801.
 - 2) Supply a continuous water spray to the windshield.



DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- 3) Set the windshield wiper control switch (P5 overhead panel) to LOW.
- 4) If the windshield wiper properly clears water from the windshield, then you corrected the fault.
- 5) If the windshield wiper does not properly clear water from the windshield, then continue.
- 6) Set the wiper control switch to the PARK position.
- (b) If there is no damage, then continue.
- (3) Do these steps to do a wiper arm force check:
 - (a) Do this task: Windshield Wiper Arm Force - Check/Adjustment, AMM TASK 30-42-31-820-801.
 - (b) If the wiper blade down force is not correct, then do the adjustment in the task.
 - (c) If the wiper blade down force is correct, then replace the wiper blade.

These are the tasks:
Windshield Wiper Blade Removal, AMM TASK 30-42-11-020-801,
Windshield Wiper Blade Installation, AMM TASK 30-42-11-400-801.
 - (d) Supply a continuous water spray to the windshield.



DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

- (e) Set the windshield wiper control switch (P5 overhead panel) to LOW.
- (f) If the windshield wiper properly clears water from the windshield, then you corrected the fault.

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- (g) Set the wiper control switch to the PARK position.

———— **END OF TASK** ————

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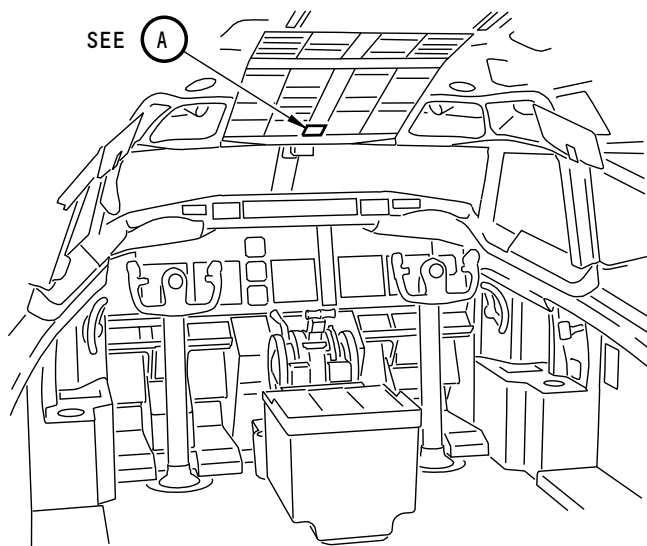
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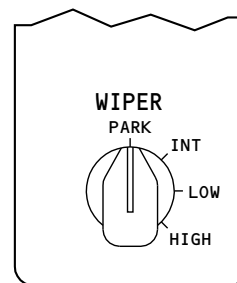
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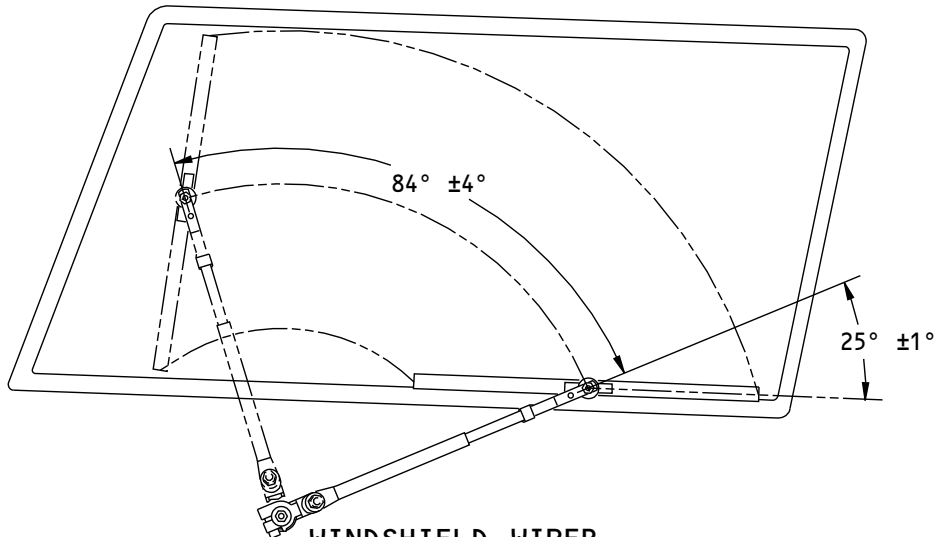
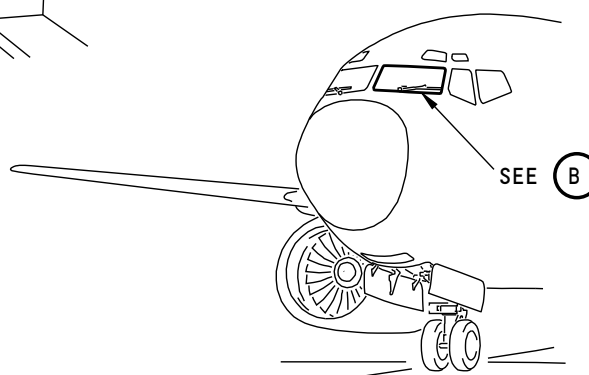


FLIGHT COMPARTMENT



WINDSHIELD WIPER SWITCH

(A)



WINDSHIELD WIPER

(B)

G58099 S0006743340_V1

Windshield Wipers Component Location
Figure 301/30-42-00-990-801

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801. Drain Mast Does Not Heat - Fault Isolation

A. Description

- (1) The drain mast does not get heat on the ground. The mast may or may not heat in the air.

B. Possible Causes

- (1) Drain mast, M1849 (forward) or M200 (aft)
(2) Ground sensing relay, R594
(3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

D. Related Data

- (1) (SSM 30-71-11)
(2) (WDM 30-71-11)

E. Initial Evaluation

- (1) Make sure the CABIN/UTIL switch is in the ON position.



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (2) Measure the temperature of the forward and aft drain masts on the ground:
- (a) If the temperature of both drain mast are not at least 10 degrees F (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure - Both Drain Masts Do Not Get Hot below.
- (b) If the temperature of the forward drain mast is not at least 10 degrees (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure - Forward Drain Mast Does Not Get Hot below.
- (c) If the temperature of the aft drain mast is not at least 10 degrees F (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure - Aft Drain Mast Does Not Get Hot) below.
- (d) If the temperature of both drain masts are at least 10 degrees F (6 degrees C) greater than the ambient temperature, then continue.



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (3) Do this check of the forward and aft drain masts in the air mode:
- (a) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.

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- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (c) Measure the temperature of the forward and aft drain masts.
- (d) If the masts are at least 10 degrees F (6 degrees C) warmer than the ground mode temperature, then there was an intermittent fault.
- (e) If the temperature of both drain mast are not at least 10 degrees F (6 degrees C) greater than the ground mode temperature, then do the Fault Isolation Procedure - Both Drain Masts Do Not Get Hot below.
- (f) Put the airplane back to the ground mode. To put the airplane in the ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.

F. Fault Isolation Procedure - Both Drain Masts Do Not Get Hot

- (1) Do these steps to replace the ground sensing relay:
- (a) Replace the ground sensing relay, R594.
- (b) Do the Repair Confirmation at the end of this task.
- (c) If the Repair Confirmation is not satisfactory, then continue.
- (2) Do this check for power to the ground sensing relay:
- (a) Remove the relay, R594.
- (b) Do a check for 115 VAC between pin A3 of connector D11022 for the relay and structure ground
- (c) Do a check for 28 VAC between pin A1 of connector D11022 for the relay and structure ground
- (d) If the voltages at pins A3 and A1 of connector D11022 are not correct, then do these steps:
- 1) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- 2) If you did not measure 115 VAC at pin A3, then do a wiring check between these pins of circuit breaker C700 at the P18-3 panel and connector D11022:

C700	D11022
term 1	pin A3

- 3) If you did not measure 28 VAC at pin A1, then do a wiring check between these pins of circuit breaker C234 at the P18-3 panel and connector D11022:

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C234

term 1

D11022

pin A1

- 4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

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

- Repair the wiring.
- Re-install the relay, R594.
- Do the Repair Confirmation at the end of this task.

- (e) If the voltages at pins A3 and A1 of connector D11022 are correct, then continue:

- (3) Do this check of the wiring between the ground sensing relay and drain mast heaters:

- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- (b) Do a wiring check between these pins of connector D11022 for the ground sensing relay and the terminal board TB2201 at the E2-2 shelf:

D11022

pin A2

TB2201

YA25

- (c) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

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

- Repair the wiring.
- Re-install the relay, R594.
- Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Forward Drain Mast Does Not Get Hot

- (1) Do these steps to replace the forward drain mast, M1849:

- (a) These are the tasks:

Forward Drain Mast Removal, AMM TASK 38-31-01-000-801,
Forward Drain Mast Installation, AMM TASK 38-31-01-400-801.

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

- (c) If the Repair Confirmation is not satisfactory, then continue.

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(2) Do this wiring check:

- (a) Disconnect connector D11920 from the forward drain mast.
- (b) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- (c) Do a check of the wiring between these pins of block TB2201 in the E2-2 shelf and connector D11920.

TB2201	D11920
YA25	pin 1

- (d) Do a check of the wiring between pin 2 of connector D11920 and structure ground.
- (e) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- (f) 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.

H. Fault Isolation Procedure - Aft Drain Mast Does Not Get Hot

(1) Do these steps to replace the aft drain mast, M200:

- (a) These are the tasks:

Aft Drain Mast Removal, AMM TASK 38-31-01-000-802,
Aft Drain Mast - Installation, AMM TASK 38-31-01-400-802.

- (b) Do the Repair Confirmation Procedure at the end of this task.
- (c) If the Repair Confirmation is not satisfactory, then continue.

(2) Do this wiring check:

- (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- (b) Do a check of the wiring between these terminals of block TB2201 in the E2-2 shelf and the aft drain mast, M200:

TB2201	M200
YA25	black
ground	term G

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- (c) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

- (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.

I. Repair Confirmation

- (1) Do this check of the ground mode operation of the drain mast heaters:

- (a) Measure the temperature of the forward and aft drain masts.
- (b) If the masts are at least 10 degrees F (6 degrees C) warmer than the ambient air temperature, then continue. The drain masts operate correctly in the ground mode.

- (2) Do this check of the air mode operation of the drain mast heaters:

- (a) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.
- (b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (c) Measure the temperature of the forward and aft drain masts.
 - (d) If the masts are at least 10 degrees F (6 degrees C) warmer than the ground mode temperature, then the drain masts operate correctly in the air mode.
 - (e) Put the airplane back to the ground mode. To put the airplane in the ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
- (3) If the drain masts operate correctly in the air mode and ground mode, then you corrected the fault.

————— END OF TASK —————

802. Drain Mast Overheats - Fault Isolation

A. Description

- (1) The drain mast overheats. The drain mast is noticeably hot on the ground or there is visual evidence of overheating.

B. Possible Causes

- (1) Ground sensing relay, R594

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C00234	HEATERS DRAIN MAST GND
E	4	C00700	HEATERS DRAIN MAST AIR

D. Related Data

- (1) (SSM 30-71-11)
(2) (WDM 30-71-11)

E. Initial Evaluation

- (1) Compare the temperature of the forward and aft drain masts in the ground and air mode:



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (a) Measure the temperature of the forward and aft drain masts.
(b) If the temperature of a drain mast becomes greater than 200 degrees F (93 degrees C), then do the Fault Isolation Procedure below.
(c) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.
(d) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR

- (e) Measure the temperature of the drain masts.
(f) If the temperature of the drain masts are at least 10 degrees F (6 degrees C) greater than the ground mode temperature, then you had an intermittent fault.
(g) If the temperature of the drain masts is not at least 10 degrees F (6 degrees C) greater than the ground mode temperature, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the ground sensing relay, R594.
(a) Do this check of the drain mast heaters:
1) Measure the temperature of the forward and aft drain masts.
2) If the masts are at least 10 degrees F (6 degrees C) warmer than the ambient air temperature, then the drain masts operate correctly in the ground mode.
3) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.

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FAULT ISOLATION MANUAL**

- 4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C00700	HEATERS DRAIN MAST AIR



WARNING

DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- 5) Measure the temperature of the forward and aft drain masts.
- 6) If the masts are at least 10 degrees F (6 degrees C) warmer than the ground mode temperature, then the drain masts operate correctly in the air mode.
- 7) Put the airplane back to the ground mode. To put the airplane in the ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
- (b) If the drain masts operate correctly in the air mode and ground mode, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

30-71 TASK 802

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