CHAPTER

30

ICE AND RAIN PROTECTION

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

30-EFFECTIVE PAGES

CHAPTER 30
ICE AND RAIN PROTECTION

Page	Date	COC
30-41 TASKS (cont)		
206	Feb 10/2005	
207	Oct 10/2006	
208	Oct 10/2006	
209	Oct 10/2006	
210	Oct 10/2006	
211	Oct 10/2006	
R 212	Jun 15/2009	
O 213	Jun 15/2009	
O 214	Jun 15/2009	
O 215	Jun 15/2009	
O 216	Jun 15/2009	
O 217	Jun 15/2009	
O 218	Jun 15/2009	
O 219	Jun 15/2009	
O 220	Jun 15/2009	
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O 224	Jun 15/2009	
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O 226	Jun 15/2009	
O 227	Jun 15/2009	
O 228	Jun 15/2009	
O 229	Jun 15/2009	
O 230	BLANK	
D 231	Jun 15/2009	
D 232	Jun 15/2009	
D 233	Jun 15/2009	
D 234	Jun 15/2009	
D 235	Jun 15/2009	
D 236	Jun 15/2009	
30-41 TASK SUPPORT		
301	Oct 10/2005	
302	Oct 10/2005	
303	Feb 10/2007	
304	BLANK	
30-42 TASKS		
201	Oct 10/2006	
202	Jun 10/2007	
30-42 TASKS (cont)		
203	Jun 10/2007	
204	Jun 15/2008	
205	Jun 10/2007	
206	Jun 10/2007	
207	Jun 10/2007	
208	Jun 10/2007	
209	Jun 10/2007	
210	Jun 10/2007	
211	Jun 10/2007	
212	Jun 10/2007	
213	Jun 10/2007	
214	Jun 10/2007	
30-42 TASK SUPPORT		
301	Feb 10/2005	
302	BLANK	
30-71 TASKS		
201	Feb 15/2009	
202	Oct 10/2006	
203	Oct 10/2006	
204	Oct 10/2006	
205	Oct 10/2006	
206	Oct 10/2006	
207	Oct 10/2006	
208	BLANK	

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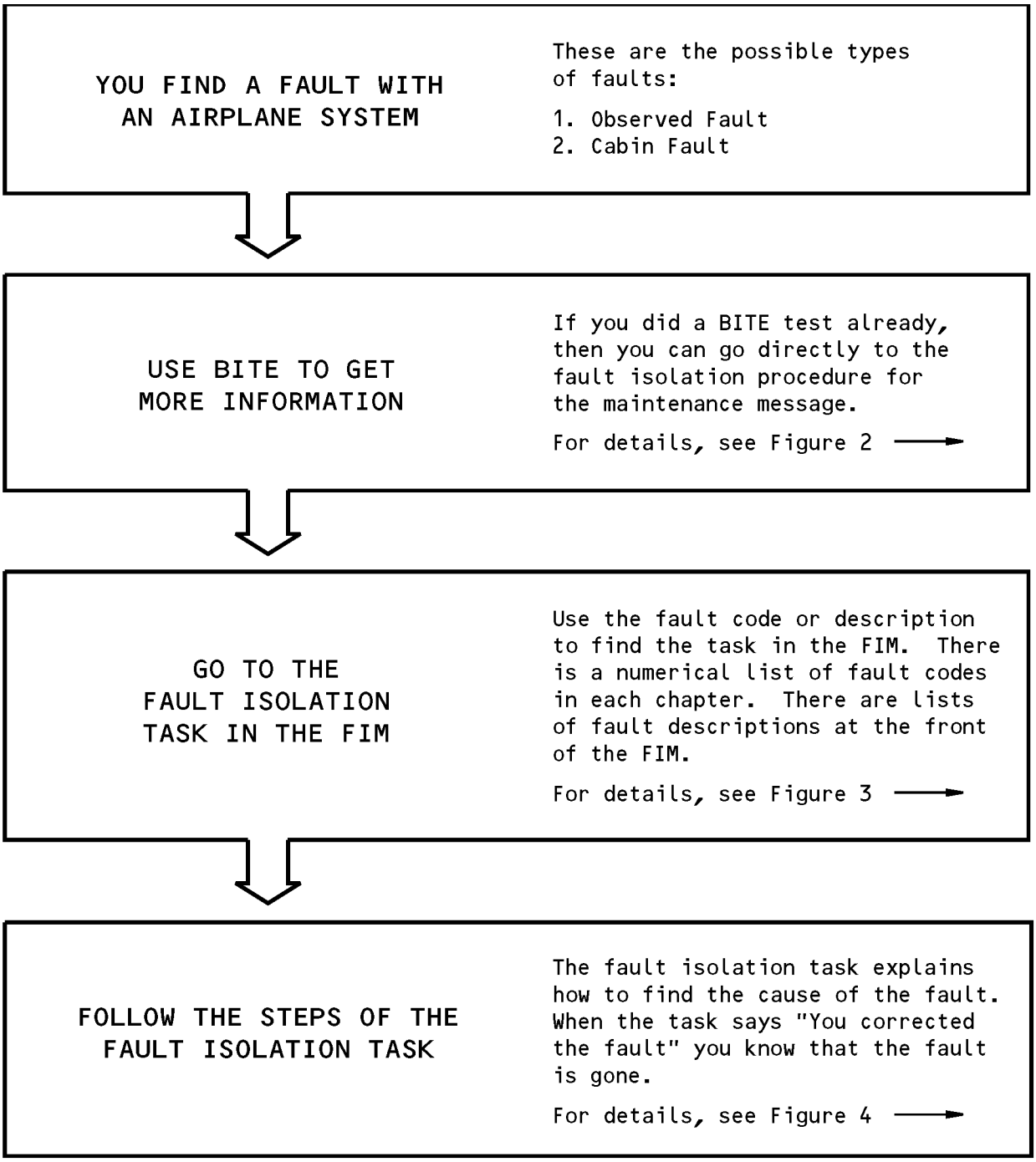
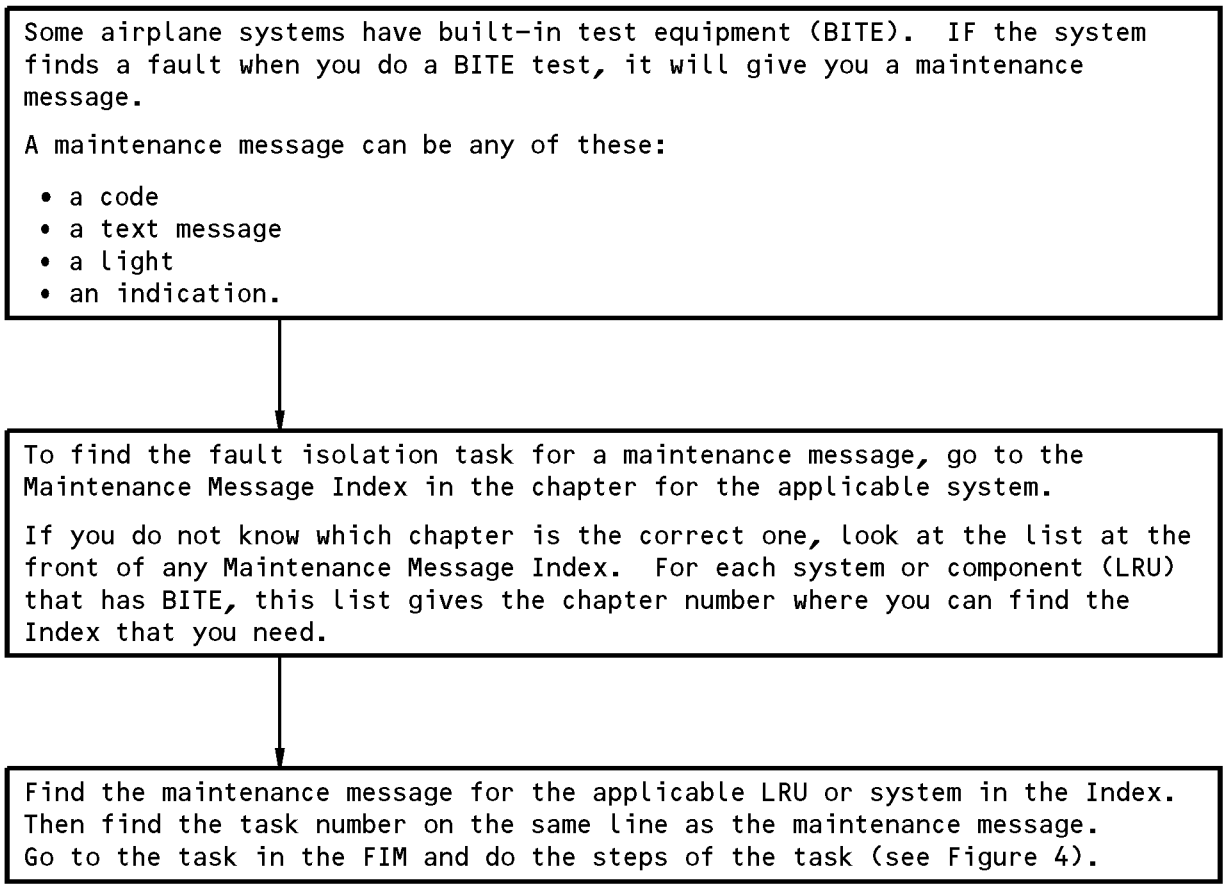
30-EFFECTIVE PAGES



Basic Fault Isolation Process
Figure 1



Getting Fault Information from BITE
Figure 2

IF YOU HAVE:	THEN DO THIS TO FIND THE TASK IN THE FIM:
FAULT CODE	1. The first two digits of the fault code are the FIM chapter that you need. Go to the Fault Code Index in that chapter and find the fault code. If the fault code starts with a letter, then go to the Cabin Fault Code Index at the front of the FIM. 2. Find the task number on the same line as the fault code. Go to the task in the FIM and do the steps in the task (see Figure 4).
OBSERVED FAULT DESCRIPTION	1. Go to the Observed Fault List at the front of the FIM and find the best description for the fault. 2. Find the task number on the same line as the fault description. Go to the task in the FIM and do the steps of the task (see Figure 4).
CABIN FAULT DESCRIPTION	1. Go to the Cabin Fault List at the front of the FIM and find the best description for the fault. 2. Find the task number on the same line as the fault description. Go to the task in the FIM and do the steps of the task (see Figure 4).
MAINTENANCE MESSAGE (FROM BITE)	1. Go to the Maintenance Message Index in the chapter for the LRU (the front of each Index gives you the chapter number for all LRUs). Find the maintenance message in the Index. 2. Find the task number on the same line as the maintenance message. Go to the task in the FIM and do the steps in the task (see Figure 4).

Finding the Fault Isolation Task in the FIM
Figure 3

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.

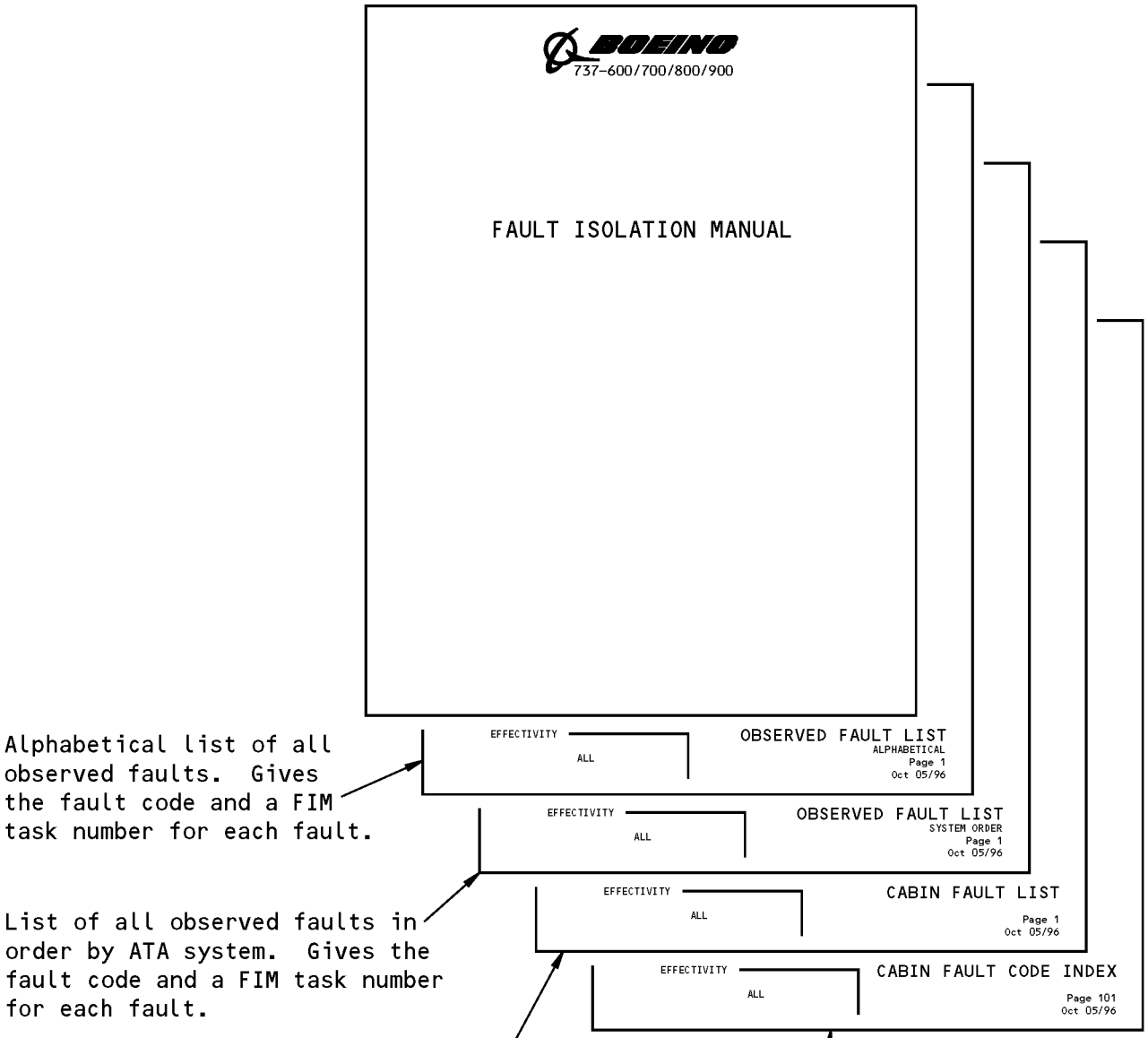
INITIAL EVALUATION PARAGRAPH

- 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.

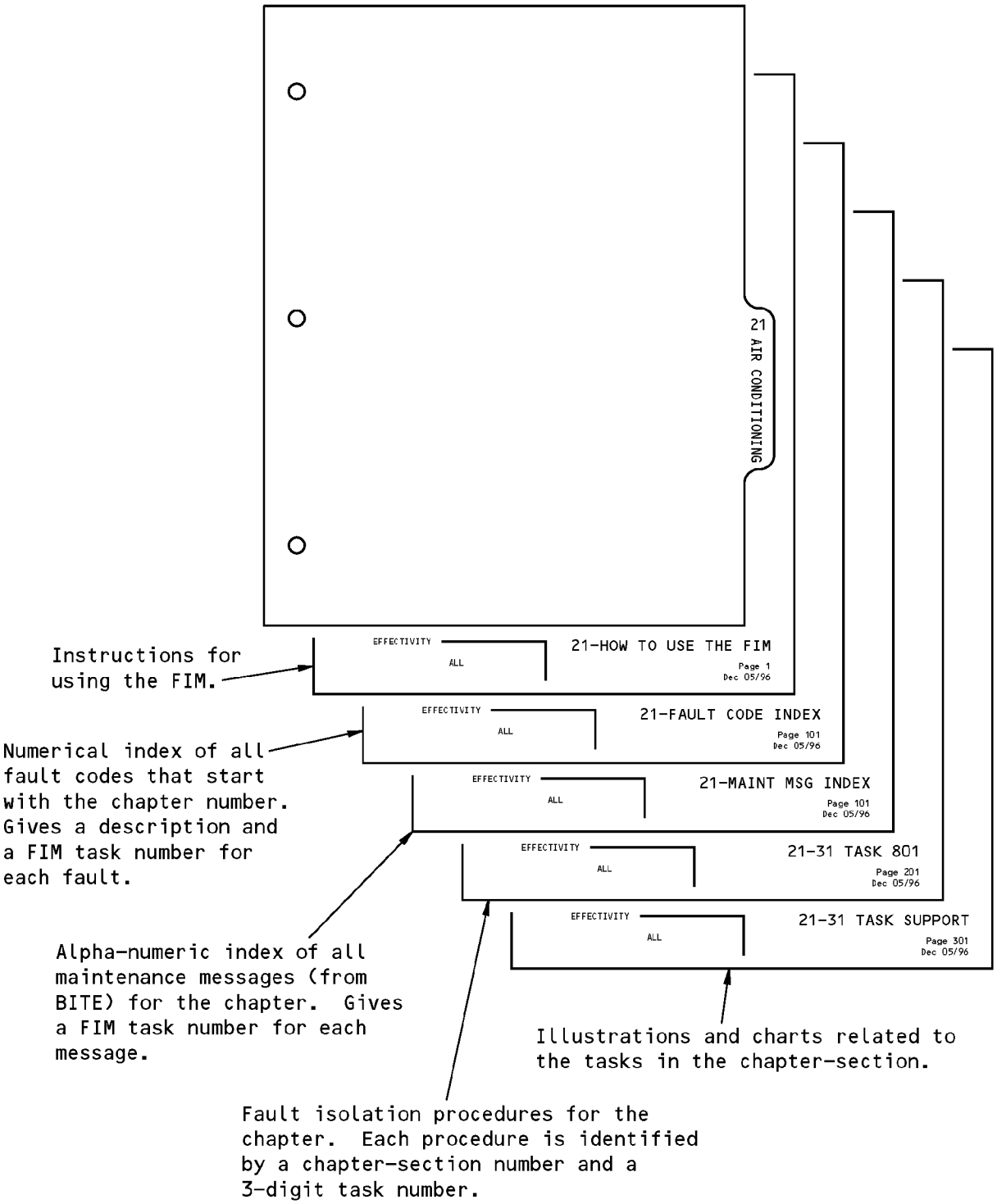
FAULT ISOLATION STEPS

- Do the steps of the task in the specified order. The "If ... then" statements that you see will guide you along the correct path.
- When you are at the endpoint of the path, the step says "...you corrected the fault." Complete the step and exit the procedure.

Doing the Fault Isolation Task
Figure 4



Subjects at Front of FIM
Figure 5



Subjects in Each FIM Chapter
Figure 6

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
301 010 00	WING ANTI-ICE L VALVE OPEN light: slow to go from bright to dim when switch is moved to ON.	30-11 TASK 801
301 015 41	WING ANTI-ICE L VALVE OPEN light: 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: slow to go from bright to off when switch is moved to OFF.	30-11 TASK 802
301 030 00	WING ANTI-ICE L VALVE OPEN light: stays on bright.	30-11 TASK 803
301 050 00	WING ANTI-ICE R VALVE OPEN light: slow to go from bright to dim when switch is moved to ON.	30-11 TASK 801
301 060 00	WING ANTI-ICE R VALVE OPEN light: slow to go from bright to off when 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 L VALVE OPEN light: 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
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 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 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 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 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

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
302 040 52	COWL VALVE OPEN light: stays on bright - ENG ANTI-ICE 2.	30-21 TASK 804
302 050 51	COWL VALVE OPEN light: stays on bright when switch is moved to ON - ENG ANTI-ICE 1.	30-21 TASK 805
302 050 52	COWL VALVE OPEN light: stays on bright when switch is moved to ON - ENG ANTI-ICE 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 801
304 030 42	WINDOW HEAT Power ON light: does not come on - R FWD.	30-41 TASK 801
304 040 41	WINDOW HEAT Power ON light: does not come on - L SIDE.	30-41 TASK 801
304 040 42	WINDOW HEAT Power ON light: does not come on - R SIDE.	30-41 TASK 801
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
304 100 00	Window heat: does not heat correctly - upper window.	Reference Not Currently Available
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

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
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
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

LRU/SYSTEM	SHORT NAME	CHAPTER
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
Automatic Direction Finder Receiver - 1	ADF RECVR - 1	34
Autothrottle System	A/T	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
Cabin Temperature Controller	CAB TEMP CONT	21
Cargo Electronic Unit - Forward	CEU - FWD	26
Cargo Electronic Unit - Lower	CEU - LOWER	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Electronic Unit - Main Forward	CEU - MAIN FWD	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	ENG ACCY UNIT	78
Engine and Auxiliary Power Unit Fire Detection Control Module	ENG/APU FIRE	26
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31
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
Head Up Display	HUD	34

LRU/SYSTEM	SHORT NAME	CHAPTER
High Frequency Transceiver	HF XCVR	23
Low Limit (35 Degree F) Controller - Left	35 DEG CONT L	21
Low Limit (35 Degree F) Controller - Right	35 DEG CONT R	21
Multi-Mode Receiver	MMR	34
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
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

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU - L FWD	BUS POWER	30-41 TASK 806
WHCU - L FWD	LRU FAULT	30-41 TASK 807
WHCU - L FWD	OUTPUT PWR (K1 DISCONNECT)	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	LRU FAULT	30-41 TASK 807
WHCU - L SIDE	OUTPUT PWR (K1 DISCONNECT)	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	LRU FAULT	30-41 TASK 807
WHCU - R FWD	OUTPUT PWR (K1 DISCONNECT)	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	LRU FAULT	30-41 TASK 807
WHCU - R SIDE	OUTPUT PWR (K1 DISCONNECT)	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

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

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

D. Related Data

(1) Component Location (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 ———————

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

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

D. Related Data

(1) Component Location (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 ———————

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

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

D. Related Data

(1) Component Location (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:

Number	Name/Location
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
- 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

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

(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 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 ENGINE 1 & WING CONTROL

(b) Remove the connector D732 (left) or D734 (right) from the applicable wing anti-ice valve.

(c) Make sure the L VALVE OPEN or R VALVE OPEN light comes on brightly.

(d) Put the WING ANTI-ICE switch in the ON position.

(e) Make sure the L VALVE OPEN or R VALVE OPEN light comes on dim.

(f) Put the WING ANTI-ICE switch in the OFF position.

(g) Make sure the L VALVE OPEN or R VALVE OPEN light stays off.

(h) If the light comes on bright in either switch position, 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) 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.

(i) 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

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

(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

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

(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.

(f) Close this access panel:

Number	Name/Location
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

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

D. Related Data

(1) Component Location (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.

(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.

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

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

(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

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

(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

Row	Col	Number	Name
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

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

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.

(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 ENGINE 1 & WING CONTROL

(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:

(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 ENGINE 1 & WING CONTROL

(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		ENGINE AND WING
pin 1	- - - - - - - - - - - - - - - - - -	pin 6
pin 2	- - - - - - - - - - - - - - - - - -	pin 5

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

WING ANTI-ICING		ENGINE AND WING
pin 1	- - - - - - - - - - - - - - - - - -	pin 4
pin 2	- - - - - - - - - - - - - - - - - -	pin 3

(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.

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

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 ENGINE 1 & WING CONTROL

(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:

Number	Name/Location
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) Wiring problem

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	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

D. Related Data

(1) Component Location (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) 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 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.

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

(1) 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

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

(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

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

(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

- 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.

(2) Do a check of the wiring between the engine, the wing anti-ice module and this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
A	1	C00146	ANTI-ICE & RAIN WING ANTI-ICE VALVE

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

CIRCUIT BREAKER C00146		ENGINE AND WING ANTI-ICING MODULE
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 on anti-icing module.

3) Close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

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

D. Related Data

(1) Component Location (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

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

(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.

(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:

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.

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.

   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.

   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

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

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

Row	Col	Number	Name
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.
   c) Close this circuit breaker:

      CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL

   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 do 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

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

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

(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:
- Switch Removal, AMM TASK 76-11-07-020-801-F00
- 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**	**D462**
	PIN 1 - - - - - - - - - - - - - - - - - -	PIN 21
R WING GROUND TAI SWITCH	**D738**	**D462**
	PIN 1 - - - - - - - - - - - - - - - - - -	PIN 21
ENGINE 1 AUTO THROTTLE SWITCH	**D11128P**	**D462**
	PIN 10 - - - - - - - - - - - - - - - - - -	PIN 21
ENGINE 2 AUTO THROTTLE SWITCH	**D11132P**	**D462**
	PIN 10 - - - - - - - - - - - - - - - - - -	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

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

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

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

D. Related Data

(1) Component Location (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.

F. Fault Isolation Procedure

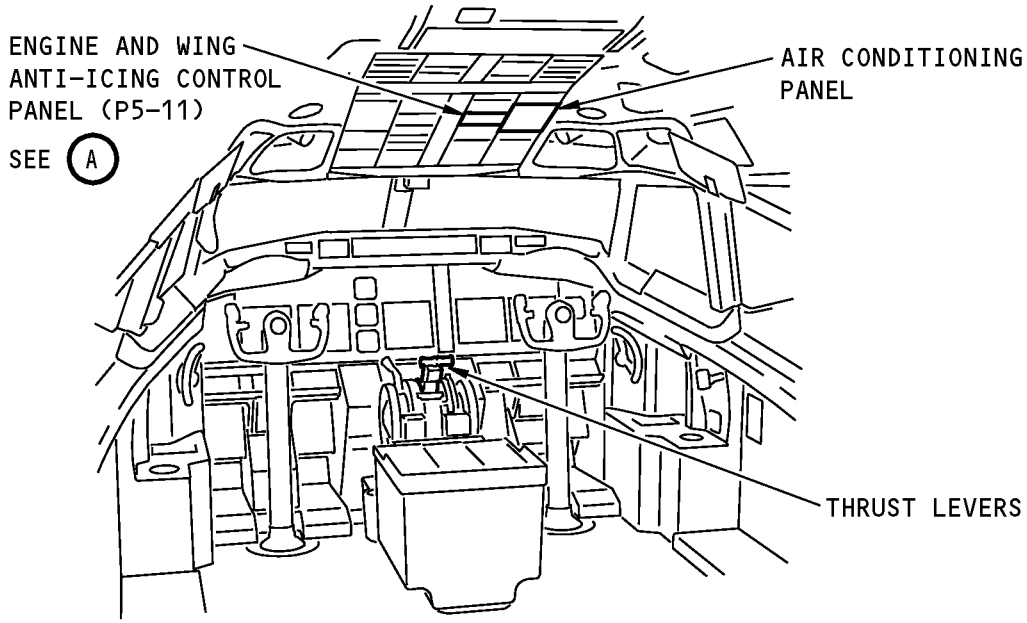
(1) Replace the ground thermal anti-ice switches. These are the tasks:

- 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

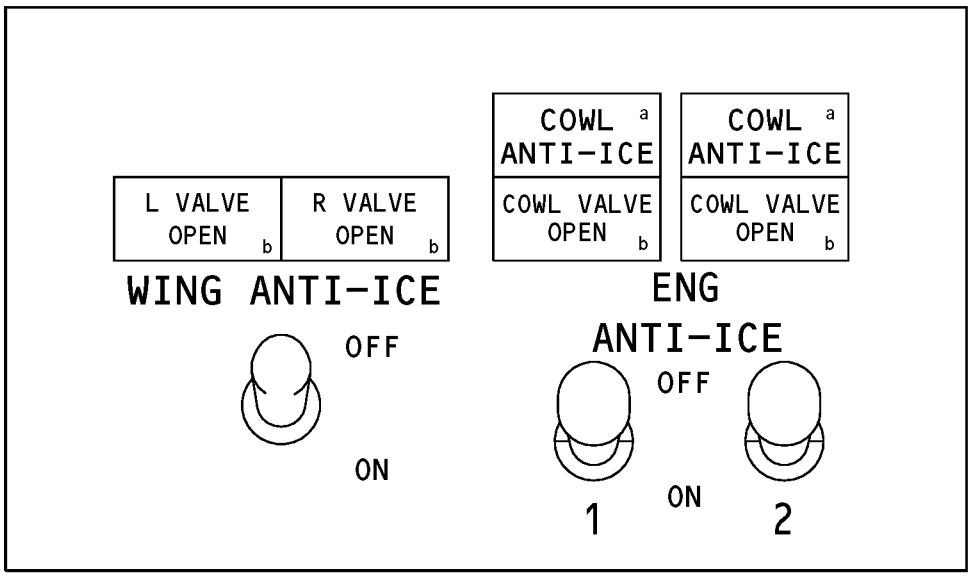
(a) If the problem does not recur on the subsequent flight, then you corrected the fault.

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

——————— END OF TASK ———————



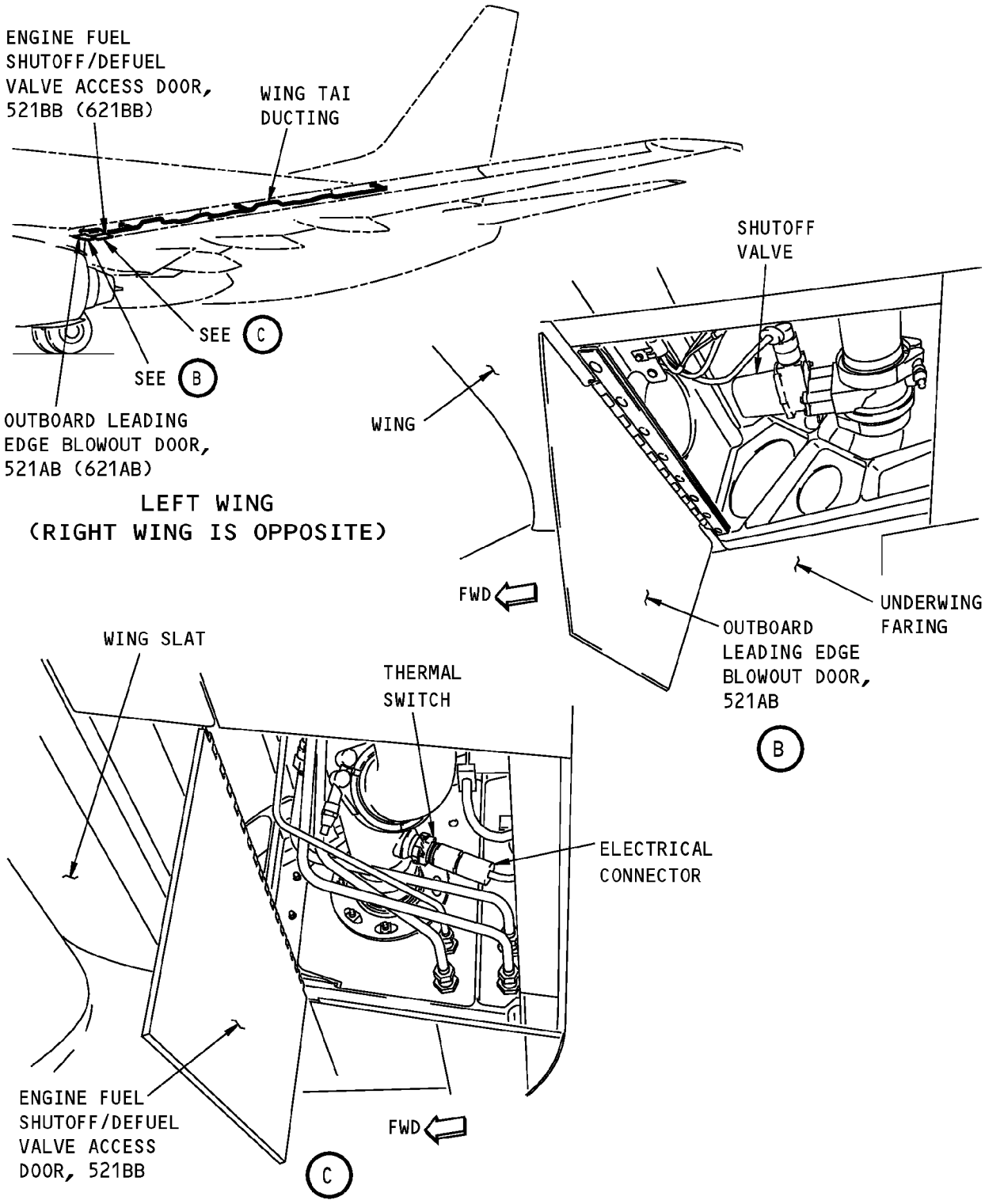
FLIGHT COMPARTMENT



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

A

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



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

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

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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

D. Related Data

(1) Component Location (Figure 301, 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).

(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. For an overpressure condition, replace the inlet cowl thermal anti-ice (TAI) valve.

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

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
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:

Number	Name/Location
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 DP1303 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

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

(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, 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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE 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

(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

Row	Col	Number	Name
B	4	C01003	ENGINE 1 THRUST REVERSER IND

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
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 ANTI-ICE 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

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

D. Related Data

(1) Component Location (Figure 301, 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.

(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:

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. 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).

WARNING: 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) 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 ANTI-ICE light.
   (b) The ENG ANTI-ICE 2 switch controls the right cowl TAI valve and right COWL ANTI-ICE 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.
   (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 fault.
   (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 ANTI-ICE 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 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

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

D. Related Data

(1) Component Location (Figure 301, 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.

(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:

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. 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).

WARNING: 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.

(a) The ENG ANTI-ICE 1 switch controls the left cowl TAI valve and left COWL ANTI-ICE light.

(b) The ENG ANTI-ICE 2 switch controls the right cowl TAI valve and right COWL ANTI-ICE 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.

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 fault.

(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

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

D. Related Data

(1) Component Location (Figure 301, 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.

(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:

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. 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).

WARNING: 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.

1) 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.

(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.
   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

Row	Col	Number	Name
A	6	C00148	ANTI-ICE & RAIN ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL 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 DAME 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.
   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 D642 at the P5-11 panel:

DP1303		D642
pin 9	- - - - - - - - - - - - - - - - - -	pin 11

(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

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

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-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

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

D. Related Data

(1) Component Location (Figure 301, 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.

(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:

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. 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).

WARNING: 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 the Fault Isolation Procedure below.

(b) If the light is on dim, 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

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.

(3) If the valve is neither open nor closed, 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 valve installation procedure.

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

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

2) 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 valve is open, then do these steps:

(a) Remove the electrical connector, DP1303 from the valve.

(b) Do a continuity check between pin 4 on the engine cowl TAI valve, V4 and ground.

(c) If there is continuity, 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 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.

(d) If there is not continuity, then do this check of the engine and wing anti-ice panel:

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

1) Loosen the quarter turn fasteners on the bottom corners of the P5 panel to open the panel assembly.

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) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

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

4) Remove this connector from the wing and engine anti-ice panel:
   a) If the left COWL VALVE OPEN light was on: D462
   b) If the right COWL VALVE OPEN light was on: D648

5) Do a check for ground at pin 12 on the wing and engine anti-ice panel connector.

6) If the pin is not grounded, 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) 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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

   c) Put the ENG ANTI-ICE switch in the ON position.
   d) See the COWL VALVE OPEN light come on bright during the transition.
   e) Make sure that the light stays on dim.
   f) Make sure that the ANTI-ICE switch is set to OFF.
   g) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
   h) If it is necessary, close the P5 panel.
   i) 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.

7) If the pin is grounded, then do this check of the wiring:
   a) If the left COWL VALVE OPEN light was on, then do a wiring check between these pins of connector DP1303 at the engine cowl TAI valve and connector D642 at the P5-11 panel:

DP1303		**D642**
pin 4	- - - - - - - - - - - - - - - - -	pin 12

b) If the right COWL VALVE OPEN light was on, then do a wiring check between these pins of connector DP1303 at the engine cowl TAI valve and connector D648 at the P5-11 panel:

DP1303		D648
pin 4	- - - - - - - - - - - - - - - -	pin 12

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

a) Repair the wiring.

b) Re-connect the connector D642 or D648 on the engine and wing anti-ice panel.

c) Re-connect the connector DP1303 on the engine cowl TAI valve.

d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

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

e) Put the ENG ANTI-ICE switch in the ON position.

f) See the COWL VALVE OPEN light come on bright during the transition.

g) Make sure that the light stays on dim.

h) Make sure that the ANTI-ICE switch is set to OFF.

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

j) If it is necessary, close the P5 panel.

k) 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.

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

(a) Remove the electrical connector DP1303 from the engine cowl TAI valve.

(b) Measure the voltage between pin 1 of DP1303 to structure ground.

(c) If you measure 28 VDC at pin 1, 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 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.

(d) If you do not measure 28 VDC at pin 1, then continue.

(6) Do this check of the engine and wing anti-ice panel:

WARNING: THERE ARE HIGH VOLTAGES IN THE P5 OVERHEAD PANEL. MAKE SURE YOU DO NOT TOUCH OR SHORT EXPOSED TERMINALS. INJURY TO PERSONNEL OR DAME 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) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

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

(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 continuity check between pins 14 and 22 on the wing and engine anti-ice panel connector.

(e) For the right COWL VALVE OPEN light, do a continuity check between pins 13 and 22 on the wing and engine anti-ice panel connector.

(f) If there is not continuity, 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) 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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

3) Put the ENG ANTI-ICE switch in the ON position.

4) See the COWL VALVE OPEN light come on bright during the transition.

5) Make sure that the light stays on dim.

6) Make sure that the ANTI-ICE switch is set to OFF.

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.

(g) If there is continuity, then continue.

(7) Do this check for power to the engine and wing anti-ice panel:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

(b) Measure the voltage between pin 22 on the connector to the wing and engine anti-ice panel and structure ground.

(c) If you do not measure 28 VDC, 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 engine cowl thermal anti-ice valve.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

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

5) Put the ENG ANTI-ICE switch in the ON position.

6) See the COWL VALVE OPEN light come on bright during the transition.

7) Make sure that the light stays on dim.

8) Make sure that the ANTI-ICE switch is set to OFF.

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.

(d) If you measure 28 VDC, then continue.

(8) Do this check of the wiring between the anti-ice panel and the engine cowl TAI valve:

(a) For the left COWL VALVE OPEN light, do a wiring check between these pins of connector DP1303 at the engine cowl TAI valve and connector D642 at the P5-11 panel:

DP1303		**D642**
pin 1	- - - - - - - - - - - - - - - - - - -	pin 14

(b) For the right COWL VALVE OPEN light, do a wiring check between these pins of connector DP1303 at the engine cowl TAI valve and connector D648 at the P5-11 panel:

DP1303		**D648**
pin 1	- - - - - - - - - - - - - - - - - - -	pin 13

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

1) Repair the wiring.
2) Re-connect the connector D642 or D648 on the engine and wing anti-ice panel.
3) Re-connect the connector DP1303 on the engine cowl TAI valve.
4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

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

5) Put the ENG ANTI-ICE switch in the ON position.
6) See the COWL VALVE OPEN light come on bright during the transition.
7) Make sure that the light stays on dim.
8) Make sure that the ANTI-ICE switch is set to OFF.
   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.

——————— END OF TASK ———————

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

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

D. Related Data

(1) Component Location (Figure 301, 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.

(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:

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. 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).

WARNING: 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.

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:

Number	Name/Location
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

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

(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:

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.

(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:

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. 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).

WARNING: 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

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

(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

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

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 ENGINE 1 & WING CONTROL
A	7	C01001	ANTI-ICE & RAIN ENGINE 1 COWL ANTI-ICE VALVE
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL
B	7	C01002	ANTI-ICE & RAIN ENGINE 2 COWL ANTI-ICE VALVE

D. Related Data

(1) Component Location (Figure 301, 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).

(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. For an overpressure condition, do the Fault Isolation Procedure below:

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.

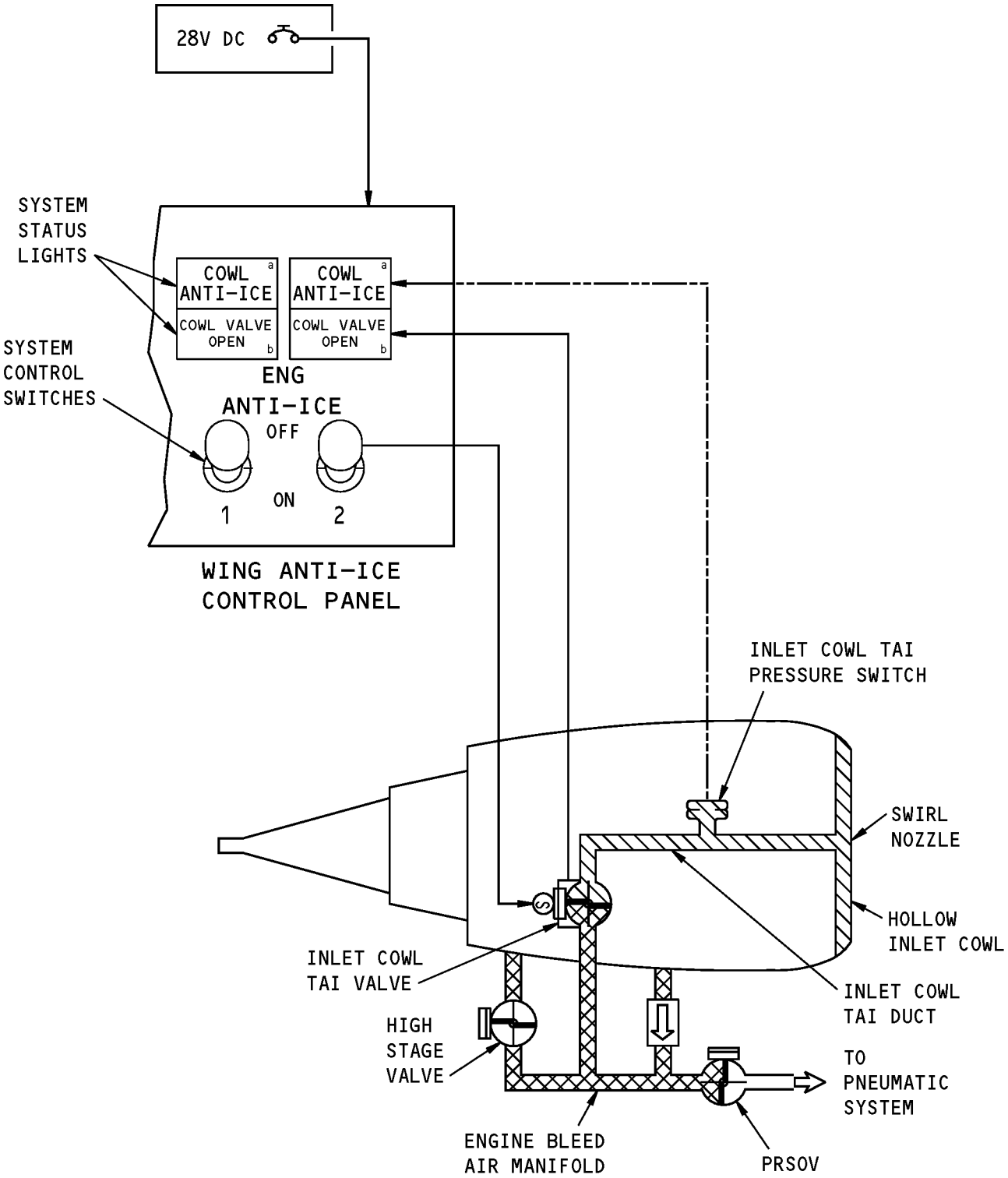
(a) Do the post installation test in the valve installation procedure.

(b) If the test operates correctly, then you corrected the fault.

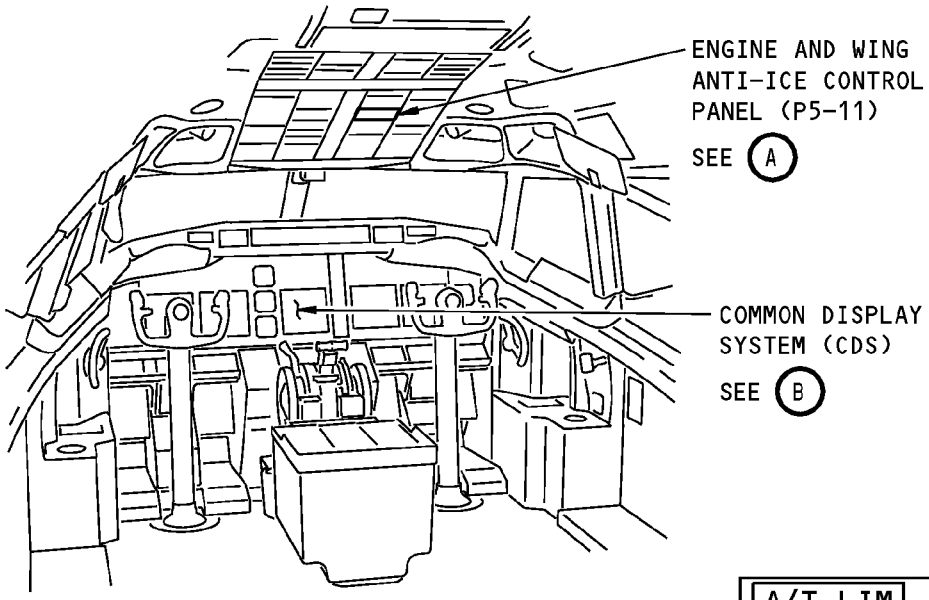
(c) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

(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

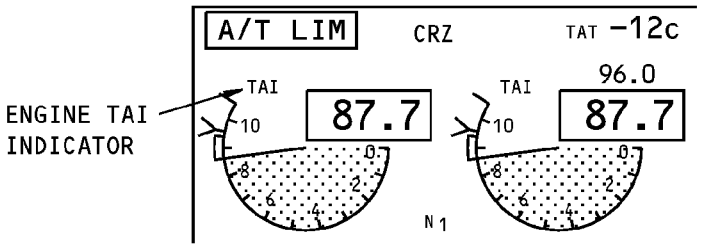
END OF TASK



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

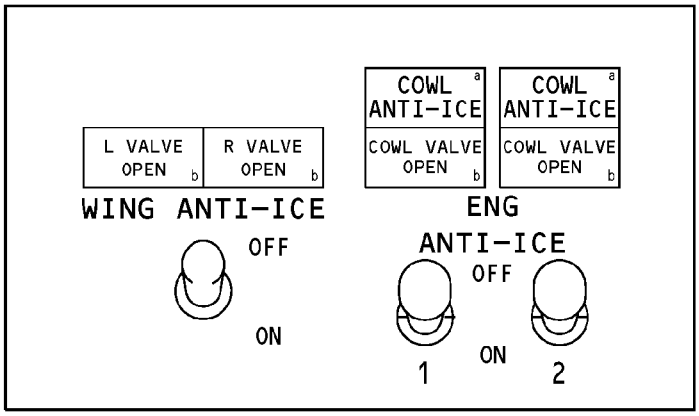


FLIGHT COMPARTMENT



COMMON DISPLAY SYSTEM

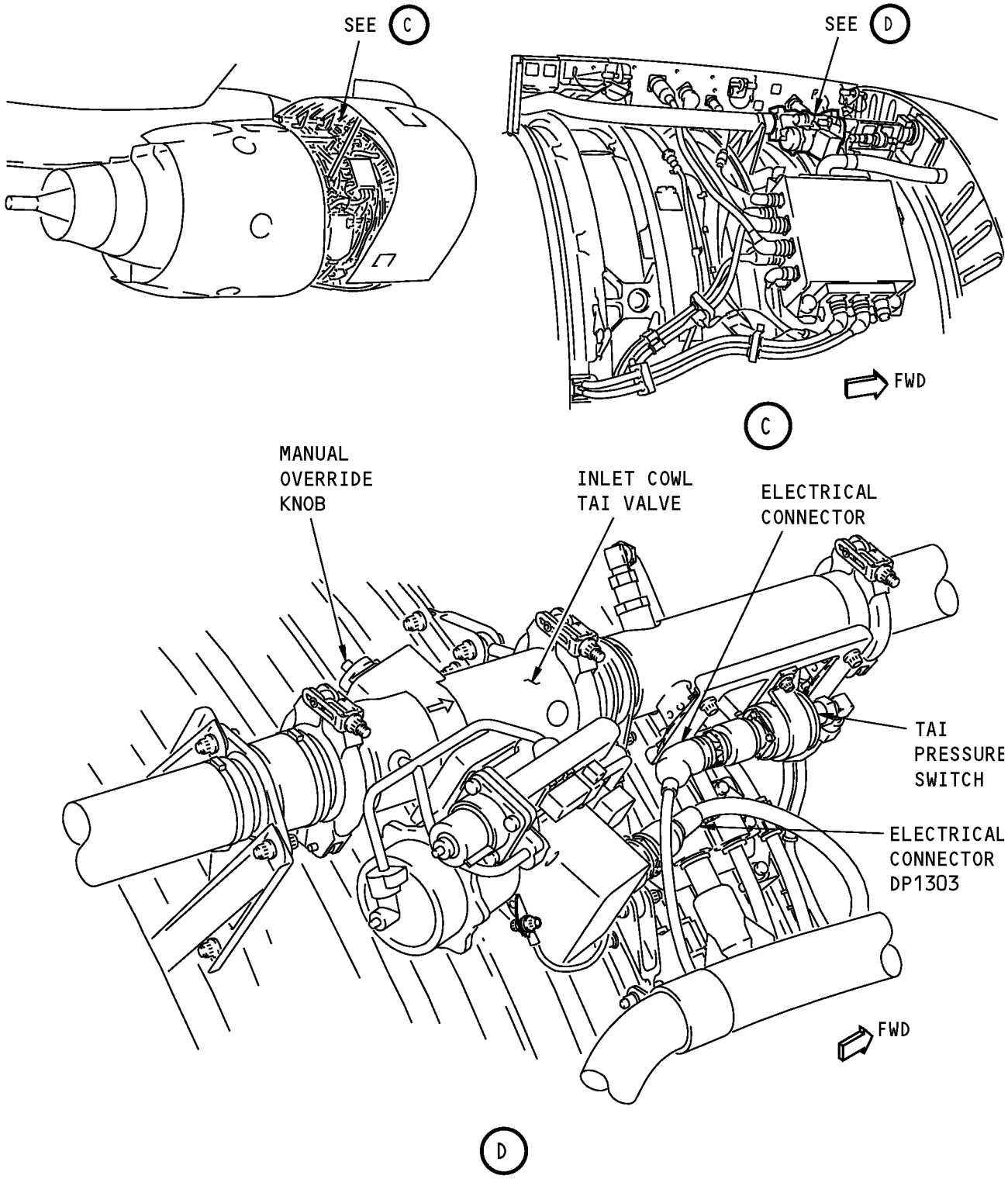
B



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

A

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



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

801. AUX PITOT or CAPT STATIC AUX PITOT light is on - Fault Isolation

A. Description

(1) The AUX PITOT light on the window/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 problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

D. Related Data

(1) Component Location (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 fault.

(c) If the AUX PITOT light comes on, then do the Fault Isolation Procedure below.

(d) Put the PROBE HEAT B switch in the OFF 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

Row	Col	Number	Name
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

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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.

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.

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) Remove the connector D638 from the window and pitot heat panel.

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

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	6	C00524	HEATERS AUX PITOT

(f) Measure the voltage at pin 39 on the connector to the panel.

(g) If there is not 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

Row	Col	Number	Name
D	6	C00524	HEATERS AUX 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

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

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

(h) 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

Row	Col	Number	Name
D	6	C00524	HEATERS AUX PITOT

(b) Measure the resistance between pin 38 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:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

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 lower right pitot probe:

(a) These are the tasks:

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

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

(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 lower right pitot probe. To remove the probe, do this task: Pitot Probe Removal, AMM TASK 34-11-01-000-801.

(c) Do a wiring check between these pins of connector D11298 at the pitot probe and connector D638 in the flight compartment:

D11298		**D638**
pin A	- - - - - - - - - - - - - - - - - -	pin 38

(d) Make sure pin B of connector D11298 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 pitot probe. To install the probe, do this task: Pitot Probe Installation, AMM TASK 34-11-01-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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 fault.

———————— END OF TASK ————————

802. CAPT PITOT or 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) Upper left pitot probe, A23

(2) Window and pitot heat panel, P5-9

(3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

(1) Component Location (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 CAPT PITOT light does not come on, then there was an intermittent fault.

(b) If the CAPT P/S light does not come on, then there was an intermittent fault.

(c) If the CAPT PITOT light comes on, then do the Fault Isolation Procedure below.

(2) Put the PROBE HEAT A switch in the OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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.

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.

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) Remove the connector D644 from the window and pitot heat panel.

(d) Examine the connector and socket for damage and unwanted objects.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT

(f) Measure the voltage between pin 42 on the connector to the panel and structure ground.

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

1) Repair the wiring between pin 42 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

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

(h) 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

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT

(b) Measure the resistance between pin 41 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

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT

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 pitot probe:

(a) These are the tasks:
Pitot Probe Removal, AMM TASK 34-11-01-000-801,
Pitot Probe Installation, AMM TASK 34-11-01-400-801.

(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 pitot probe. To remove the probe, do this task: Pitot Probe Removal, AMM TASK 34-11-01-000-801.

(c) Do a wiring check between these pins of connector D11294 at the pitot probe and connector D644 in the flight compartment:

D11294		D644
pin A	- - - - - - - - - - - - - - - - - -	pin 41

(d) Make sure pin B of connector D11294 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 pitot probe. To install the probe, do this task: Pitot Probe Installation, AMM TASK 34-11-01-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT

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.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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 CAPT PITOT light does not come on, then you corrected the fault.

—————— 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

(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

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

D. Related Data

(1) Component Location (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

Row	Col	Number	Name
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 fault.

(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 OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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.

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.

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) Remove the connector D638 from the window and pitot heat panel.

(d) Examine the connector and socket for damage and unwanted objects.

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

CAPT Electrical System Panel, P18-3

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

(f) 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

Row	Col	Number	Name
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

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

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

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

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

(b) Measure the resistance between pin 41 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

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

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 upper right pitot probe:

(a) These are the tasks:
- Pitot Probe Removal, AMM TASK 34-11-01-000-801
- Pitot Probe Installation, AMM TASK 34-11-01-400-801

(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 upper right pitot probe. To remove the probe, do this task: Pitot Probe Removal, AMM TASK 34-11-01-000-801.

(c) Do a wiring check between these pins of connector D11300 at the pitot probe and connector D638 in the flight compartment:

D11300		**D638**
pin A	- - - - - - - - - - - - - - - - - - -	pin 41

(d) Make sure pin B of connector D11300 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 pitot probe. To install the probe, do this task: Pitot Probe Installation, AMM TASK 34-11-01-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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 fault.

——————— 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

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

D. Related Data

(1) Component Location (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 OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT

(f) Measure the voltage at pin 46 on the connector to the panel.

(g) 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

Row	Col	Number	Name
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

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

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

(h) 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

Row	Col	Number	Name
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

Row	Col	Number	Name
C	3	C01072	HEATERS ALPHA VANE LEFT

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.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

(1) Component Location (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 ELEV PITOT light does not come on, then there was an intermittent fault.

(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 OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

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

(g) 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

Row	Col	Number	Name
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

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

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

(h) 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

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

(b) Measure the resistance between pin 40 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

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT LEFT

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 elevator pitot probe:

(a) These are the tasks:

Feel System Pitot Probe - Installation, AMM TASK 27-31-94-400-801,

Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801.

(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 elevator pitot probe. To remove the probe, do this task: Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801.

(c) Do a wiring check between these pins of connector D11296 at the pitot probe and connector D644 in the flight compartment:

D11296		D644
pin A	- - - - - - - - - - - - - - - - - -	pin 40

(d) Make sure pin B of connector D11296 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 pitot probe. To install the probe, do this task: Feel System Pitot Probe - Installation, AMM TASK 27-31-94-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	4	C00236	HEATERS ELEV PITOT 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.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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 ELEV PITOT light does not come on, then you corrected the fault.

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

Row	Col	Number	Name
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

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

D. Related Data

(1) Component Location (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) Put the PROBE HEAT A and B switches in the OFF 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.

(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 or 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 OFF 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.

(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

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

D. Related Data

(1) Component Location (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) Put the PROBE HEAT A and B switches in the OFF 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:

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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:

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

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

(3) Put the PROBE HEAT A and B switches in the OFF position.

(a) If all the air data sensor heat fault lights come on, then you corrected the fault.

——————— END OF TASK ———————

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

Row	Col	Number	Name
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

D. Related Data

(1) Component Location (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 OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	3	C01071	HEATERS ALPHA VANE RIGHT

(f) 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

Row	Col	Number	Name
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

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

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

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

Row	Col	Number	Name
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

Row	Col	Number	Name
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.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	3	C01071	HEATERS ALPHA VANE RIGHT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

(1) Component Location (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 fault.

(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 OFF 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

Row	Col	Number	Name
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

Row	Col	Number	Name
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 SWING FREELY WHEN THE LATCH IS RELEASED. 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) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

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

(g) 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

Row	Col	Number	Name
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

Row	Col	Number	Name
F	16	C00570	PROBE INDICATION F/O

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

(h) 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

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

(b) Measure the resistance between pin 40 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

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT 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 elevator pitot probe:

(a) 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.

(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 elevator pitot probe. To remove the probe, do this task: Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801.

(c) Do a wiring check between these pins of connector D11302 at the pitot probe and connector D638 in the flight compartment:

D11302		**D638**
pin A	- - - - - - - - - - - - - - - - - -	pin 38

(d) Make sure pin B of connector D11302 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 pitot probe. To install the probe, do this task: Feel System Pitot Probe - Installation, AMM TASK 27-31-94-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	4	C00237	HEATERS ELEV PITOT RIGHT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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 fault.

——————— 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) Total air temperature (TAT) probe, M171

(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

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
F	18	C00569	PROBE INDICATION CAPT

D. Related Data

(1) Component Location (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 TEMP PROBE light does not come on, then there was an intermittent fault.

(b) If the TEMP PROBE light comes on, then do the Fault Isolation Procedure below.

(2) Put the PROBE HEAT A switch in the OFF position.

(3) Press and hold the TAT TEST switch.

(4) 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.

(5) Release the TAT TEST switch.

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

Row	Col	Number	Name
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

Row	Col	Number	Name
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) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

(f) Measure the voltage at pin 39 on the connector to the panel.

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

1) Repair the wiring between pin 39 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

2) Re-connect the connector on the window and pitot heat panel.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

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

(h) 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

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

(b) Measure the resistance between pin 38 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

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

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 total air temperature probe:

(a) 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.

(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 TAT probe. To remove the probe, do this task: Total Air Temperature Probe Removal, AMM TASK 34-21-06-000-801.

(c) Do a wiring check between these pins of connector D277 at the TAT probe and connector D644 in the flight compartment:

D277		D644
pin 1	- - - - - - - - - - - - - - - - - -	pin 38

(d) Make sure pin 6 of connector D277 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 TAT probe. To install the probe, do this task: Total Air Temperature Probe Installation, AMM TASK 34-21-06-400-801.

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	2	C00238	HEATERS TEMP PROBE

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.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

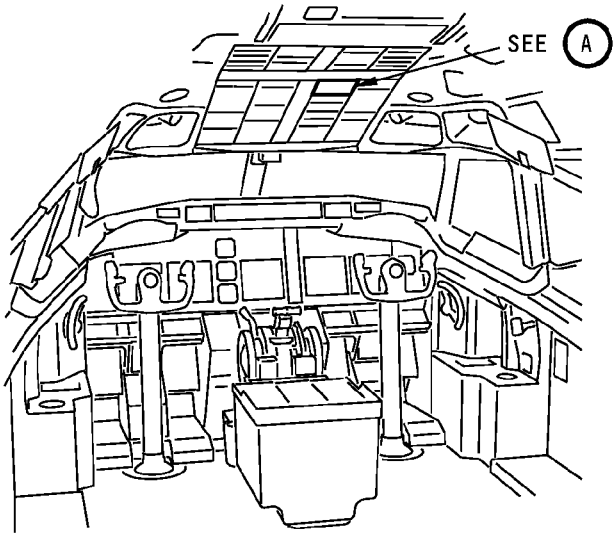
F/O Electrical System Panel, P6-3

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

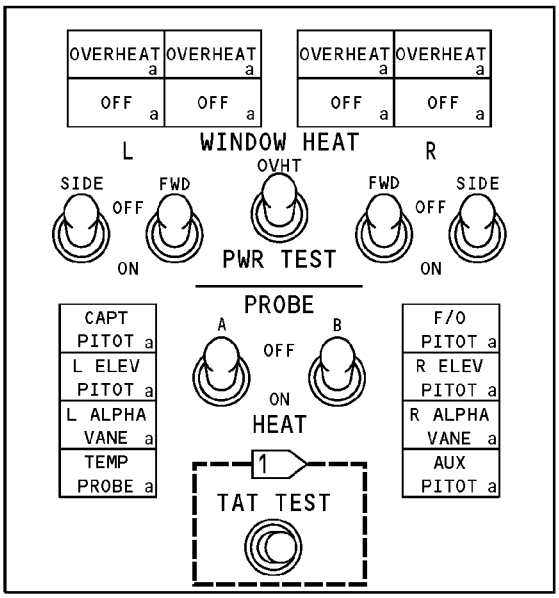
(3) Put the PROBE HEAT A switch in the ON position.

(a) If the TEMP PROBE light does not come on, then you corrected the fault.

——————— END OF TASK ———————



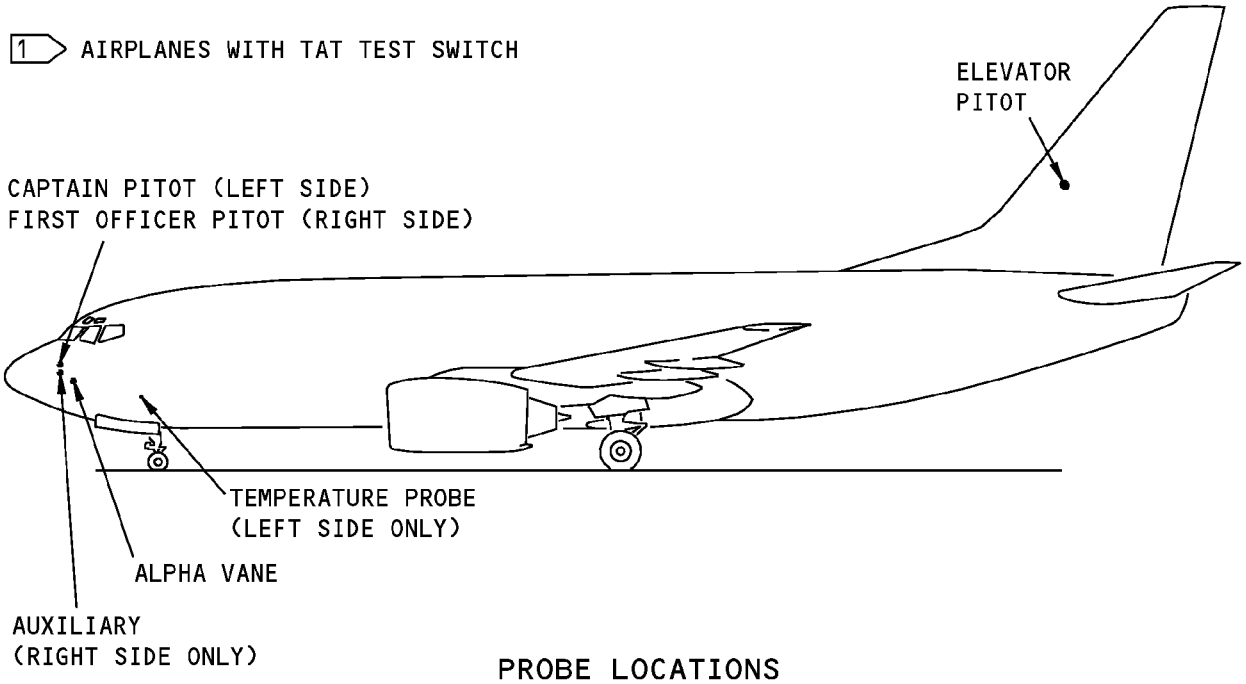
FLIGHT COMPARTMENT



WINDOW/PITOT HEAT MODULE
(P5-9)

A

1 AIRPLANES WITH TAT TEST SWITCH



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

Air Data Sensor Heaters Component Location
Figure 301 / 30-31-00-990-801

801. Window Heat Control Unit (WHCU) BITE Procedure

A. General

(1) You do the window heat control unit BITE procedure at the front of the window heat control unit. The window heat control units are on the E2-1 and E4-2 shelves in the electronic equipment bay.

(2) Make sure the circuit breakers C00392 and C00394 are not open before doing the BITE procedure. If either one or both are open, inspect the lugs and reset the circuit breakers.

B. BITE Procedure

(1) Get access to the window heat control units (WHCU):

(2) Look at the WHCUs and see whether any fault lights are illuminated.

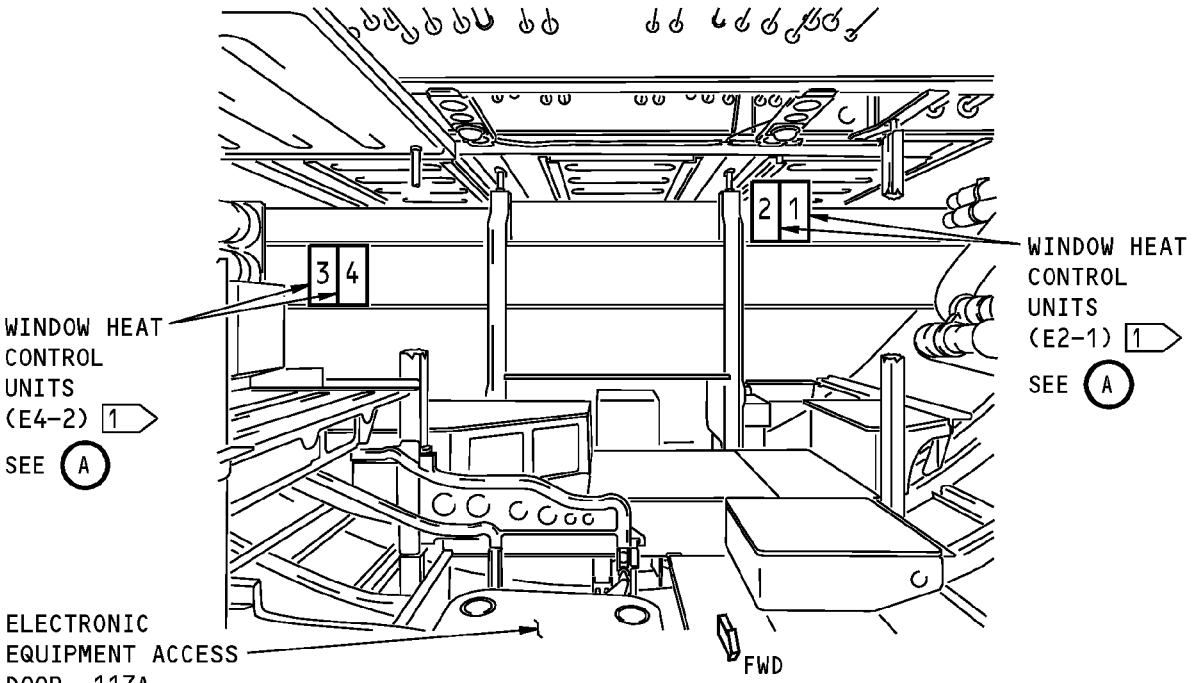
(3) Push the reset button on the WHCU.

(a) Refer to the table at the end of this task to find the fault isolation task for the applicable maintenance message.

——————— END OF TASK ———————

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU - L FWD	BUS POWER	30-41 TASK 806
WHCU - L FWD	LRU FAULT	30-41 TASK 807
WHCU - L FWD	OUTPUT PWR (K1 DISCONNECT)	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	LRU FAULT	30-41 TASK 807
WHCU - L SIDE	OUTPUT PWR (K1 DISCONNECT)	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	LRU FAULT	30-41 TASK 807
WHCU - R FWD	OUTPUT PWR (K1 DISCONNECT)	30-41 TASK 806

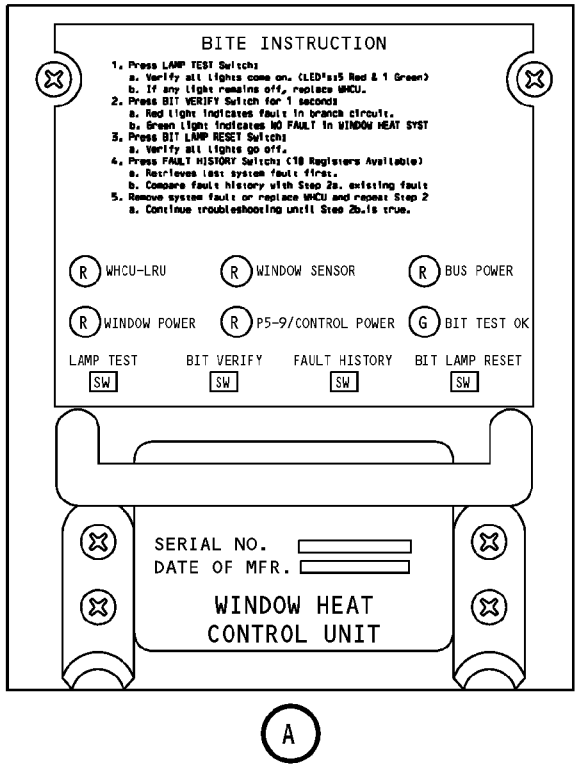
LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
WHCU - R FWD	P5-9/CONTROL POWER	30-41 TASK 813
WHCU - R FWD	WHCU-LRU	30-41 TASK 807
WHCU - R FWD	WINDOW POWER	30-41 TASK 814
WHCU - R FWD	WINDOW SENSOR	30-41 TASK 812
WHCU - R SIDE	BUS POWER	30-41 TASK 806
WHCU - R SIDE	LRU FAULT	30-41 TASK 807
WHCU - R SIDE	OUTPUT PWR (K1 DISCONNECT)	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



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

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



A

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

802. Windshield Does Not Heat Properly - Fault Isolation

A. Description

(1) A window does not heat properly. The fault lights on the window heat control unit (WHCU) are not on.

B. Possible Causes

(1) Wiring problem

(2) Window heat control unit (WHCU), M321 or M323

(3) Windshield, A6 (left front 1) or A10 (right front 1)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

D. Related Data

(1) Component Location (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 for faults on the window heat control unit (WHCU):

(a) For the left windshield, do the test on the WHCU M321.

(b) For the right windshield, do the test on the WHCU M323.

(c) To do the test, do this task: Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.

(d) If faults are detected, then do the procedure indicated in the BITE procedure.

(e) If no faults lights are detected, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this test of the window heater resistance:

(a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

(b) Remove the terminal lugs from terminals 3 and 4 of the windshield heater.

(c) Measure the resistance between terminals 3 and 1 of the windshield heater.

(d) 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,

Window No. 1 Installation, AMM TASK 56-11-11-400-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

3) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(e) If the resistance is between 31.4 and 52 ohms, then install the lugs on the windshield heater and continue.

(2) 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 the steps in the referenced task to rewire the WHCU.

2) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(c) If no faults were found in the test, then continue:

(3) Install a new WHCU.

(a) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

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

——————— END OF TASK ———————

806. Window Heater Power Disconnected - Fault Isolation

A. Description

(1) This task is for these 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)

(2) The window heat control unit (WHCU) detects a loss of power to the windows.

B. Possible Causes

(1) Window heat control unit (WHCU), M320 (r side) or M322 (l side)

(2) Wiring problem

C. Circuit Breakers

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

D. Related Data

(1) Component Location (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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

(2) Make sure the fault is active:

(a) Push the RESET switch on the WHCU.

(b) If the fault light goes out, then there was an intermittent fault.

(c) If the fault light stays on, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this check for power to the WHCU K1 relay:

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

(b) Measure for 115 VAC at the applicable pin on the WHCU connector:

Table 201

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

(c) If you measure 115 VAC at the pin, then do these steps:

1) Install a new WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

3) If the test passes, then you corrected the fault.

(d) If you do not measure 115 VAC at the pin, then continue.

(2) Do a check of the wiring between the circuit breaker and WHCU:

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

(c) Do a wiring check between these pins on the WHCU connector and the applicable circuit breaker:

Table 202

WHCU	WHCU CONNECTION	PIN
LEFT SIDE WHCU - M320	D1042B	pin 2
LEFT FRONT WHCU - M321	D1044B	pin 2
RIGHT FRONT WHCU - M322	D1046B	pin 2
RIGHT SIDE WHCU - M323	D1048B	pin 2

(d) These are the applicable circuit breakers:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

(e) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

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

1) Repair the wiring.
2) Do this test of the window heat system:
   a) Push the RESET switch on the WHCU.
   b) If the fault light goes out, then you corrected the fault.

——————— END OF TASK ———————

807. Window Heat Control Unit (WHCU) Internal Fault - Fault Isolation

A. Description

(1) This task is for these 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 window heat control unit (WHCU).

(3) A problem with the window heater could cause this fault light to illuminate. Do the initial evaluation to isolate this fault.

B. Possible Causes

(1) Window heat control unit (WHCU), M320 (right side), M321 (left front), M322 (left side), or M323 (right front)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

(1) Component Location (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 check for faults on the window heat control unit (WHCU):

(a) Push the BIT LAMP RESET switch on the WHCU.

1) If the WINDOW POWER fault light is on, do this task: Window Heater Fault - Fault Isolation, 30-41 TASK 814.

2) If only the WHCU LRU fault light is on, then do the Fault Isolation Procedure below.

3) If the fault light goes off, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) 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 post installation test in the installation procedure.

(b) If the test passes, then you corrected the fault.

——————— END OF TASK ———————

809. Side Window Does Not Heat Properly - Fault Isolation

A. Description

(1) A side (sliding) window does not heat properly. There are no fault lights illuminated on the window heat control unit (WHCU).

B. Possible Causes

(1) Wiring problem

(2) Window heat control unit (WHCU), M320 (right side) or M322 (left side)

(3) Sliding window, A9 (right side 2) or A13 (left side 2)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

(1) Component Location (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 for faults on the window heat control unit (WHCU):

(a) For the right side window, do the test on the WHCU M320.

(b) For the left side window, do the test on the WHCU M322.

(c) To do the test, do this task: Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.

(d) If a fault is detected, then do the procedure indicated in the BITE procedure.

(e) If no faults are detected, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this test of the window heater resistance:

(a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

(b) Remove the lug from terminal A or B from the window heater.

(c) Measure the resistance between pins A and B of the window heater.

(d) 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) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

3) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(e) If the window resistance is between 55.7 and 100 ohms, then replace the lug on the window heater and continue.

(2) 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 the steps in the referenced task to rewire the WHCU.

2) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(c) If no faults were found in the test, then continue:

(3) Install a new WHCU.

(a) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

(c) If the test passes, then you corrected the fault.

———————— END OF TASK ————————

811. WINDOW SENSOR Fault Light for a Side Window is on - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) WINDOW SENSOR (left side window)

(b) WINDOW SENSOR (right side window)

(2) The window heat control unit (WHCU) detects a shorted or open condition in the wiring between the control unit and the window temperature sensor on a side window.

(3) This task applies to the side windows. A different fault isolation procedure applies for the front windows.

B. Possible Causes

(1) Wiring problem

(2) Window heat control unit (WHCU), M320 (right side) or M322 (left side)

(3) No. 2 window

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

D. Related Data

(1) Component Location (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 the WINDOW SENSOR fault is active:

(a) Push the BIT LAMP RESET switch on the WHCU.

(b) If the fault light goes out, then do the Fault Isolation Procedure - Intermittent Fault below.

(c) If the fault light stays on, then do the Fault Isolation Procedure - Existing Fault below.

F. Fault Isolation Procedure - Existing Fault

(1) Do this check of the side window temperature sensor:

(a) Remove one of the wires from the window temperature sensor.

(b) Measure the resistance of the side window temperature sensor:

1) If the resistance is greater than 362 ohms, then the sensor is faulty. Do these steps:

a) Remove the other lead from the window temperature sensor.

b) Put the leads on the other window temperature sensor.

c) Mark the faulty sensor to indicate that it no longer operates.

d) Replace the No. 2 window (No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801 and No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801). It is recommended that the window be replaced as soon as possible after the primary sensor has failed.

NOTE: The spare sensor may be used until the windshield is replaced.

2) If the resistance is less than 362 ohms, then continue. The window temperature sensor is not open or grounded.

(2) Do a wiring check between the WHCU and side window temperature sensor.

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	2	C00225	WINDOW HEAT CONTROL LEFT SIDE AC

Row	Col	Number	Name
E	2	C00227	WINDOW HEAT CONTROL RIGHT SIDE AC

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

(c) Do a wiring check between these connections on the WHCU and window temperature sensor:

RIGHT SIDE WHCU

	WINDOW TEMP SENSOR CONNECTION	WHCU CONNECTION
RIGHT SIDE WHCU - M320	**TEMP SENSOR**	**D1042A**
	pin C	pin 13
	pin D	pin 26

LEFT SIDE WHCU

	WINDOW TEMP SENSOR CONNECTION	WHCU CONNECTION
LEFT SIDE WHCU - M322	**TEMP SENSOR**	**D1046A**
	pin C	pin 13
	pin D	pin 26

(d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	9	C00392	WINDOW HEAT POWER LEFT SIDE

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

1) Repair the wiring.
2) Do this test of the window heat system:
   a) Push the BIT LAMP RESET switch on the WHCU.
   b) If the fault light goes out, then you corrected the fault.

(f) If you do not find a problem with the wiring, then continue.

(3) Install a new WHCU.

(a) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

(c) If the test passes, then you corrected the fault.

G. Fault Isolation Procedure - Intermittent Fault

(1) Find whether the sensor fails when the window is heated.

(a) Remove one of the wires from the window temperature sensor.

(b) Attach an ohmmeter to the sensor studs.

CAUTION: MAKE SURE YOU USE THE SPECIFIED HEAT GUN OR EQUIVALENT. THIS HEAT GUN IS LIMITED TO 180 DEGREES. A HIGHER TEMPERATURE GUN COULD CAUSE DAMAGE TO THE WINDOW.

(c) Heat the window near the sensor with a 180° F (82° C) maximum output temperature heat gun, STD-442 for up to thirty seconds.

1) If the sensor resistance stays less than 362 ohms, then no fault was found.

2) If the resistance is greater than 362 ohms, then do these steps. The sensor is faulty.

a) Connect the sensor leads to the other window heat sensor.

b) Mark the faulty sensor to indicate that it no longer operates.

c) Replace the No. 2 window(AMM PAGEBLOCK 56-12-11/401).

———————— END OF TASK ————————

812. WINDOW SENSOR Fault Light for a Windshield is on - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) WINDOW SENSOR (left forward window)

(b) WINDOW SENSOR (right forward window)

(2) The WHCU detects a shorted condition in the wiring between the control unit and the window temperature sensor.

(3) This task applies to the front windows. A different fault isolation procedure applies for the side windows.

B. Possible Causes

(1) Wiring problem

(2) Window heat control unit (WHCU), M321 (left front) or M323 (right front)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

D. Related Data

(1) Component Location (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 the WINDOW SENSOR light on the WHCU indicates an active fault.

(a) Push the BIT LAMP RESET switch on the WHCU.

(b) If the light goes out, then do the Fault Isolation Procedure - Intermittent Faults below.

(c) If the light stays on, then continue.

(2) Do this quick check of the window temperature sensor:

(a) Change the position of the sensor select switch.

(b) Find whether the fault continues:

1) Push the BIT LAMP RESET switch on the WHCU.

2) If the light stays on, then the sensor is not the source of the fault, do the steps to check the wiring and WHCU.

NOTE: If the other sensor was previously identified to be a failed sensor, this quick check may not work. You will have to check the sensor. Also, you will have to check the wiring between the sensor select switch and window temperature sensor.

3) If the light went out, then the sensor, or wiring between the sensor select switch and sensor is faulty.

(c) Put the sensor select switch back to its original position.

(d) Do the Fault Isolation Procedure - Existing Faults below.

F. Fault Isolation Procedure - Existing Fault

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

(1) If the light went off when the sensor select switch was moved to the other sensor position, then do these steps:

(a) Measure the resistance of the window temperature sensor:

1) Remove one of the wires from the window temperature sensor.

2) If the resistance is greater than 362 ohms, then do these steps:

a) Put the sensor select switch to the other sensor position.

3) If the resistance is less than 362 ohms, then continue.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

(c) Do a wiring check between these connections on the temperature sensor and select switch:

LEFT FRONT WHCU

SENSOR SWITCH CONNECTION		**M321**
S1078		**PRIMARY**
pin 6	- - - - - - - - - - - - - - - - - -	terminal A
pin 3	- - - - - - - - - - - - - - - - - -	terminal B
S1078		**SECONDARY**
pin 1	- - - - - - - - - - - - - - - - - -	terminal C
pin 4	- - - - - - - - - - - - - - - - - -	terminal D

RIGHT FRONT WHCU

SENSOR SWITCH CONNECTION		**M323**
S1079		**PRIMARY**
pin 6	- - - - - - - - - - - - - - - - - -	terminal A
pin 3	- - - - - - - - - - - - - - - - - -	terminal B
S1079		**SECONDARY**
pin 1	- - - - - - - - - - - - - - - - - -	terminal C
pin 4	- - - - - - - - - - - - - - - - - -	terminal D

(d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

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

1) Repair the wiring.

2) Do this test of the window heat system:

a) Push the BIT LAMP RESET switch on the WHCU.

b) If the light goes out, then you corrected the fault.

(2) If the light stays on when the select switch was moved to the other sensor position, then do these steps:

(a) Do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

(c) Do a wiring check between these connectors on the WHCU connector and sensor select switch:

LEFT FRONT WHCU

SENSOR SWITCH CONNECTION	**M321**
S1078	**D1044A**
pin 2	pin 13
pin 5	pin 26

RIGHT FRONT WHCU

SENSOR SWITCH CONNECTION	**M323**
S1079	**D1048A**
pin 2	pin 13
pin 5	pin 26

(d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

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

1) Repair the wiring.

2) Do this test of the window heat system:

a) Push the BIT LAMP RESET switch on the WHCU.

b) If the fault light goes out, then you corrected the fault.

(f) If you do not find a problem with the wiring, then continue.

(3) Replace the WHCU.

(a) Do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

(c) If the test passes, then you corrected the fault.

G. Fault Isolation Procedure - Intermittent Fault

(1) Find whether the sensor fails when the window is heated:

(a) Remove one of the wires from the window temperature sensor.

(b) Attach an ohmmeter to the sensor studs.

CAUTION: MAKE SURE YOU USE THE SPECIFIED HEAT GUN OR EQUIVALENT. THIS HEAT GUN IS LIMITED TO 180 DEGREES. A HIGHER TEMPERATURE GUN COULD CAUSE DAMAGE TO THE WINDOW.

(c) Heat the window near the sensor with a 180° F (82° C) maximum output temperature heat gun, STD-442 for up to thirty seconds.

1) If the sensor resistance stays less than 362 ohms, then no fault was found.

2) If the resistance is greater than 362 ohms, then the sensor is faulty. Do these steps:

a) Put the sensor select switch to the other sensor position (Figure 302).

b) Mark the faulty sensor to indicate that it no longer operates.

c) If both sensors are faulty then replace the faulty No. 1 window (No. 1 Window Removal, AMM TASK 56-11-11-000-801, Window No. 1 Installation, AMM TASK 56-11-11-400-801).

NOTE: The window does not need to be replaced until both sensors have failed.

NOTE: The WINDSHLD SNSR switch may be left in the spare position until the windshield is replaced.

END OF TASK

813. P5-9 Control Panel Fault - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) P5-9 CONTROL POWER (left forward window)

(b) P5-9 CONTROL POWER (right forward window)

(c) P5-9 CONTROL POWER (left side window)

(d) P5-9 CONTROL POWER (right side window)

(2) 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

(3) Window heat control unit (WHCU), M320 (right side), M321 (left front), M322 (left side), or M323 (right front)

(4) Windshield, A6 (left front 1) or A10 (right front 1)

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

D. Related Data

(1) Component Location (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 the WHCU indicates an active fault.

(a) Push the BIT LAMP RESET switch on the WHCU.

(b) If the fault light goes off, then there was an intermittent fault.

(c) If the P5-9 CONTROL POWER fault light stays on, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this check of the WHCU.

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

(b) Measure for 115 VAC at this pin on the WHCU connector:

1) M320 - D1042A, pin 5

2) M321 - D1044A, pin 5

3) M322 - D1046A, pin 5

4) M323 - D1048A, pin 5

(c) If there is 115 VAC at the pin, then do these steps:

1) Install a new WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

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

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

(d) If there is not 115 VAC at the pin, then re-install the WHCU and continue. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

(2) Do this check for power to the P5-9 panel:

(a) Remove the P5-9 panel. To do this, do this task: Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801

(b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

(c) Measure the voltage at the applicable pin on the P5–9 connector:

1) Right side window, WHCU M320 - D638 pin 51

2) Left front window, WHCU M321 - D638 pin 50

3) Left side window, WHCU M322 - D644 pin 51

4) Right front window, WHCU M323 - D644 pin 50

(d) If you do not measure 115 VAC at the pin, then do these steps:

1) Do a wiring check between the connector and the applicable circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

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

a) Repair the wiring.

b) Re-install the P5-9 panel. To do this, do this task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

c) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

d) Push the BIT LAMP RESET switch on the WHCU.

e) If the fault light goes out, then you corrected the fault.

(e) If you measure 115 VAC at the pin, then continue.

(3) Do these steps to install a new P5-9 panel:

(a) Do this task: Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801.

(b) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

(c) Push the BIT LAMP RESET switch on the WHCU.

(d) If the fault light goes out, then you corrected the fault.

(e) If the fault light stays on, then continue.

(4) Do this check of the wiring between the P5-9 panel and the applicable WHCU.

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

(c) Do a wiring check between these connectors on the P5-9 panel and the WHCU:

RIGHT SIDE WHCU - M320

P5-9 PANEL D638		**WHCU CONNECTION D1042A**
pin 48	- - - - - - - - - - - - - - - - - -	pin 5

LEFT FRONT WHCU - M321

P5-9 PANEL D638	WHCU CONNECTION D1044A
pin 47	pin 5

LEFT SIDE WHCU - M322

P5-9 PANEL D644	WHCU CONNECTION D1046A
pin 48	pin 5

RIGHT FRONT WHCU - M323

P5-9 PANEL D644	WHCU CONNECTION D1048A
pin 47	pin 5

(d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

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

1) Repair the wiring.

2) Do this test of the window heat system:

a) Push the BIT LAMP RESET switch on the WHCU.

b) If the fault light goes out, then you corrected the fault.

c) If the fault light stays on, 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

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

(b) Remove the terminal lugs from terminals 3 and 4 of the windshield heater.

(c) Measure the resistance between terminals 3 and 1 of the windshield heater.

(d) 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,

Window No. 1 Installation, AMM TASK 56-11-11-400-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

3) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(e) If the resistance is between 31.4 and 52 ohms, then install the lugs on the windshield heater and continue.

(6) Do this check of the wiring between the applicable window and the applicable WHCU.

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

(c) Do a wiring check between these connectors on the applicable window and the WHCU:

RIGHT SIDE WHCU

WINDOW M320		**WHCU CONNECTION**
RIGHT SIDE 2	- - - - - - - - - - - - -	pin A

LEFT FRONT WHCU

WINDOW M321		**WHCU CONNECTION**
LEFT FRONT 1	- - - - - - - - - - - - -	pin 3

LEFT SIDE WHCU

WINDOW M322		WHCU CONNECTION
LEFT SIDE 2	- - - - - - - - - - - - - -	pin A

RIGHT FRONT WHCU

WINDOW M323		WHCU CONNECTION
RIGHT FRONT 1	- - - - - - - - - - -	pin 3

(d) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

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

1) Repair the wiring.

2) Do this test of the window heat system:

a) Push the BIT LAMP RESET switch on the WHCU.

b) If the fault light goes out, then you corrected the fault.

———————— END OF TASK ————————

814. Window Heater Fault - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) WINDOW POWER (left forward window)

(b) WINDOW POWER (right forward window)

(c) WINDOW POWER (left side window)

(d) WINDOW POWER (right side window)

(2) There is fault with a window heater, wiring, or window heat control unit (WHCU).

B. Possible Causes

(1) Windshield, A6 (left front 1) or A10 (right front 1)

(2) Wiring problem

(3) Window heat control unit (WHCU), M321 or M323

C. Circuit Breakers

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

D. Related Data

(1) Component Location (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 the WHCU indicates an active fault.

(a) Push the BIT LAMP RESET switch on the WHCU.

(b) If the fault light goes off, then there was an intermittent fault.

(c) If the WINDOW POWER fault light stays on, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Do this test of the window heater resistance:

(a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

(b) Remove the terminal lugs from terminals 3 and 4 of the windshield heater.

(c) Measure the resistance between terminals 3 and 1 of the windshield heater.

(d) 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,

Window No. 1 Installation, AMM TASK 56-11-11-400-801.

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

Row	Col	Number	Name
B	8	C00394	WINDOW HEAT POWER RIGHT FRONT

3) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(e) If the resistance is between 31.4 and 52 ohms, then install the lugs on the windshield heater and continue.

(2) Do this check of the wiring between the window heater and the applicable WHCU.

(a) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801.

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

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

(c) 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 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 (AMM TASK 30-41-21-000-801).

WHCU M320

WINDOW RIGHT SIDE		**WHCU CONNECTION D1042A**
terminal A	- - - - - - - - - - - - - - -	pin 1, 7, 8, 14, 20, or 21
terminal B	- - - - - - - - - - - - - - -	ground

WHCU M321

WINDOW LEFT FRONT		WHCU CONNECTION D1044A
terminal A	- - - - - - - - - - - - - - -	pin 7, 8, 14 20 or 21
terminal B	- - - - - - - - - - - - - - -	ground

WHCU M322

WINDOW LEFT SIDE		WHCU CONNECTION D1046A
terminal A	- - - - - - - - - - - - - - -	pin 1, 7, 8, 14, 20, or 21
terminal B	- - - - - - - - - - - - - - -	ground

WHCU M323

WINDOW RIGHT FRONT		WHCU CONNECTION D1048A
terminal A	- - - - - - - - - - - - - - -	pin 7, 8, 14 20 or 21
terminal B	- - - - - - - - - - - - - - -	ground

(d) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-11

Row	Col	Number	Name
B	8	C00393	WINDOW HEAT POWER RIGHT SIDE
B	9	C00228	WINDOW HEAT POWER LEFT FRONT

F/O Electrical System Panel, P6-12

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

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

1) Repair the wiring.

2) Do this test of the window heat system:

a) Push the BIT LAMP RESET switch on the WHCU.

b) If the fault light goes out, then you corrected the fault.

(f) If you do not find a problem with the wiring, then continue.

(3) 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 resistance. To do this, 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 the steps in the referenced task to rewire the WHCU.

2) Do a test of the window heat system. To do the test, do this task: Window Heat System - Operational Test, AMM TASK 30-41-00-710-801.

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

(c) If the window heater impedance and the WHCU transformer match, then continue.

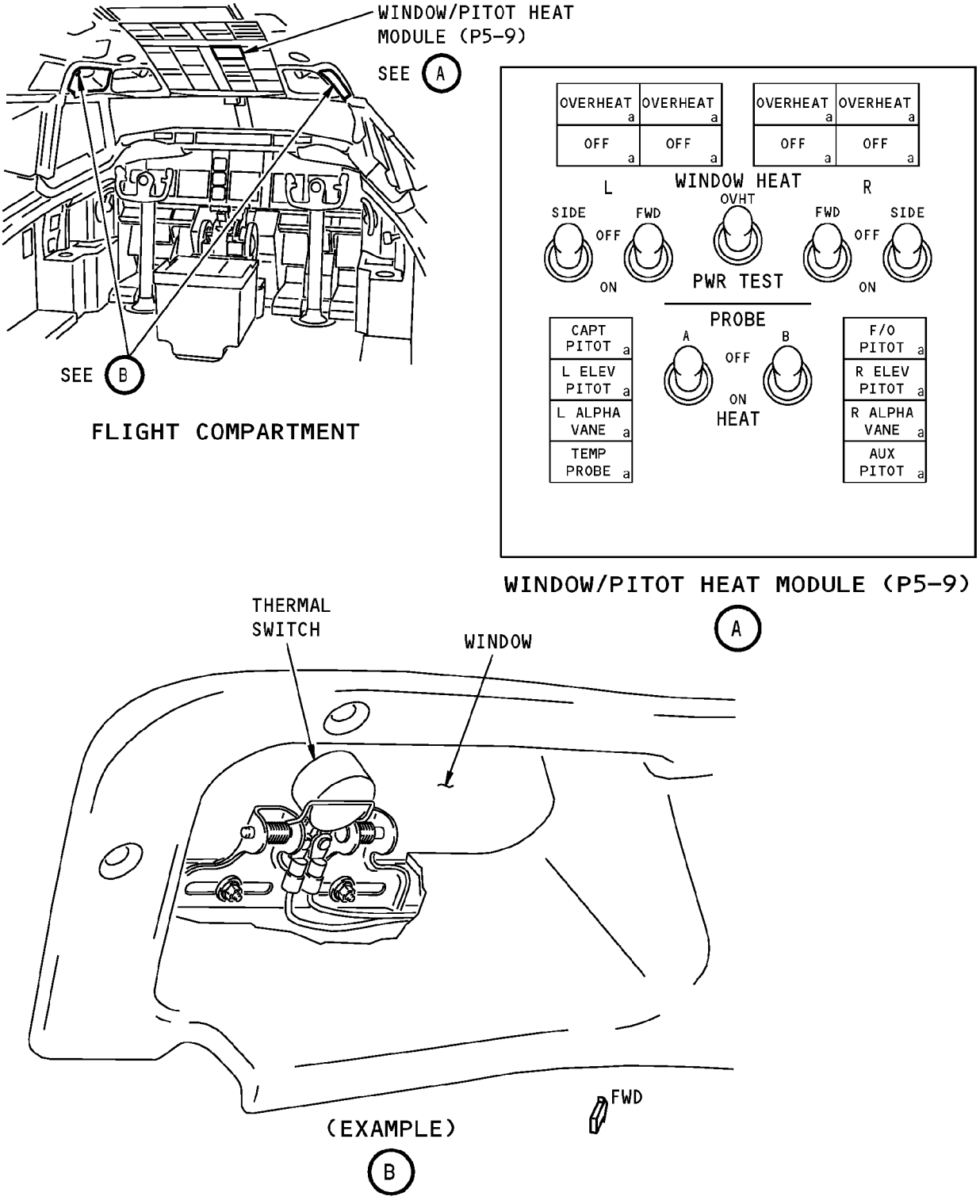
(4) Install a new WHCU.

(a) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-801.

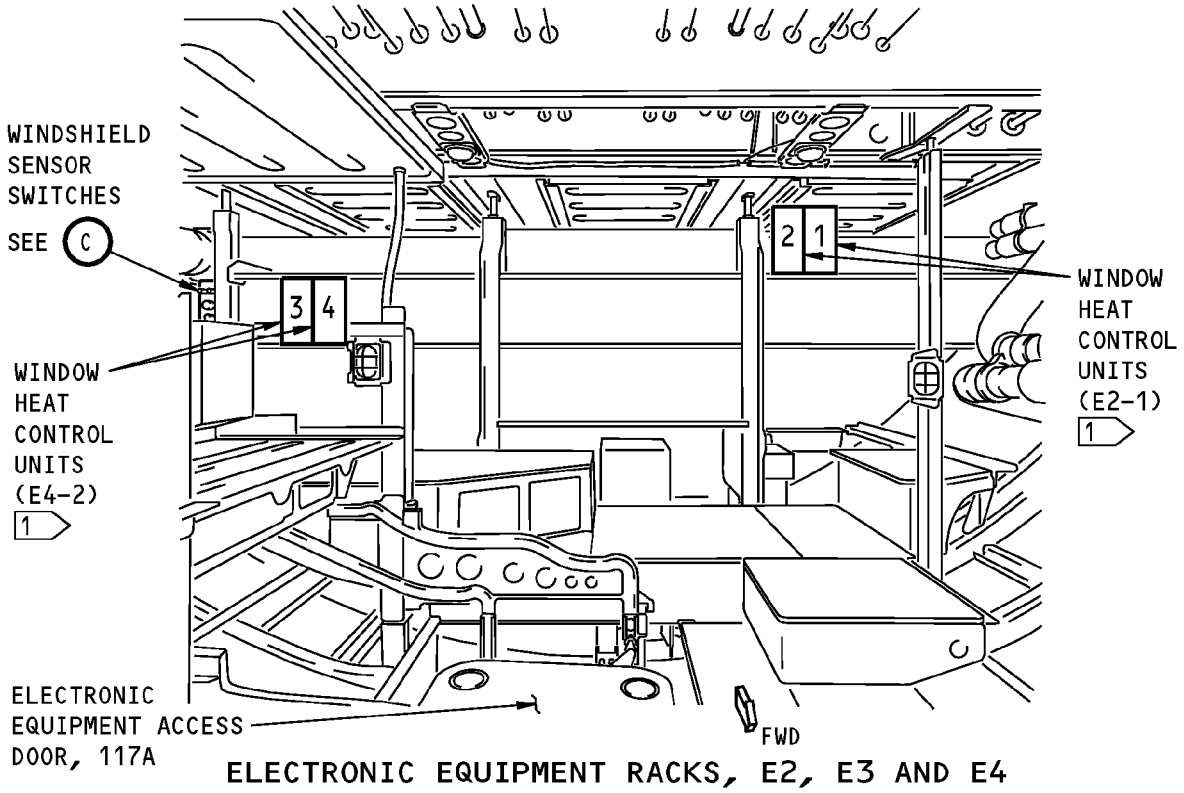
(b) Do the post installation test in the installation procedure.

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

——————— END OF TASK ———————



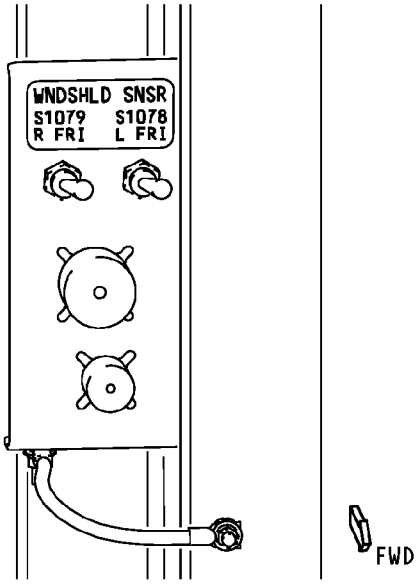
Control Cabin Window Anti-Icing Component Location
Figure 301 (Sheet 1 of 2)/ 30-41-00-990-801



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

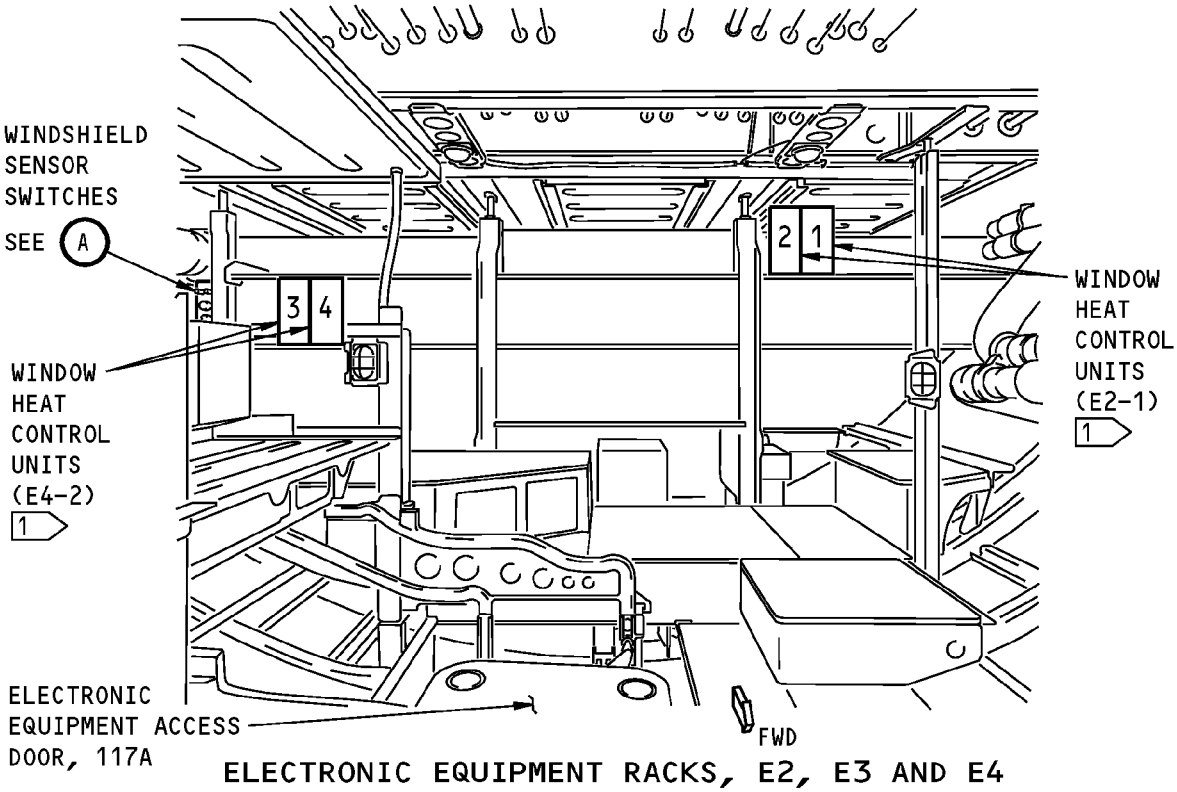
1

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



WINDSHIELD SENSOR SWITCHES
C

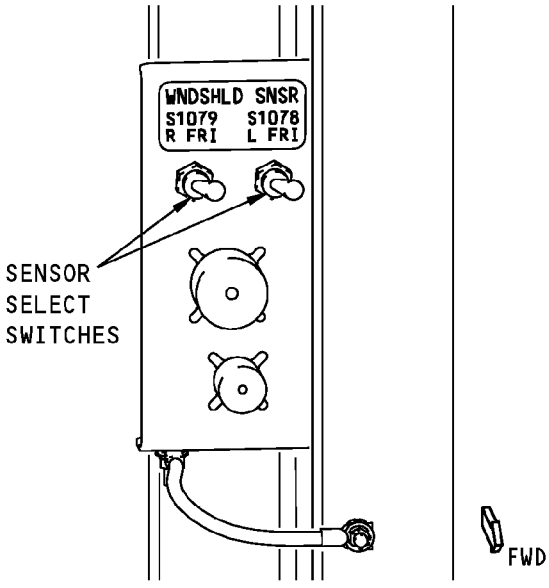
Control Cabin Window Anti-Icing Component Location
Figure 301 (Sheet 2 of 2)/ 30-41-00-990-801



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

1

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



WINDSHIELD SENSOR SWITCHES
A

Winshield Sensor Switches
Figure 302 / 30-41-00-990-806

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

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 (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.

(d) Make sure that these circuit breakers are closed:

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

(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) 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.

2) 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

Row	Col	Number	Name
B	1	C00055	ANTI-ICE & RAIN WSHLD WIPER RIGHT
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

Row	Col	Number	Name
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:

(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

Row	Col	Number	Name
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

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 (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 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.

(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

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 (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.

(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

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 (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:

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)

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 (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

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

CAUTION: 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

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 (Figure 301)

(2) (SSM 30-42-11)

(3) (WDM 30-42-11)

E. Initial Evaluation

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

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

(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:

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) 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 ———————

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

Row	Col	Number	Name
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.

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.

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.

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.

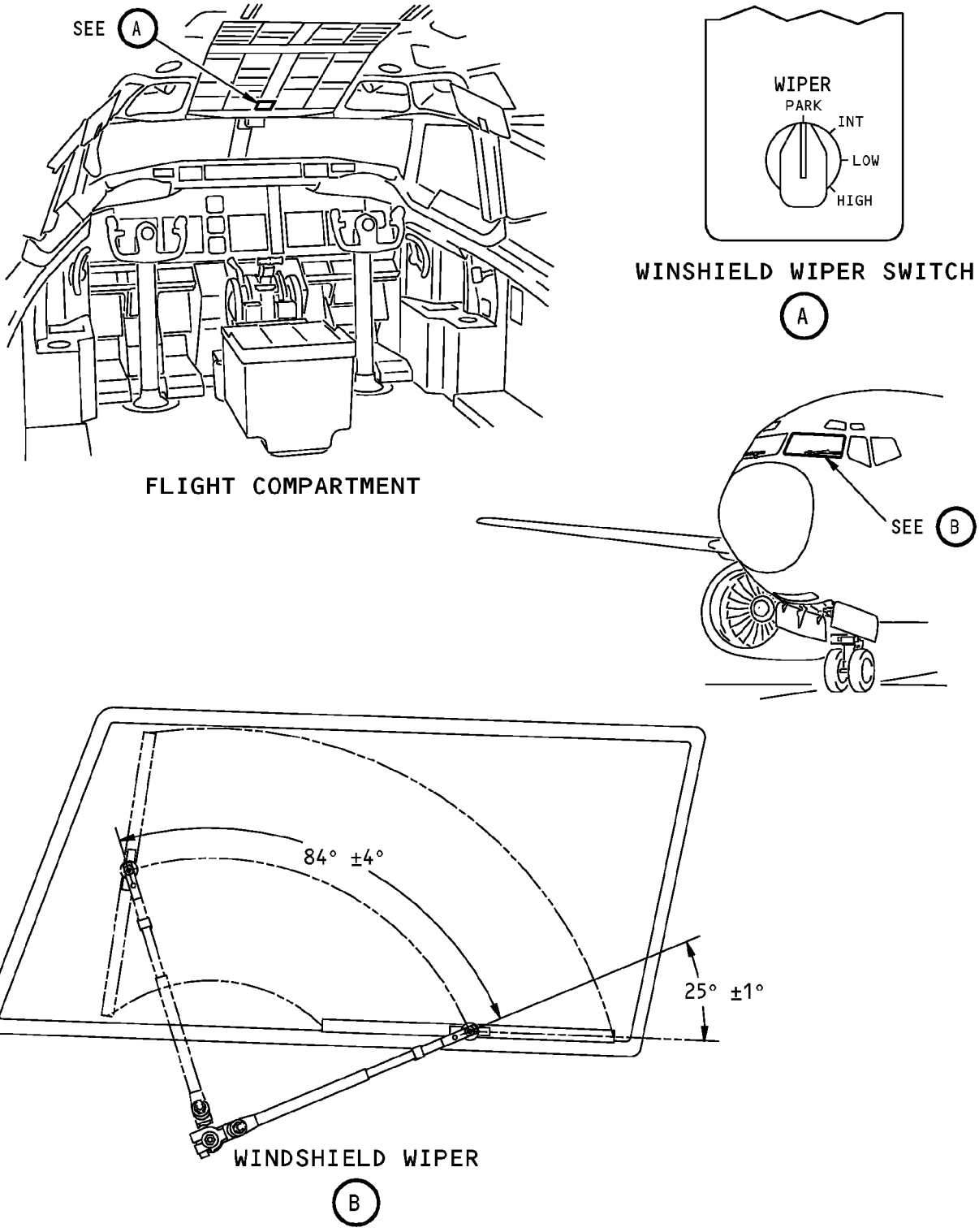
CAUTION: DO NOT OPERATE THE WIPER ON A DRY WINDSHIELD. THE WIPER WILL CAUSE DAMAGE TO A DRY WINDSHIELD.

(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.

(g) Set the wiper control switch to the PARK position.

END OF TASK



Windshield Wipers Component Location
Figure 301 / 30-42-00-990-801

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

Row	Col	Number	Name
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

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-24-1147

(1) Make sure the CABIN/UTIL switch is in the ON position.

HAP ALL

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.

(b) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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:

C234		**D11022**
term 1	- - - - - - - - - - - - - - - - -	pin A1

4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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:

a) Repair the wiring.

b) Re-install the relay, R594.

c) 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

Row	Col	Number	Name
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		**TB2201**
pin A2	- - - - - - - - - - - - - - - - - -	YA25

(c) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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) Re-install the relay, R594.

3) 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.

(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

Row	Col	Number	Name
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

Row	Col	Number	Name
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

Row	Col	Number	Name
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

(c) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
E	3	C00234	HEATERS DRAIN MAST GND

Row	Col	Number	Name
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

Row	Col	Number	Name
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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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

Row	Col	Number	Name
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.

4) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
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 ———————