CHAPTER

30

ICE AND RAIN PROTECTION



CHAPTER 30 ICE AND RAIN PROTECTION

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

30-EFFECTIVE PAGES



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These are the possible types of faults: YOU FIND A FAULT WITH AN AIRPLANE SYSTEM 1. Observed Fault 2. Cabin Fault If you did a BITE test already, then you can go directly to the USE BITE TO GET fault isolation procedure for MORE INFORMATION the maintenance message. For details, see Figure 2 -Use the fault code or description to find the task in the FIM. There GO TO THE is a numerical list of fault codes FAULT ISOLATION in each chapter. There are lists of fault descriptions at the front TASK IN THE FIM of the FIM. For details, see Figure 3 —

FOLLOW THE STEPS OF THE FAULT ISOLATION TASK

The fault isolation task explains how to find the cause of the fault. When the task says "You corrected the fault" you know that the fault is gone.

For details, see Figure 4 ──►

G04902 S0000148576_V1

Basic Fault Isolation Process Figure 1

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

A maintenance message can be any of these:

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

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

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

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

G04950 S0000148578_V1

Getting Fault Information from BITE Figure 2

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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)

- 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).

G04979 S0000148579_V2

Finding the Fault Isolation Task in the FIM Figure 3

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ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

INITIAL EVALUATION PARAGRAPH

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

FAULT ISOLATION STEPS

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

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

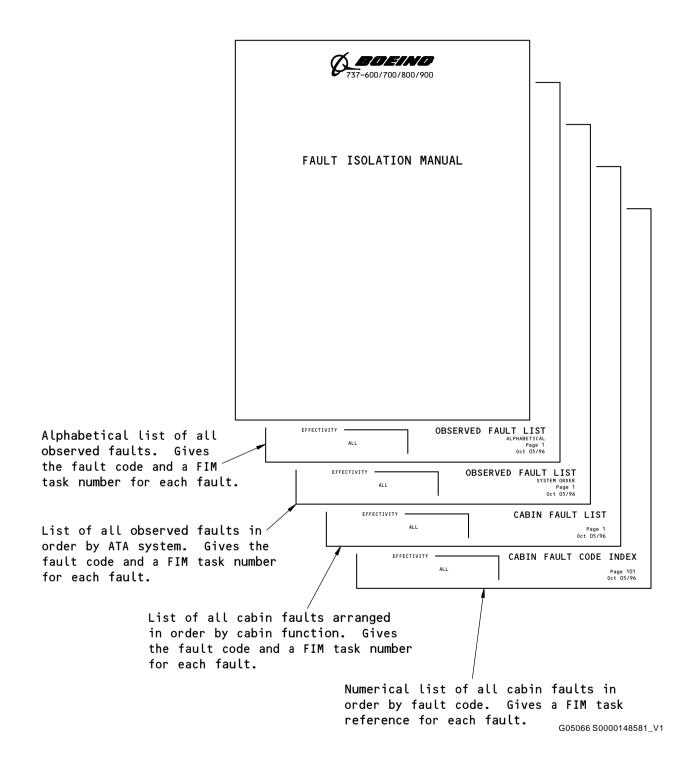
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FAULT ISOLATION MANUAL

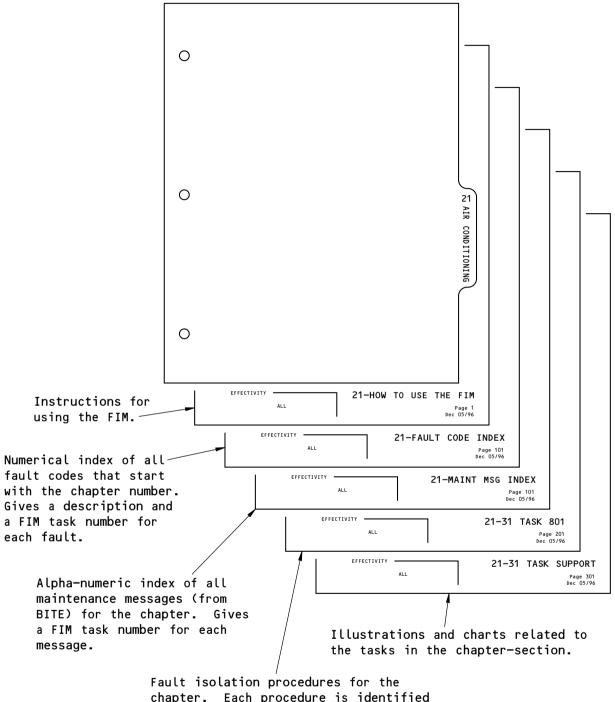


Subjects at Front of FIM Figure 5

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Fault isolation procedures for the chapter. Each procedure is identified by a chapter-section number and a 3-digit task number.

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Subjects in Each FIM Chapter Figure 6

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| FAULT CODE | FAULT DESCRIPTION | GO TO FIM TASK |
|------------|--|----------------|
| 301 010 00 | WING ANTI-ICE L VALVE OPEN light: 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 |
| 301 121 00 | ANTI-ICE & RAIN ENG 1 & WING CONT circuit breaker tripped | 30-11 TASK 810 |
| 302 010 51 | COWL ANTI-ICE light: light comes on independent of engine thrust setting - ENG ANTI-ICE 1. | 30-21 TASK 801 |
| 302 010 52 | COWL ANTI-ICE light: light comes on independent of engine thrust setting - ENG ANTI-ICE 2. | 30-21 TASK 801 |
| 302 011 51 | COWL ANTI-ICE light: light comes on at high thrust setting (takeoff or climb) and goes off at reduced thrust - ENG ANTI-ICE 1. | 30-21 TASK 809 |
| 302 011 52 | COWL ANTI-ICE light: light comes on at high thrust setting (takeoff or climb) and goes off at reduced thrust - ENG ANTI-ICE 2. | 30-21 TASK 809 |
| 302 020 51 | COWL VALVE OPEN light: slow to go from bright to dim when 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 |

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| 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 |
| 304 200 41 | Windshield wiper: does not operate in any switch position - left. | 30-42 TASK 801 |
| 304 200 42 | Windshield wiper: does not operate in any switch position - right. | 30-42 TASK 801 |
| 304 210 41 | Windshield wiper: does not operate in one switch position - left. | 30-42 TASK 802 |
| 304 210 42 | Windshield wiper: does not operate in one switch position - right. | 30-42 TASK 802 |
| 304 220 41 | Windshield wiper: Speed is incorrect - left. | 30-42 TASK 804 |
| 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 |

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

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| 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 |
| Attendant Control Panel | ACP | 23 |
| Automatic Direction Finder Receiver - 1 | ADF RECVR - 1 | 34 |
| Automatic Direction Finder Receiver - 2 | ADF RECVR - 2 | 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 |
| 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 | EAU | 78 |
| Engine Accessory Unit/TR DEPLOY ENG 1 | EAU/TR DPLOY-ENG 1 | 78 |
| Engine Accessory Unit/TR DEPLOY ENG 2 | EAU/TR DPLOY-ENG 2 | 78 |
| Engine Accessory Unit/TR STOW ENG 1 | EAU/TR STOW-ENG 1 | 78 |
| Engine Accessory Unit/TR STOW ENG 2 | EAU/TR STOW-ENG 2 | 78 |
| Engine and Auxiliary Power Unit Fire Detection Control Module | ENG/APU FIRE | 26 |
| Flap/Slat Electronics Unit | FSEU | 27 |
| Flight Data Acquisition Unit | FDAU | 31 |
| Flight Management Computer System | FMCS | 34 |
| Fuel Quantity Indicating System | FQIS | 28 |

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| LRU/SYSTEM | SHORT NAME | CHAPTER |
|---|-----------------|---------|
| Generator Control Unit - 1 | GCU - 1 | 24 |
| Generator Control Unit - 2 | GCU - 2 | 24 |
| Ground Proximity Computer | GROUND PROX | 34 |
| High Frequency Transceiver | HF XCVR | 23 |
| Multi-Mode Receiver | MMR | 34 |
| Nitrogen Generation System BITE Display Unit | NGS | 47 |
| Pack Flow Temperature Controller | PFTC | 21 |
| Pack/Zone Temperature Controller - Left | PACK/ZN CON - L | 21 |
| Pack/Zone Temperature Controller - Right | PACK/ZN CON - R | 21 |
| Proximity Switch Electronics Unit | PSEU | 32 |
| Radio Altimeter Receiver/Transmitter | RADIO ALTIMTR | 34 |
| 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 |

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| LRU/SYSTEM | MAINTENANCE MESSAGE | GO TO FIM TASK |
|---------------|--|----------------|
| WHCU - L FWD | BIT TEST OK | 30-41 TASK 802 |
| WHCU - L FWD | BUS POWER | 30-41 TASK 806 |
| WHCU - L FWD | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - L FWD | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 | BIT TEST OK | 30-41 TASK 809 |
| WHCU - L SIDE | BUS POWER | 30-41 TASK 806 |
| WHCU - L SIDE | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - L SIDE | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 | BIT TEST OK | 30-41 TASK 802 |
| WHCU - R FWD | BUS POWER | 30-41 TASK 806 |
| WHCU - R FWD | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - R FWD | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 | BIT TEST OK | 30-41 TASK 809 |
| WHCU - R SIDE | BUS POWER | 30-41 TASK 806 |
| WHCU - R SIDE | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - R SIDE | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 |

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

A. Description

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

B. Possible Causes

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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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.
 - 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.

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

A. Description

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

B. Possible Causes

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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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.
 - 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.

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 If the VALVE OPEN lights go bright for 1 to 6 seconds then go off, then you corrected the fault.

| END | OF | TASK | |
|---------|-----|-------------|--|
| | OI. | IASIN | |

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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

D. Related Data

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

E. Initial Evaluation

- 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.
- 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:

AKS ALL

30-11 TASKS 802-803



(a) Open the applicable access panels:

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

(b) If the valve is partially open, do these steps:

Name / Landian

- 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.

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- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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

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

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

CAPT Electrical System Panel, P18-3

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

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

AKS ALL



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

CAPT Electrical System Panel, P18-3

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

- (d) Make sure the L VALVE OPEN or R VALVE OPEN light comes on brightly.
- (e) Put the WING ANTI-ICE switch in the ON position.
- (f) Make sure the L VALVE OPEN or R VALVE OPEN light comes on dim.
- (g) Put the WING ANTI-ICE switch in the OFF position.
- (h) Make sure the L VALVE OPEN or R VALVE OPEN light stays off.
- (i) If the light comes on bright in either switch position, do these steps:
 - 1) Replace the engine and wing anti-ice panel. These are the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801
 - 2) Re-connect the connector D732 (left) or D734 (right) to the applicable wing anti-ice valve.
 - 3) Do the Repair Confirmation procedure below.
 - 4) If the test operates correctly, then you corrected the fault.
- (j) If the light does not come on bright, then continue:
- (4) Replace the wing thermal anti-icing shutoff valve. These are the tasks:
 - Wing Thermal Anti-Icing Shutoff Valve Removal, AMM TASK 30-11-11-000-801
 - Wing Thermal Anti-Icing Shutoff Valve Installation, AMM TASK 30-11-11-400-801
 - (a) Do the Repair Confirmation procedure below.
 - (b) If the test operates correctly, then you corrected the fault.
 - (c) If the test does not operate correctly, then continue.
- (5) Do this wiring test between the engine and wing anti-ice panel (P5-11) and the anti-ice valve connector, (WDM 30-11-11).
 - (a) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | .L | | |

- (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.

AKS ALL



G. Repair Confirmation

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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:

| <u>Number</u> | 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

AKS ALL

30-11 TASKS 803-804



(Continued)

CAPT Electrical System Panel, P18-3

Row Col Number Name

AKS 001-024, 026, 028-999

A 6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

AKS 025, 027

A 6 C00148 ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET

AKS ALL

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.

AKS ALL



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

CAPT Electrical System Panel, P18-3

I

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------------------------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001-024, 026, 028-999 | | | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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 | <u>Col</u> | <u>Number</u> | Name |
|-----|------------|---------------|-------------------------------------|
| Α | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------------------------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001-024, 026, 028-999 | | | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- 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.

AKS ALL



- (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 | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|-------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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.

AKS ALL 30-11 TASK 804



- (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.
 - Repair the wiring.
 - 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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

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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 guarter 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 | ENGINE AND | |
|------------|------------|--|
| ANTI-ICING | 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 | ENGINE AND | |
|------------|------------|--|
| ANTI-ICING | 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.
 - 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 |
|---------------------------|--------|--------|---------------------------------------|
| | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001-024, 026, 028-999 | | | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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.

AKS ALL



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

| <u>Number</u> | 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) Ground wing thermal anti-ice solenoid valve M1236 (engine 1) or M1237 (engine 2)
- (3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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 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.

AKS ALL

30-11 TASKS 804-805



- (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.
 - 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 that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| AKS 001 | -024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | , 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS ALI | | | |

AKS ALL



- (a) If this circuit breaker opens intermittently when the airplane is on the ground, replace the ground thermal anti-ice solenoid valve M1236 (engine 1) or M1237 (engine 2). These are the tasks:
 - Ground Wing Thermal Anti-Icing Solenoid Valve Removal, AMM TASK 30-11-12-000-801
 - Ground Wing Thermal Anti-Icing Solenoid Valve Installation, AMM TASK 30-11-12-400-801
- (2) Make sure the engine and wing anti-ice module receives 115 VAC power.

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

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

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

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

CAPT Electrical System Panel, P18-3

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| Row | Col | <u>Number</u> | <u>Name</u> |
|--------|----------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------------------------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001-024, 026, 028-999 | | | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | .L | | |

- (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

AKS ALL



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

CAPT Electrical System Panel, P18-3

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

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

| | ENGINE AND |
|---------|-------------------|
| CIRCUIT | WING |
| BREAKER | ANTI-ICING |
| C00146 | MODULE |
| pin 1 | pin 11 |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------------|
| Α | 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.

AKS ALL



- 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 1 | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

D. Related Data

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- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

- (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.

AKS ALL

30-11 TASKS 805-806



- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 001 | -024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | , 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS ALI | L | | |

- 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.
- Do a wiring check between the engine, the wing anti-ice module, and this circuit breaker:

CAPT Electrical System Panel, P18-3

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

| CIRCUIT | ENGINE AND |
|---------|--------------|
| BREAKER | WING ANTI- |
| C00148 | 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.

AKS ALL



c) Close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row Col Number Name

AKS 001-024, 026, 028-999

6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

AKS 025, 027

A 6 C00148 ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET

AKS ALL

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- 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:
 - 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.
 - Put the WING ANTI-ICE switch on the engine and wing anti-ice module (P5-11) in the ON position.
 - 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
 - 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:

AKS ALL 30-



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 0 | 01-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 0 | 25, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS A | LL | | |

- (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:
 - Autothrottle Switchpack Switch Removal, AMM TASK 76-11-07-020-801-F00
 - Autothrottle Switchpack Switch Installation, AMM TASK 76-11-07-400-801-F00
 - 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:

30-11 TASK 806

EFFECTIVITY



ENGINE AND WING ANTI-ICE SENSOR VALVE 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**

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

D11132P

1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

PIN 10 PIN 21

D462

2) Repair the wiring.

SWITCH

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EFFECTIVITY

AKS ALL

- 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 -----

30-11 TASK 806

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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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| Α | 1 | C00146 | ANTI-ICE & RAIN WING ANTI-ICE VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |

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 | OE | TAC | K _ | |
|------------|----|-----|-----|--|

AKS ALL



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

A. Description

Circuit breaker C148 opens intermittently when the airplane is on the ground.

B. Possible Causes

- (1) Ground Wing Thermal Anti-Ice Solenoid Valve M1236 (Engine 1) or M1237 (Engine 2)
- (2) Wiring Problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

Row Col Number Name

AKS 001-024, 026, 028-999

A 6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

AKS 025, 027

A 6 C00148 ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET

AKS ALL

D. Related Data

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

E. Initial Evaluation

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

F. Fault Isolation Procedure

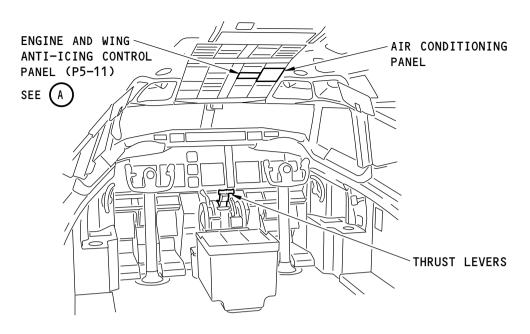
- (1) Replace the Ground Thermal Anti-Ice Solenoid Valve M1236 (Engine 1) or M1237 (Engine 2). These are the tasks:
 - Ground Wing Thermal Anti-Icing Solenoid Valve Removal, AMM TASK 30-11-12-000-801
 - Ground Wing Thermal Anti-Icing Solenoid Valve Installation, AMM TASK 30-11-12-400-801
 - (a) If circuit breaker C148 does not open when the airplane is on the ground, you corrected the fault.

| END | OF: | TASK | |
|----------------|-----|------|--|

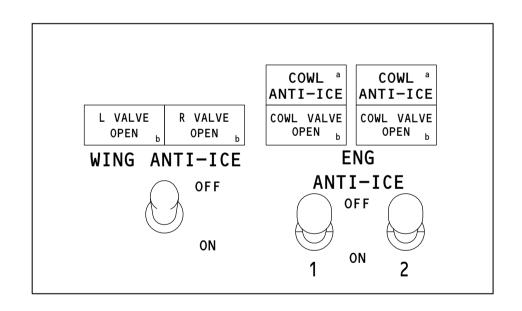
AKS ALL

30-11 TASK 810





FLIGHT COMPARTMENT



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

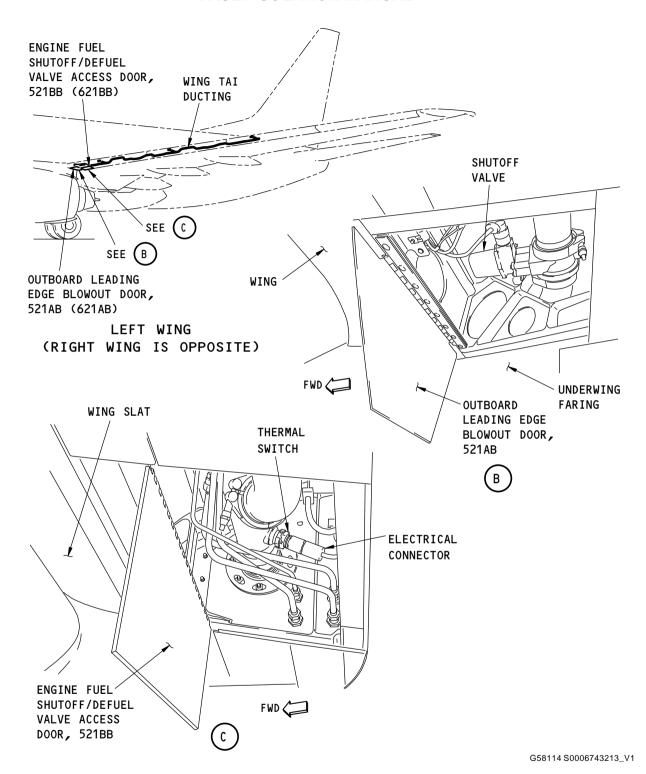


Wing Thermal Anti-Icing Component Location Figure 301/30-11-00-990-801 (Sheet 1 of 2)

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

AKS ALL

30-11 TASK SUPPORT

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

A. Description

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

B. Possible Causes

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

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

(5) Contaminated removable honest orifice.

AKS ALL

I

I

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| | | • | , |
|---------|------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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).

AKS ALL



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

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

AKS ALL

I

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

F. Fault Isolation Procedure

- (1) Do these steps to prepare for fault isolation:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 4 | C01003 | ENGINE 1 THRUST REVERSER IND |

F/O Electrical System Panel, P6-2

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| С | 4 | C00154 | ENGINE 2 START VALVE |

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

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

- (2) Do this test of the overpressure switch:
 - (a) Remove the electrical connector DP1302 from the CTAI duct overpressure switch.
 - (b) Do a continuity check between pins 1 and 2 of the overpressure switch, S806.
 - (c) If there is continuity between pins 1 and 2, then do these steps:
 - 1) Replace the CTAI duct overpressure switch, S806. These are the tasks:
 - Engine Anti-Ice Pressure Sensor Removal, AMM TASK 30-21-21-000-802
 - Engine Anti-Ice Pressure Sensor Installation, AMM TASK 30-21-21-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If there is not continuity between pins 1 and 2, then continue.
- (3) Do this test of the wiring between the engine and wing anti-ice panel and the overpressure switch:

AKS ALL 30-21 TASK 801



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|---------|------------|-------------|---------------------------------------|
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

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

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

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

- 2) Release the panel safety latch.
- (c) Remove this connector from the wing and engine anti-ice panel, 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 | | | | | | | | | | | | | | D46 | 62 | |
|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|-----|----|
| 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:

| DP130 | 2 | | | | | | | | | | 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.

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30-21 TASK 801

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

| CAPT | Electrical S | ystem | Panel. | P18-3 |
|-------------|---------------------|-------|--------|-------|
|-------------|---------------------|-------|--------|-------|

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|-------------------|---------------|---------------------------------------|
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I - 024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

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

G. Repair Confirmation

ı

- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 4 | C01003 | ENGINE 1 THRUST REVERSER IND |

F/O Electrical System Panel, P6-2

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|----------------------|
| С | 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.

AKS ALL

30-21 TASKS 801-802



B. Possible Causes

(1) Engine cowl thermal anti-ice (TAI) valve, V4

CAPT Flectrical System Panel P18-3

C. Circuit Breakers

These are the primary circuit breakers related to the fault:

| | | <u>Number</u> | <u>Name</u> |
|---------|----------|---------------|------------------------------|
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING |
| AKS 025 | 5, 027 | | |

C00148 6 Α **AKS ALL**

ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET

ANTI-ICE & RAIN ENGINE 2 CONTROL

CONT

Α 7 C01001

ANTI-ICE & RAIN ENG 1 COWL AI VALVE

AKS 001-024, 026, 028-999 В 6 C00149

AKS 025, 027

В

ANTI-ICE-RAIN ENG 2/CONT & ICE DET 6 C00149

AKS ALL

7 В C01002 ANTI-ICE & RAIN ENG 2 COWL AI VALVE

Related Data

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

E. Initial Evaluation

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.
- 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.
- If using the APU or external air to pressurize the TAI duct, then the PRSOV valves must be manually opened.
- Do these steps on the applicable engine to manually open the PRSOV: (g)

30-21 TASK 802 EFFECTIVITY ' **AKS ALL**



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.

- Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 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.
- 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.

- 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.
- Put the applicable ENG ANTI-ICE switch in the ON position:
 - The ENG ANTI-ICE 1 switch controls the left cowl TAI valve and left COWL ANTI-ICE light.
 - The ENG ANTI-ICE 2 switch controls the right cowl TAI valve and right COWL ANTI-ICE (b) 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.
 - The COWL VALVE OPEN light is on dimly after 6 seconds.
 - If the light took more than 6 seconds to go dim, then do the Fault Isolation Procedure (c) below.
 - If the lights operated as expected, then there was an intermittent fault.

F. Fault Isolation Procedure

- 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
 - If the valve passes the post installation check in the valve installation procedure, then you corrected the fault.
 - If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.

| | ID. | OF ' | TAC | · LZ | |
|--|-----|------|-----|------|--|
| | VU. | UF | IAS | n | |

EFFECTIVITY ' **AKS ALL**



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:

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| AKS 001 | -024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | -024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | , 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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.

AKS ALL



(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.

- 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.
- Use a wrench on the manual override nut for the PRSOV to put it to the open position.
- 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.

| | OE. | TASK | |
|--|-----|------|--|
| | | | |

AKS ALL



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

| O/ 11 1 E | | our Oyotoiii i | 41101, 1 10 0 |
|-----------|------------|----------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 02 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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.

AKS ALL



- (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.
- 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:

| <u>Number</u> | 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:

AKS ALL



- 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.
 - 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
 - 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.
 - 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:

AKS ALL



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

CAPT Electrical System Panel, P18-3

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| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|---------------------------------------|
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 02 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

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

- (b) Do these steps to open the P5 overhead panel assembly.
 - 1) Loosen the guarter 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.
 - 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.

AKS ALL 30-21 TASK 804



- (g) If the pin is grounded, then do these steps:
 - 1) Replace the applicable engine cowl TAI valve, V4. These are the tasks:
 - Engine Cowl TAI Valve Removal, AMM TASK 30-21-11-000-801
 - Engine Cowl TAI Valve Installation, AMM TASK 30-21-11-400-801
 - 2) Do the post installation test in the installation procedure.
 - 3) If the test passes, then you corrected the fault.
 - a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - b) If it is necessary, close the P5 panel.
 - c) If it is necessary, close the cowl panel on the engine. To close the panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.
 - 4) If the test fails, then continue.
- (4) Do this check of the wiring:
 - (a) For the left COWL VALVE OPEN light, do a wiring check between these pins of the connector DP1303 at the engine cowl TAI valve and the connector D462 at the P5-11 panel:

| DP130 |)3 | D462 |
|-------|----|----------|
| pin 9 | | . pin 15 |

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

| DP130 | 13 | | | | | | | | | 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 | <u>Col</u> | Number | <u>Name</u> |
|---------|------------|-------------|---------------------------------------|
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |

EFFECTIVITY • AKS ALL



AKS 025, 027 (Continued)

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(Continued)

CAPT Electrical System Panel, P18-3

<u>Row Col Number Name</u>

AKS ALL

B 7 C01002 ANTI-ICE & RAIN ENG 2 COWL AI VALVE

- 6) If the COWL VALVE OPEN light does not come on, then you corrected the fault.
 - a) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
 - 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|---------------------------------------|
| AKS 00 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 00' | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 02 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

EFFECTIVITY AKS ALL

30-21 TASKS 804-805

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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.
- 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.

AKS ALL



- (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:

| <u>Number</u> | 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:

AKS ALL 30-21 TASK 805



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:

| _ | | - | Panel, P18-3 |
|---------|------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 001 | -024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | , 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS ALI | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | -024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | i, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS ALI | L | | |

- 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:

C01002

a) Replace the engine and wing anti-ice panel.

These are the tasks:

В

7

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.

ANTI-ICE & RAIN ENG 2 COWL AI VALVE

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|---------|------------|-------------|---------------------------------------|
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |

AKS ALL



(Continued)

I

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | Name |
|---------|------------|---------------|-------------------------------------|
| AKS 001 | -024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | , 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS ALI | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

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

- See the COWL VALVE OPEN light come on bright during the transition. d)
- e) Make sure that the light stays on dim.
- Make sure that the ANTI-ICE switch is set to OFF. f)
- 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.
- 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.
- If the pin is grounded, then do this check of the wiring: 7)
 - 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:

| DP130 |)3 | 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:

| DP130 | 3 | | | | | | | D648 |
|--------------|---|--|--|--|--|--|--|--------|
| pin 4 | | | | | | | | pin 12 |

- If you find a problem with the wiring, then do these steps:
 - Repair the wiring.
 - 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 Col Number Row Name

AKS 001-024, 026, 028-999

ANTI-ICE & RAIN ENG 1 & WING CONT Α 6 C00148

EFFECTIVITY AKS ALL



AKS 001-024, 026, 028-999 (Continued)

(Continued)

| CAPT E | Electric | al System I | Panel, P18-3 |
|---------|-------------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS ALI | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I -024 , 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS ALI | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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:

AKS ALL



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

П

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|-------------------|---------------|---------------------------------------|
| AKS 001 | I -024 , 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I -024 , 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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

AKS 001-024, 026, 028-999

A 6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

AKS ALL



AKS 001-024, 026, 028-999 (Continued)

(Continued)

| CAPT E | lectric | al System I | Panel, P18-3 |
|---------|---------|---------------|---------------------------------------|
| Row | Col | <u>Number</u> | <u>Name</u> |
| AKS 025 | , 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | -024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | i, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------------|
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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

AKS 001-024, 026, 028-999

A 6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

AKS ALL



AKS 001-024, 026, 028-999 (Continued)

(Continued)

| CAPT E | Electric | al System | Panel, P18-3 |
|---------|-------------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I -024 , 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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:

| DP130 | 3 | | | | | | | | | 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:

| DP130 | 13 | D648 |
|-------|----|--------|
| pin 1 | | pin 13 |

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

30-21 TASK 805

AKS ALL

EFFECTIVITY



4) Make sure that these circuit breakers are closed:

| CAPT E | Electrical S | system | Panel, | P18-3 |
|---------------|--------------|--------|--------|-------|
|---------------|--------------|--------|--------|-------|

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|-------------------|---------------|---------------------------------------|
| AKS 001 | I-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I - 024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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

ı

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

B. Possible Causes

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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

<u>Row Col Number Name</u>

AKS 001-024, 026, 028-999

AKS ALL

30-21 TASKS 805-806



AKS 001-024, 026, 028-999 (Continued)

(Continued)

| CAPT Electrical System Panel, P |
|---------------------------------|
|---------------------------------|

| Row | <u>Col</u> | Number | <u>Name</u> |
|---------------|-------------------|-------------|---------------------------------------|
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | I -024 , 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI 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:

AKS ALL



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.

- Open the left thrust reverser. To open it, do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
- 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.
- 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.

- 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.
 - 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.
 - If the light on dim and the green TAI indication is on the CDS, then there was an intermittent fault.
 - If the light is on dim and the green TAI indication is not on the CDS, then continue.
- 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.
 - 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.
 - 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.
 - Do the Fault Isolation Procedure TAI Valve or Wiring below.
 - 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.

30-21 TASK 806

AKS ALL

EFFECTIVITY '

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- 2) Remove pneumatic pressure from the TAI duct. To do this, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- 3) Do the Fault Isolation Procedure DEU or Wiring below.

F. Fault Isolation Procedure - TAI Valve or Wiring

- (1) Do these steps to get access to the engine cowl TAI valve:
 - (a) For the right fan cowl panel on the applicable engine, do this task:

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

Open these access panels:

| <u>Number</u> | 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

| 0 / \(\) \(\) | | our Oyotoiii | . 41101, 1 10 0 |
|------------------------|------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 00 | 01-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 02 | 25, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS A | LL | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 00 | 01-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 02 | 25, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS A | LL | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

- (b) Disconnect the connector, DP1303 from the TAI valve.
- (c) Loosen the retaining screw on the manual locking assembly.
- (d) Move the hex shaft to the OPEN position.
- (e) Slide the locking assembly up the shaft into the recess in the cover plate.
- (f) Tighten the retaining screw.
- (3) Do this check of the TAI valve:

ı

- (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.

AKS ALL



- 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:

| DP130 | 03 | 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 |

EFFECTIVITY '



(d) For the right TAI indication, do a wiring check between these pins of connector D3973D at the DEU and terminal block TB3102:

| D3973D | 1 | TB3102 |
|---------|---|------------|
| pin A11 | | term YB103 |

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

30-21 TASK 806

EFFECTIVITY

AKS ALL



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

AKS 001-024, 026, 028-999

A 6 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT

A 6 C00148 ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET

AKS ALL

AKS 025, 027



AKS 025, 027 (Continued)

ı

(Continued)

| CAPT Electrical System Panel, P18-3 | | | | | | | |
|-------------------------------------|------------|-------------|-------------------------------------|--|--|--|--|
| Row | <u>Col</u> | Number | <u>Name</u> | | | | |
| AKS AL | L | | | | | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE | | | | |
| AKS 001 | I-024, 0 | 26, 028-999 | | | | | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL | | | | |
| AKS 025 | 5, 027 | | | | | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET | | | | |
| AKS AL | L | | | | | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE | | | | |

- (3) Put the ENG ANTI-ICE switches in the ON position.
- (4) Do these steps to make sure the green TAI indication is generated by both DEU.
 - (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 <u>Number</u> **Name** AKS 001-024, 026, 028-999 C00148 ANTI-ICE & RAIN ENG 1 & WING CONT Α 6 AKS 025, 027 ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET Α 6 C00148 **AKS ALL** Α 7 C01001 ANTI-ICE & RAIN ENG 1 COWL AI VALVE AKS 001-024, 026, 028-999 В 6 C00149 ANTI-ICE & RAIN ENGINE 2 CONTROL AKS 025, 027 ANTI-ICE-RAIN ENG 2/CONT & ICE DET В 6 C00149 **AKS ALL** ANTI-ICE & RAIN ENG 2 COWL AI VALVE В 7 C01002

- (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.

AKS ALL



(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.

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

(2) Contaminated removable honest orifice.

AKS ALL

C. Circuit Breakers

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

| CAPT Electrical Syste | em Panel, P18-3 |
|-----------------------|-----------------|
|-----------------------|-----------------|

| | | • | • |
|---------|------------|---------------|---------------------------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| Α | 6 | C00148 | ANTI-ICE & RAIN ENG 1 & WING CONT |
| AKS 025 | 5, 027 | | |
| Α | 6 | C00148 | ANTI-ICE-RAIN ENG 1/WING CONT-ICE DET |
| AKS AL | L | | |
| Α | 7 | C01001 | ANTI-ICE & RAIN ENG 1 COWL AI VALVE |
| AKS 001 | 1-024, 0 | 26, 028-999 | |
| В | 6 | C00149 | ANTI-ICE & RAIN ENGINE 2 CONTROL |
| AKS 025 | 5, 027 | | |
| В | 6 | C00149 | ANTI-ICE-RAIN ENG 2/CONT & ICE DET |
| AKS AL | L | | |
| В | 7 | C01002 | ANTI-ICE & RAIN ENG 2 COWL AI VALVE |

D. Related Data

· EFFECTIVITY ·

AKS ALL

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

30-21 TASKS 806-809

D633A103-AKS



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).

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

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

AKS ALL; AIRPLANES WITHOUT ENGINE COWL TAI VALVE P/N 3215618-5

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

AKS ALL

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.

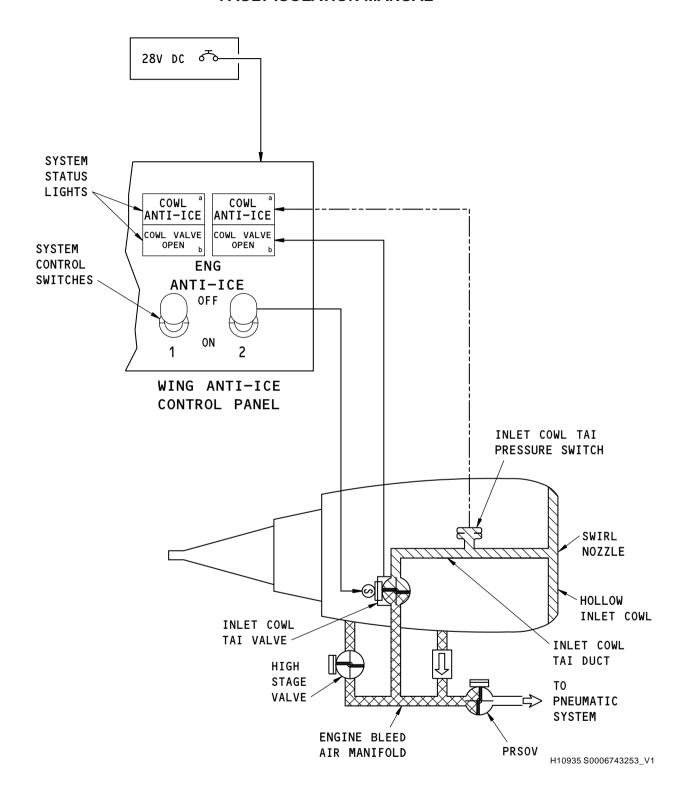
- (a) Do the post installation test in the valve installation procedure.
- (b) If the test operates correctly, then you corrected the fault.
- (c) If pneumatic pressure is no longer needed, do this task: Remove Pressure from the Pneumatic System, AMM TASK 36-00-00-860-806.
- (2) If replacing the applicable cowl TAI valve did not correct the fault, then do this task:COWL ANTI-ICE Light is On Fault Isolation, 30-21 TASK 801

| ENID | OF T | NGK. | |
|----------|------|------|--|

30-21 TASK 809

EFFECTIVITY AKS ALL





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

AKS ALL

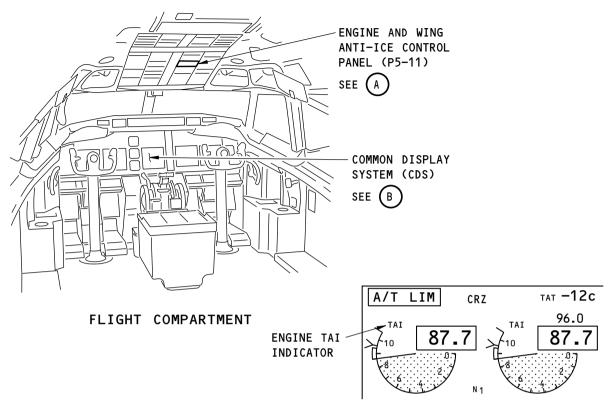
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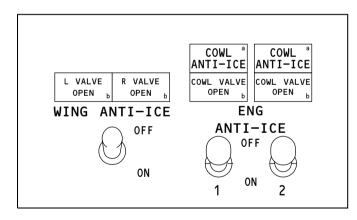
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COMMON DISPLAY SYSTEM





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



H10944 S0006743254_V1

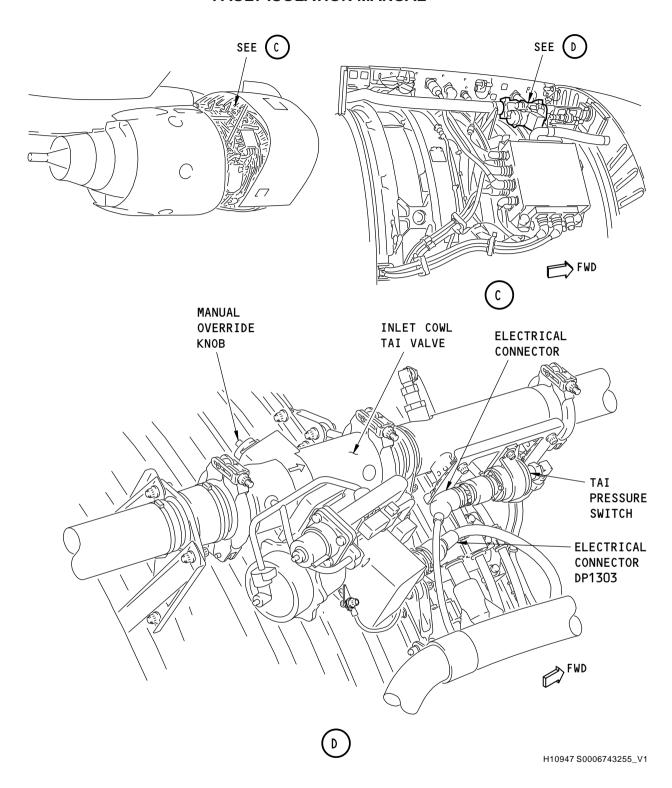
Inlet Cowl TAI Components Figure 302/30-21-00-990-802 (Sheet 1 of 2)

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

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801. AUX PITOT or CAPT STATIC AUX PITOT Light is ON - Fault Isolation

A. Description

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

B. Possible Causes

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

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|----------------------|
| 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 problem.
 - (c) If the AUX PITOT Light comes ON, then do the Fault Isolation Procedure below.
 - (d) Put the PROBE HEAT B Switch in the AUTO position.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 |

AKS ALL

30-31 TASK 801

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(Continued)

I

CAPT Electrical System Panel, P18-3

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

D 6 C00524 HEATERS AUX PITOT

F/O Electrical System Panel, P6-3

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

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

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) Do a physical wiring check via visual and continuity tests between pins of connector D638 in the Flight Compartment and Circuit Breaker C524 in the P18-3 panel (WDM 30-31-12):

 D638
 D15514
 C524

 Pin 22
 A1 and A2
 C524

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

CAPT Electrical System Panel, P18-3

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

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

CAPT Electrical System Panel, P18-3

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

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

AKS ALL



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.
- (i) If you find 115 VAC at the pin, then continue.
- (2) Do a Resistance Check of the Lower Right Pitot Probe as follows:

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

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

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

Window Pitot

| and Heat PNL | D638 | Ground | Resistance |
|--------------|--------|------------|-------------|
| | Pin 38 | Ground | 48 ± 8 Ohms |

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

Lower R Pitot Window and Probe Pitot Heat PNL

Lower R Pitot

Probe

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

AKS ALL



- Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
- Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

I

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

----- END OF TASK -----

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

- A. Description
 - (1) The CAPT PITOT Light on the Window/Pitot Heat Module (P5-9) is ON.
- B. Possible Causes
 - (1) Left Pitot Probe, A23
 - (2) Window and Pitot Heat Panel, P5-9
 - (3) Wiring
- C. Circuit Breakers
 - (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

AKS ALL

30-31 TASKS 801-802



F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------|
| 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 problem.
 - (b) If the CAPT PITOT Light comes ON, then do the Fault Isolation Procedure below.
 - (2) Put the PROBE HEAT A Switch in the AUTO position.
- F. Fault Isolation Procedure
 - (1) Do a check of the Left Pitot Probe as follows (WDM 30-31-11):
 - (a) Disconnect connector D11294 from the Left Pitot Probe, A23.
 - (b) Do a Resistance Check of the Left Pitot Probe as follows:

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

| L Pitot Probe | L Pitot Probe | Resistance |
|---------------|---------------|-------------|
| pin A | pin B | 48 ± 8 Ohms |

- 1) If the Resistance is not in the specified range, replace the Left Pitot Probe. These are the tasks:
 - Pitot Probe Removal, AMM TASK 34-11-01-000-801
 - Pitot Probe Installation, AMM TASK 34-11-01-400-801
 - a) Do the Repair Confirmation at the end of this task.
- 2) If the Resistance is in the specified range, continue.
- (2) Do these wiring checks:

| | Window and |
|---------------|----------------|
| L Pitot Probe | Pitot Heat PNL |
| D11294 | D644 |
| pin A | pin 41 |

L Pitot Probe

- (a) If you find a problem with the wiring, repair it as necessary.
 - 1) Do the Repair Confirmation at the end of this task.
- (b) If the wiring is OK, continue.
- (3) Do this check for 115V AC Power to the Window and Pitot Heat Panel:

AKS ALL



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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) Examine the connector and socket for damage and unwanted objects.
- (d) Remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

- (e) Do a check for 115V AC at:
 - Connector D644, pin 42.
 - Connector D644, pin 24 (Switch in AUTO).
 - 1) If you find 115V AC, 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.
- (f) If you do not find 115V AC, then do these steps:

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|---------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

- 3) Re-connect the connector on the Window and Pitot Heat Panel.
- 4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

F/O Electrical System Panel, P6-3

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

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

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-3

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

AKS ALL



(a) If the CAPT PITOT Light does not come ON, then you corrected the problem.

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

F/O Electrical System Panel, P6-3

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

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

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

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

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30-31 TASKS 802-803



(Continued)

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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) Do a wiring check between the pins of connector D638 in the flight compartment and Circuit Breaker C525 in the P18-3 panel (WDM 30-31-12):

| D638 | D155514 | C525 |
|--------|---------------|----------|
| Pin 23 | B1 and B2 | C525 |

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

CAPT Electrical System Panel, P18-3

| 0 7 ti i | | ai Oyotoiii | . a.i.o.,o.o |
|-----------------|------------|---------------|-------------------|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| D | 5 | C00525 | HEATERS E/O PITOT |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------|
| D | 5 | C00525 | HEATERS E/O PITOT |

AKS ALL



- 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.
- If there is 115 VAC at the pin, then continue.
- (2) Do a Resistance Check of the Upper Right Pitot Probe as follows:

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

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

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

Window and

 Pitot Heat PNL
 D638
 Ground
 Resistance

 Pin 41
 Ground
 48 ± 8 Ohms

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

Upper Right Window and Pitot Probe Pitot Heat PNL D11300 D638

D11300 D638 Pin A Pin 41

Upper Right Pitot Probe

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

30-31 TASK 803

AKS ALL

· EFFECTIVITY ·



- (4) Replace the Window and Pitot Heat Panel. These are the tasks:
 - Window/Pitot Heat Module (P5-9) Removal, AMM TASK 30-41-41-000-801
 - Window/Pitot Heat Module (P5-9) Installation, AMM TASK 30-41-41-400-801
- (5) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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



804. L ALPHA VANE Light is On - Fault Isolation

A. Description

(1) The LALPHA 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

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-------------------------|
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |

F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| 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 LALPHA VANE light does not come on, then there was an intermittent fault.
 - (b) If the LALPHA VANE light comes on, then do the Fault Isolation Procedure below.
- (2) Put the PROBE HEAT A switch in the AUTO position.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

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

- 2) Release the panel safety latch.
- (c) Remove the connector D644 from the window and pitot heat panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D644 in the flight compartment and Circuit Breaker C1072 in the P18-3 panel(WDM 30-31-11):

| D644 | D155512 | C1072 |
|--------|---------------|-----------|
| Pin 25 | C1 and C2 | C1072 |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------|
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |

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

CAPT Electrical System Panel, P18-3

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

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-------------------------|
| С | 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,

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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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-------------------------|
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------|
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |

F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| 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.

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- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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



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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------|
| С | 4 | C00236 | HEATERS ELEV PITOT LEFT |

F/O Electrical System Panel, P6-3

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

D. Related Data

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- (1) Component Location Figure 301
- (2) SSM 30-31-11

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(3) WDM 30-31-11

E. Initial Evaluation

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

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | <u>Name</u> |
|-----|-----|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

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

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

| D644 | D155512 | C236 |
|--------|--------------|------|
| Pin 36 | D1and D2 | C236 |

1) Repair any problems you find.

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

CAPT Electrical System Panel, P18-3

Row Col Number Name
C 4 C00236 HEATERS ELEV PITOT LEFT

- (g) Measure the voltage at pin 43 on the connector to the panel.
- (h) If there is not 115 VAC at the pin, then do these steps:
 - 1) Repair the wiring between pin 43 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

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

- 4) Do the Repair Confirmation at the end of this task.
- (i) If there is 115 VAC at the pin, then continue.
- (2) Do a Resistance Check of the Left Elevator Pitot Probe A-24 as follows:

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

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------|
| С | 4 | C00236 | HEATERS ELEV PITOT LEFT |

Window Pitot

| and Heat PNL | D644 | Ground | Resistance |
|--------------|--------|----------|-------------|
| | Pin 40 | . Ground | 48 ± 8 Ohms |

- (a) If the Resistance is not in the specified range, do these wiring checks:
 - Remove the Left Elevator Pitot Probe A-24. This is the task: Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801

Left Elevator Window and Pitot Probe Pitot Heat PNL

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Left Elevator Pitot Probe

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

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

——— 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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Number</u> | <u>Name</u> |
|-----|-----|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

D. Related Data

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

E. Initial Evaluation

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

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

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

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

F. Fault Isolation Procedure

(1) Replace the window and pitot heat module.

These are the tasks:

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

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

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

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

(b) Make sure the applicable air data sensor heater gets hot.

NOTE: You can spray the air data sensor with water to check for heat.

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

| | END | OF TA | SK — | |
|--|------------|-------|------|--|
|--|------------|-------|------|--|

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

A. Description

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

D. Related Data

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

E. Initial Evaluation

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

F. Fault Isolation Procedure

- (1) If only one light did not come on, then do these steps:
 - (a) Push the light that is not on.
 - (b) If the light comes on, then replace the window and pitot heat panel, P5-9.

These are the tasks:

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

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

- (c) If the light does not come on, then replace the bulb.
- (d) Do the Repair Confirmation at the end of this task.
- (2) If more than one light did not come on, then do this check of the window and pitot heat panel:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |

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CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

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

- 2) Release the panel safety latch.
- (c) If the left side lights are not on, then remove the connector D644 from the window and pitot heat panel.
- (d) If the right side lights are not on, then remove the connector D638 from the window and pitot heat panel.
- (e) Examine the connector and socket for damage and unwanted objects.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

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

- (g) Measure the voltage at pin 33 on the connector to the panel.
- (h) If there is not 28 VDC at the pin, then do these steps:
 - Repair the wiring between pin 33 on connector D638 or D644 and the applicable circuit breakers:

F/O Electrical System Panel, P6-3

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

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- 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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



808. R ALPHA VANE Light is On - Fault Isolation

A. Description

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(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

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|----------------------|
| 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 AUTO position.

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

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

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

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

AKS ALL



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

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

| D638 | D155514 | C1071 |
|--------|---------------|-----------|
| Pin 24 | C1 and C2 | C1071 |

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

CAPT Electrical System Panel, P18-3

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

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

CAPT Electrical System Panel, P18-3

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

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

F/O Electrical System Panel, P6-3

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

- d) Do the Repair Confirmation at the end of this task.
- 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| D | 3 | C01071 | HEATERS ALPHA VANE RIGHT |

- (b) Measure the resistance between pin 44 on the connector D638 and structure ground:
- (c) If the resistance is less than 200 ohms, then do these steps:
 - 1) Replace the window and pitot heat panel.

These are the tasks:

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

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

- 3) Do the Repair Confirmation at the end of this task.
- (d) If the resistance is greater than 200 ohms, then continue.
- (3) Replace the right alpha vane:
 - (a) These are the tasks:

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

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

| D287 | D638 |
|-------|------------|
| pin 8 | pin 44 |
| pin 9 | pin 45 |

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

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

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

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

G. Repair Confirmation

- (1) If it is necessary, close the P5 overhead panel:
 - (a) Raise the P5 overhead panel assembly.

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- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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



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

F/O Electrical System Panel, P6-3

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

D. Related Data

- EFFECTIVITY

- (1) Component Location Figure 301
- (2) SSM 30-31-12

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(3) WDM 30-31-12

E. Initial Evaluation

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

F. Fault Isolation Procedure

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

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

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

| D638 | D155514 | C237 |
|--------|---------------|----------|
| Pin 25 | D1 and D2 | C237 |

1) Repair any problems you find.

AKS ALL



(f) 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

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

CAPT Electrical System Panel, P18-3

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

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

F/O Electrical System Panel, P6-3

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

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

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

Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

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

Window Pitot

| and Heat PNL | D638 | Ground | Resistance |
|--------------|--------|--------|-------------|
| | Pin 40 | Ground | 48 ± 8 Ohms |

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

Right Elevator Window and Pitot Probe Pitot Heat PNL

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Right Elevator Pitot Probe

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

G. Repair Confirmation

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | <u>Name</u> |
|-----|-----|---------------|--------------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |
| С | 3 | C01072 | HEATERS ALPHA VANE LEFT |
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| F | 16 | C00570 | PROBE INDICATION F/O |
| F | 18 | C00569 | PROBE INDICATION CAPT |

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

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

----- END OF TASK -----

810. TEMP PROBE Light is On - Fault Isolation

A. Description

(1) The TEMP PROBE light on the window/pitot heat module (P5-9) is on.

B. Possible Causes

- (1) 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 2 | C00238 | HEATERS TEMP PROBE |

F/O Electrical System Panel, P6-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------|
| 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 B switch in the AUTO 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 1 | C00523 | HEATERS CAPT PITOT |
| С | 2 | C00238 | HEATERS TEMP PROBE |

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(Continued)

CAPT Electrical System Panel, P18-3

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

F/O Electrical System Panel, P6-3

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

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

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

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

- 2) Release the panel safety latch.
- (c) Remove the connector D644 from the window and pitot heat panel.
- (d) Examine the connector and socket for damage and unwanted objects.
- (e) Do a wiring check between the pins of connector D644 in the flight compartment and Circuit Breaker C238 in the P18-3 panel(WDM 30-31-11):

| D644 | D155512 | C238 |
|--------|-----------|------|
| Pin 23 | A1 and A2 | C238 |

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

CAPT Electrical System Panel, P18-3

| Row | Col | Number | <u>Name</u> |
|-----|-----|--------|--------------------|
| С | 2 | C00238 | HEATERS TEMP PROBE |

- (g) Measure the voltage at pin 39 on the connector to the panel.
- (h) If there is not 115 VAC at the pin, then do these steps:
 - 1) Repair the wiring between pin 39 on connector D644 and this circuit breaker:

CAPT Electrical System Panel, P18-3

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

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- 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 2 | C00238 | HEATERS TEMP PROBE |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 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 |

EFFECTIVITY

AKS ALL



- (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.
 - 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| С | 2 | C00238 | HEATERS TEMP PROBE |

F/O Electrical System Panel, P6-3

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

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

F/O Electrical System Panel, P6-3

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

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

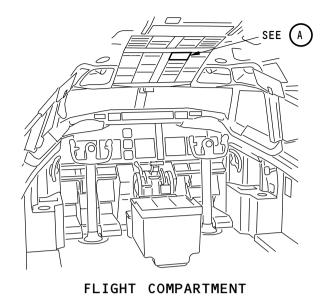
——— END OF TASK ———

30-31 TASK 810

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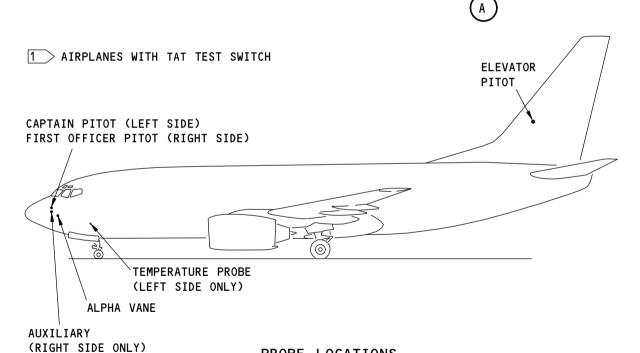
EFFECTIVITY





OVERHEAT OVERHEAT OVERHEAT OVERHEAT WINDOW HEAT L SIDE SIDE OFF OFF PWR TEST **PROBE** CAPT F/0 PITOT a PITOT a OFF R ELEV L ELEV PITOT a PITOT a ΟN L ALPHA R ALPHA **HEAT** VANE a VANE a TEMP AUX PITOT a PROBE a TAT TEST

WINDOW/PITOT HEAT MODULE (P5-9)



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

G56883 S0006743283_V1

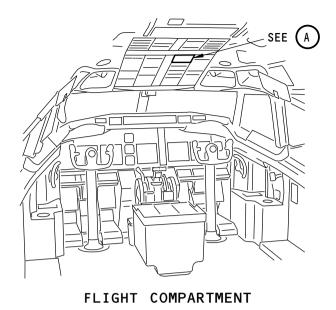
Air Data Sensor Heaters Component Location Figure 301/30-31-00-990-801 (Sheet 1 of 2)

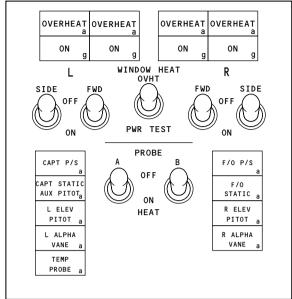
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30-31 TASK SUPPORT

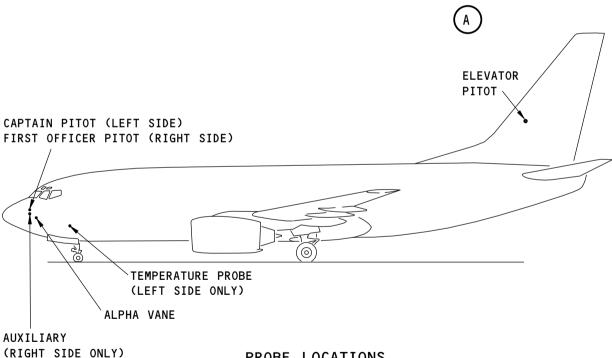
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WINDOW/PITOT HEAT MODULE (P5-9)



-^{Y)} PROBE LOCATIONS
(LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE)

L49486 S0006743286_V1

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

AKS ALL

30-31 TASK SUPPORT

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801. Window Heat Control Unit (WHCU) BITE Procedure

A. General

- (1) This task isolates the faults for the window heat control unit (WHCU).
- (2) The BITE module, for the window heat control, is at the front of the WHCU.
- (3) The WHCUs are on the E2-1 and E4-2 shelves in the electronic equipment bay.

B. Prepare for the BITE test

Get access to the WHCUs.

Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- (a) If one or more circuit breakers are open, examine the lugs.
 - 1) If the terminals are oxidized & corroded, replace the terminals per SWPM 20-30-11.
 - <u>NOTE</u>: Oxidation and corrosion is indicated by brown discoloration to the insulation on the terminal crimp barrel.
 - 2) Close the circuit breakers.
 - a) If a circuit breaker opens again, replace the circuit breaker.
 - NOTE: Repeat nuisance tripping due to oxidized & corroded terminals can degrade the circuit breaker.
 - Close the circuit breakers.
 - a) If circuit breakers open again, then do 30-41 TASK 806.
 - b) If circuit breakers stay closed, then continue.
 - 4) Cycle the applicable WINDOW HEAT ON switch on the P5-9 panel to unlatch the fault.

C. BITE Procedure

- (1) In the WHCUs, find all fault lights that are on.
 - (a) If the red light(s) are on and match the combination of lights in the "Fault vs. LED Matrix" table, then find the applicable FIM task in that table. Otherwise, continue.
 - (b) If the red light(s) are on but do not match the combination of lights in the "Fault vs. LED Matrix" table, then refer to the table at the end of this procedure to find the applicable FIM task. Otherwise, continue.
 - (c) If the red light(s) are not on, then continue.
- (2) Push the FAULT HISTORY switch only one time on the applicable WHCU.
 - (a) If a combination of red lights are on and match those in the "Fault vs. LED Matrix" table, then do the FIM task for the fault shown in that table. Otherwise, continue.

AKS ALL



Fault vs. LED Matrix

| | RED LIGHTS (LED) | | | | | LRU | |
|---|------------------|-----------|-----------------|------------------|--------------------|----------------------------|--------------------|
| FAULT | WHCU-LRU | BUS POWER | WINDOW POWER | WINDOW SENSOR | P5-9/CTRL POWER | WHCU - L/R FWD | WHCU - L/R SIDE |
| POWER ON TEST FAIL | X | | Χ | | X | FIM TA | SK 814 |
| POWER ON TEST FAIL (man made overheat) | X | X | Х | Х | X | FIM TASK 812 | FIM TASK 811 |
| OVERHEAT TEST FAIL | Х | | | Х | Х | FIM ⁻ 813 ar | TASK nd 814 |

- (b) If the red light(s) are on but do not match the combination of lights in the "Fault vs. LED Matrix" table, then find the applicable FIM task in the table below. Otherwise, continue.NOTE: The red lights indicate that there was a fault and possibly an intermittent fault.
- (c) If the green BIT TEST OK light is on, then do the subsequent step to erase all records.

 NOTE: The light will be on for approximately 15 seconds.
 - Push the BIT LAMP RESET switch and the LAMP TEST switch at the same time until the green BIT TEST OK light is on (for approximately 2 seconds). This will reset the WHCU BITE.
 - Refer to the table below to find the applicable FIM task for the related maintenance message - BIT TEST OK.

| LRU/SYSTEM | MAINTENANCE MESSAGE | GO TO FIM TASK |
|---------------|--|----------------|
| WHCU - L FWD | BIT TEST OK | 30-41 TASK 802 |
| WHCU - L FWD | BUS POWER | 30-41 TASK 806 |
| WHCU - L FWD | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - L FWD | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 | BIT TEST OK | 30-41 TASK 809 |
| WHCU - L SIDE | BUS POWER | 30-41 TASK 806 |
| WHCU - L SIDE | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - L SIDE | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 | BIT TEST OK | 30-41 TASK 802 |
| WHCU - R FWD | BUS POWER | 30-41 TASK 806 |

AKS ALL

30-41 TASK 801

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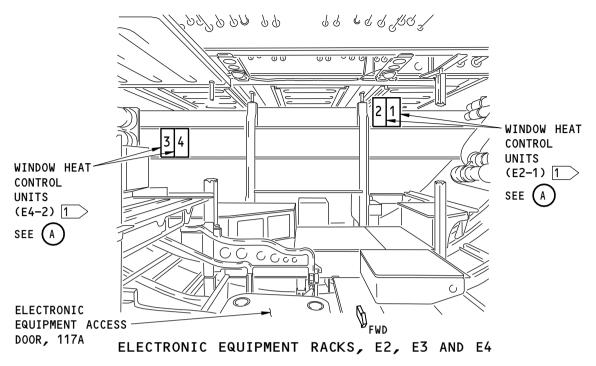


| LRU/SYSTEM | MAINTENANCE MESSAGE | GO TO FIM TASK |
|---------------|--|----------------|
| WHCU - R FWD | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - R FWD | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| WHCU - R FWD | WHCU-LRU | 30-41 TASK 807 |
| WHCU - R FWD | WINDOW POWER | 30-41 TASK 814 |
| WHCU - R FWD | WINDOW SENSOR | 30-41 TASK 812 |
| WHCU - R SIDE | BIT TEST OK | 30-41 TASK 809 |
| WHCU - R SIDE | BUS POWER | 30-41 TASK 806 |
| WHCU - R SIDE | P5-9/CONTROL POWER | 30-41 TASK 813 |
| WHCU - R SIDE | WCHU-LRU and WINDOW POWER at the same time | 30-41 TASK 814 |
| 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 |

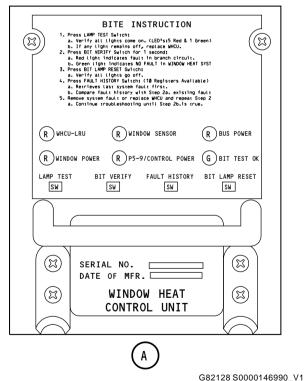
_____ END OF TASK _____

AKS ALL





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



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

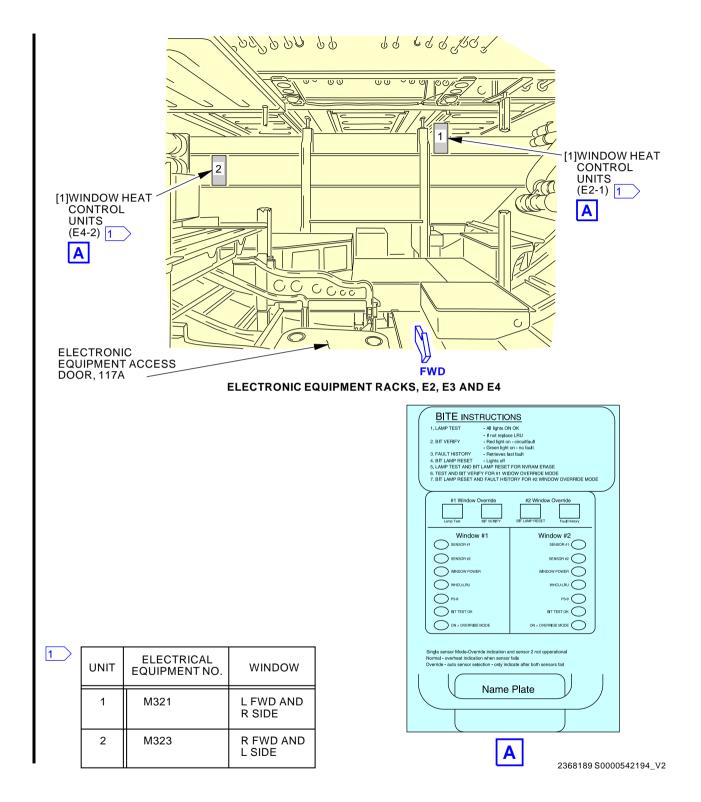
· EFFECTIVITY ·

AKS 001-022

30-41 TASK 801

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

AKS 023-999

30-41 TASK 801

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802. Windshield Does Not Heat Properly - Fault Isolation

A. Description

 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|------------------------------------|
| AKS 001 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | Col | <u>Number</u> | <u>Name</u> |
|--------|-----|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 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) Push BIT VERIFY only one time on the WHCU.
 - (d) If the red light(s) are on, then refer to the table that is at the end of Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801, to find the applicable FIM task.
 - (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:

AKS ALL



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | Col | <u>Number</u> | <u>Name</u> |
|--------|-----|---------------|------------------------------|
| AKS AL | .L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 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,

No. 1 Window 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 | <u>Number</u> | <u>Name</u> | |
|---------|-------|---------------|------------------------------------|--|
| AKS 001 | I-022 | | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC | |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC | |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 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.

30-41 TASK 802

AKS ALL

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- (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 or Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-760-802.
 - (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 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
 - (b) Do the post installation test in the installation procedure.
 - (c) If the test operates correctly, then you corrected the fault.



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

AKS 001-022

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

AKS 023-999

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

AKS ALL

(3) Wiring problem

C. Circuit Breakers

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

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

EFFECTIVITY AKS ALL

30-41 TASKS 802-806



F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |
| В | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- (2) Make sure the WHCU fault is active:
 - (a) Push the BIT VERIFY 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 perform the following task: Window Heat Control Unit System Test, AMM TASK 30-41-11-710-801.
 - (d) If the fault light still 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 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.
 - (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 |

AKS ALL

30-41 TASK 806

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

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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.

AKS 023-999

2) Install a new WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

AKS ALL

- 3) Do the post installation test in the installation procedure.
- 4) 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:

AKS 001-022

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

AKS 023-999

(b) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

AKS ALL

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

F/O Electrical System Panel, P6-11

| Row | Col | Number | Name |
|-----|-----|--------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

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

Table 202

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

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(e) These are the applicable circuit breakers:

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

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

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- (g) 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 VERIFY 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

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AKS 001-022

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

AKS 023-999

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

AKS ALL

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | <u>Name</u> |
|-------------|-----|---------------|-----------------------------------|
| AKS 001-022 | | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | .L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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) If only the WHCU-LRU light is on, then do this::
 - (a) If you have not done so, push the FAULT HISTORY switch only one time on the WHCU.
 - If only the WHCU LRU fault light is on, then do the "Fault Isolation Procedure" below.
 - 2) If other than the WHCU-LRU light is on, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.

F. Fault Isolation Procedure

AKS 001-022

(1) Replace the WHCU.

These are the tasks:

Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-801,

AKS ALL



AKS 001-022 (Continued)

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.

AKS 023-999

(2) Replace the WHCU.

These are the tasks:

Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803,

Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

- (a) Do the post installation test in the installation procedure.
- (b) If the test passes, then you corrected the fault.

AKS ALL

——— 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

AKS 001-022

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

AKS 023-999

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

AKS ALL

(4) 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 | <u>Col</u> | Number | <u>Name</u> |
|---------|----------------|--------|-----------------------------------|
| AKS 001 | I - 022 | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| ROW | <u>C01</u> | <u>number</u> | <u>name</u> |
|---------|------------|---------------|------------------------------|
| AKS ALI | L | | |
| B | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

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F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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):

AKS 001-022

- (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.

AKS 023-999

- (c) For the right side window, do the test on the WHCU M321.
- (d) For the left side window, do the test on the WHCU M323.

AKS ALL

- (e) Push BIT VERIFY only one time on the WHCU.
- (f) If the red light(s) are on, then refer to the table that is at the end of Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801, to find the applicable FIM task.
- (g) 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|-----------------------------------|
| AKS 00 | 1-022 | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | Col | <u>Number</u> | <u>Name</u> |
|--------|-----|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 9 | C00392 | WINDOW HEAT POWER LEFT SIDE |

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

AKS ALL



- (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:
 - 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 | <u>Col</u> | <u>Number</u> | Name |
|---------|------------|---------------|-----------------------------------|
| AKS 001 | -022 | | |
| 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 | <u>Col</u> | <u>Number</u> | Name |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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 or Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-760-802.
 - (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.

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AKS 001-022

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

AKS 023-999

(b) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

AKS ALL

- (c) Do the post installation test in the installation procedure.
- (d) If the test passes, then you corrected the fault.

| END (| OF TAS | K |
|-----------|--------|---|
| | | |

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

Description

- (1) This task is for these maintenance messages:
 - (a) A combination of: WHCU-LRU, BUS POWER, WINDOW POWER, WINDOW SENSOR, and P5-9/CTRL POWER (left or right side windows)
 - (b) WINDOW SENSOR (left side window)
 - (c) WINDOW SENSOR (right side window)
- 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.
- This task applies to the side windows. A different fault isolation procedure applies for the front windows.

B. Possible Causes

(1) Wiring problem

AKS 001-022

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

AKS 023-999

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

AKS ALL

(3) No. 2 window

C. Circuit Breakers

These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

| <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|----------------|-----------------------------------|
| 001-022 | | |
| 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |
| | 001-022 | 2 C00225 |

EFFECTIVITY **AKS ALL**

30-41 TASKS 809-811



| AKS 001-022 (Continued)

| F/O Electrical | System | Panel, | P6-11 |
|----------------|--------|--------|-------|
|----------------|--------|--------|-------|

Row Col Number Name

AKS ALL

B 8 C00393 WINDOW HEAT POWER RIGHT SIDE

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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 this if the current fault is a combination of the following red lights: WHCU-LRU, BUS POWER, WINDOW POWER, WINDOW SENSOR, and P5-9/CTRL POWER.
 - (a) Push the BIT VERIFY switch only one time on the WHCU.
 - (b) If the fault lights go out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If these fault lights stay on, then do the "Fault Isolation Procedure Existing Fault" below.
- (2) If only the WINDOW SENSOR light is on, then do this:
 - (a) Push the BIT VERIFY switch oly one time on the WHCU.
 - (b) If the fault light goes out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If this 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's temperature sensor:
 - (a) Remove one of the wires from the temperature sensor.
 - (b) Measure the resistance of the temperature sensor, AMM TASK 30-41-21-760-801:
 - 1) If the resistance is not within the permitted limits, then the sensor is defective. Do these steps to connect the spare sensor:
 - a) Disconnect the wire connected to the primary sensor's D terminal located at the bottom corner of the window. If more space is necessary to access the terminals, remove the window (No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801).
 - b) Connect the wire to the spare temperature sensor's D terminal.
 - c) Mark the faulty sensor to indicate that it no longer operates.
 - d) If the window was removed, install the window (No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801).

AKS ALL



e) If both sensors have failed then 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).

NOTE: The spare sensor may be used until the windshield is replaced. The window does not need to be replaced until both sensors have failed.

- 2) If the resistance is within the permitted limits, 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 or Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.
 - (b) Make sure that these circuit breakers are open and have safety tags:

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | <u>Name</u> |
|---------|-------|---------------|-----------------------------------|
| AKS 001 | I-022 | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|------------------------------|
| AKS ALI | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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 pin C | • |

LEFT SIDE WHCU

| | EE. 1 015E W.10 | |
|-------------|-----------------|------------|
| | WINDOW TEMP | |
| | SENSOR | WHCU |
| | CONNECTION | CONNECTION |
| LEFT SIDE | | |
| WHCU - M322 | TEMP SENSOR | D1046A |
| | pin C | pin 13 |
| | pin D | pin 26 |
| | | |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|-----------------------------------|
| AKS 00 | 1-022 | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| | | Number | |
|--------|---|--------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------------|
| В | 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 VERIFY 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 or Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.
 - (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 side window's temperature 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 to connect the spare sensor:
 - a) Disconnect the wire connected to the primary sensor's D terminal located at the bottom corner of the window. If more space is necessary to access the terminals, remove the window (No. 2 Openable Window Removal, AMM TASK 56-12-11-000-801).

AKS ALL



- Connect the wire to the spare temperature sensor's D terminal.
- Mark the faulty sensor to indicate that it no longer operates.
- If the window was removed, install the window (No. 2 Openable Window Installation, AMM TASK 56-12-11-400-801).
- If both sensors have failed, then replace the side 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).

NOTE: The spare sensor may be used until the windshield is replaced. The window does not need to be replaced until both sensors have failed.

| END | OF TASK | (—— |
|-----|---------|------|
|-----|---------|------|

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

Description

- (1) This task is for these maintenance messages:
 - (a) A combination of: WHCU-LRU, BUS POWER, WINDOW POWER, WINDOW SENSOR, and P5-9/CTRL POWER (left or right forward windows)
 - (b) WINDOW SENSOR (left forward window)
 - (c) WINDOW SENSOR (right forward window)
- The WHCU detects a shorted condition in the wiring between the control unit and the window temperature sensor.
- This task applies to the front windows. A different fault isolation procedure applies for the side windows.

B. Possible Causes

- (1) Wiring problem
- Window heat control unit (WHCU), M321 (left front) or M323 (right front)

C. Circuit Breakers

These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Е | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L. | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |

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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 this if the current fault is a combination of the following red lights: WHCU-LRU, BUS POWER, WINDOW POWER, WINDOW SENSOR, and P5-9/CTRL POWER.
 - (a) Push the BIT VERIFY switch only one time on the WHCU.
 - (b) If the fault lights go out, then do the "Fault Isolation Procedure Intermittent Faults" below.
 - (c) If the fault lights stay on, then do the Fault Isolation Procedure Existing Fault below.
- (2) If only the WINDOW SENSOR light is on then continue
- (3) 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 VERIFY 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, AMM TASK 30-41-21-760-801:
 - 1) Remove one of the wires from the window temperature sensor.
 - 2) If the resistance is not within the permitted limits, then do these steps:
 - a) Put the sensor select switch to the other sensor position.
 - 3) If the resistance is within the permitted limits, then continue.

AKS ALL



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |

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

LEFT FRONT WHCU

| 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

SENSOR

| CONNECTION | M323 |
|------------|------------|
| S1079 | PRIMARY |
| pin 6 | terminal A |
| pin 3 | terminal B |

| S1079 | | | | | | | | | | | SECONDARY |
|-------|--|--|--|--|--|--|--|--|---|---|------------|
| pin 1 | | | | | | | | | | | terminal C |
| pin 4 | | | | | | | | | _ | _ | terminal D |

AKS ALL

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|--------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-------------------------------|
| В | 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 VERIFY 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:

AKS 001-022

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

AKS 023-999

(b) Do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

AKS ALL

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> | | | |
|--------|------------|---------------|------------------------------|--|--|--|
| AKS AL | .L | | | | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT | | | |

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F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |

AKS 001-022

(d) 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

 \$1079
 D1048A

 pin 2
 pin 13

 pin 5
 pin 26

AKS ALL

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |

- (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 BIT VERIFY switch on the WHCU.
 - b) If the fault light goes out, then you corrected the fault.

AKS ALL



- (g) If you do not find a problem with the wiring, then continue.
- (3) Replace the WHCU.

AKS 001-022

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

AKS 023-999

(b) Do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

AKS ALL

- (c) Do the post installation test in the installation procedure.
- (d) 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, AMM TASK 30-41-21-760-801:
 - (a) Remove one of the wires from the window temperature sensor.
 - (b) Attach an ohmmeter to the sensor studs.
 - 1) If the sensor resistance stays within the permitted limits, then no fault was found.
 - 2) If the sensor resistance is not within the permitted limits, 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, No. 1 Window 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) A combination of WHCU-LRU, WINDOW SENSOR, and P5–9/CTRL POWER (left/right of the forward or side windows)
 - (b) P5-9 CONTROL POWER (left forward window)
 - (c) P5-9 CONTROL POWER (right forward window)
 - (d) P5-9 CONTROL POWER (left side window)
 - (e) 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.

AKS ALL

30-41 TASKS 812-813



AKS 023-999

(3) For airplanes with dual sensors, this task provides information for the WHCU Override Mode when the P5-9 OVERHEAT indication light is ON due to a single sensor failure.

AKS ALL

B. Possible Causes

- (1) Wiring problem
- (2) Window and pitot heat module, P5-9

AKS 001-022

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

AKS 023-999

- (4) Window heat control unit (WHCU), M321 (left front and right side), or M323 (right front and left side)
- (5) Single sensor failure

AKS ALL

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | Name |
|-------------|-----|---------------|------------------------------------|
| AKS 001-022 | | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AI | .L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |
| В | 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)

AKS ALL



E. Initial Evaluation

- (1) Do this if the current fault is a combination of the following red lights: WHCU-LRU, WINDOW SENSOR, and P5–9/CTRL POWER. Otherwise continue.
 - (a) Push the BIT VERIFY switch only one time on the WHCU.
 - (b) If the fault lights go out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If the fault lights stay on, then do the "Fault Isolation Procedure" below.
- (2) If only the P5-9 CONTROL POWER light is ON, then do this:
 - (a) Push the BIT VERIFY switch only one time on the WHCU.
 - (b) If the fault light goes out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If the P5-9 CONTROL POWER fault light stays on, then do the "Fault Isolation Procedure" below.

AKS 023-999

- (3) For airplanes with dual sensors, the P5-9 OVERHEAT indication light comes ON and the WHCU sensor #1 or sensor #2 shows a red light.
 - (a) On the WHCU turn on the Override Mode where the single sensor failure red light shows.
 - (b) The WHCU will automatically select a working sensor and the OVERHEAT indication light will turn OFF.
 - NOTE: Flight can continue with one working sensor.
 - (c) If the P5-9 OVERHEAT indication comes ON while in Override Mode, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (d) If the fault lights stay on, then do the "Fault Isolation Procedure" below.

AKS ALL

- (4) Do the Fault Isolation Procedure if a window overheats, which is shown by these indications:
 - (a) The amber OVERHEAT lights ON.
 - (b) MASTER CAUTION and ANTI-ICE annunciation lights come ON.
 - NOTE: With the power ON, the MASTER CAUTION will be OFF during the first 5 minutes of flight or when the plane is grounded.
 - (c) The green ON light goes OFF.
 - (d) Electric current to the window is cut off.

F. Fault Isolation Procedure

(1) Do this check of the WHCU.

AKS 001-022

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

AKS 023-999

(b) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

AKS ALL

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

AKS ALL



- 1) M320 D1042A, pin 5
- 2) M321 D1044A, pin 5
- 3) M322 D1046A, pin 5
- 4) M323 D1048A, pin 5
- (d) If there is 115 VAC at the pin, then do these steps:

AKS 001-022

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.

AKS 023-999

2) Install a new WHCU. To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

AKS 001-022

ı

(e) 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.

AKS 023-999

(f) 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 30-41-11-400-803.

AKS ALL

- (g) Do the repair confirmation at the end of this task.
- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|------------------------------------|
| AKS 001 | -022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|--------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

EFFECTIVITY AKS ALL

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- (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 | <u>Col</u> | Number | <u>Name</u> |
|---------|-------------|--------|------------------------------------|
| AKS 001 | -022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- 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 | <u>Col</u> | <u>Number</u> | Name |
|-------------|------------|---------------|------------------------------------|
| AKS 001-022 | | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

AKS ALL

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F/O Electrical System Panel, P6-12

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

- d) Do the repair confirmation at the end of this task.
- (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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
| AKS 00 | 1-022 | | |
| 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 |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | Col | <u>Number</u> | <u>Name</u> |
|---------|-----|---------------|------------------------------|
| AKS ALI | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- (c) Do the repair confirmation at the end of this task.
- (4) Do this check of the wiring between the P5-9 panel and the applicable WHCU.

AKS 001-022

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

AKS 023-999

(b) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

AKS ALL

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

CAPT Electrical System Panel, P18-3

<u>Row Col Number Name</u>

AKS 001-022

AKS ALL



AKS 001-022 (Continued)

(Continued)

| CAPT | Electrical | System | Panel, | P18-3 |
|------|-------------------|---------------|--------|-------|
|------|-------------------|---------------|--------|-------|

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

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

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

RIGHT SIDE WHCU - M320

WHCU

 P5-9 PANEL
 CONNECTION

 D638
 D1042A

 pin 48
 pin 5

LEFT FRONT WHCU - M321

WHCU

 P5-9 PANEL
 CONNECTION

 D638
 D1044A

 pin 47
 pin 5

LEFT SIDE WHCU - M322

WHCU

 P5-9 PANEL
 CONNECTION

 D644
 D1046A

 pin 48
 pin 5

RIGHT FRONT WHCU - M323

WHCU

 P5-9 PANEL
 CONNECTION

 D644
 D1048A

 pin 47
 pin 5

AKS ALL

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | Name |
|--------|-------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|--------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

- (f) If you find a problem with the wiring, then do these steps:
 - Repair the wiring.
 - 2) Do the repair confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this test of the window heat system:
 - (a) Push the BIT VERIFY switch on the WHCU.
 - (b) If the fault light goes out, then you corrected the fault.
 - (c) If the fault light stays ON, then continue the Fault Isolation at the subsequent step.

------ END OF TASK ------

814. Window Heater Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) A combination of: WHCU-LRU, WINDOW POWER, and P5-9/CTRL POWER (left/right on the forward or side windows)
 - (b) A combination of: WHCU-LRU, WINDOW SENSOR, and P5-9/CTRL POWER (left/right on the forward or side windows)
 - (c) A combination of: WHCU-LRU and WINDOW POWER (left/right on the forward or side windows)
 - (d) WINDOW POWER (left forward window)
 - (e) WINDOW POWER (right forward window)
 - (f) WINDOW POWER (left side window)
 - (g) WINDOW POWER (right side window)
- (2) There is fault with a window heater, wiring, or window heat control unit (WHCU).

AKS ALL

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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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------------|
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-------------------------------|
| В | 8 | C00394 | WINDOW HEAT POWER RIGHT FRONT |
| В | 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

AKS ALL

- (1) Do this if the current fault is a combination of the following red lights: WHCU-LRU, WINDOW POWER, and P5-9/CTRL POWER. Otherwise continue.
 - (a) If you have not done so, push the FAULT HISTORY switch only one time on the WHCU.
 - (b) If the fault lights go out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If the fault lights stay on, then do the "Fault Isolation Procedure" below.
- (2) Do this if the current fault is a combination of the following red lights: WHCU-LRU and WINDOW SENSOR, and P5-9/CTRL POWER. Otherwise continue.
 - (a) If you have not done so, push the FAULT HISTORY switch only one time on the WHCU.
 - (b) If the fault lights go out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If the fault lights stay on, then do the "Fault Isolation Procedure" below.
- (3) If the WINDOW POWER or the combination of WINDOW POWER and WHCU-LRU lights are on, then do this:
 - (a) If you have not done so, push the FAULT HISTORY switch only one time on the WHCU.
 - (b) If the fault light goes out, then go back and do the Window Heat Control Unit (WHCU) BITE Procedure, 30-41 TASK 801.
 - (c) If the fault lights stay 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-------------|------------|---------------|------------------------------------|
| AKS 001-022 | | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | Col | <u>Number</u> | <u>Name</u> |
|-----|-----|---------------|-------------------------------|
| В | 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,

No. 1 Window 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-------------|------------|---------------|------------------------------------|
| AKS 001-022 | | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| Е | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|--------|------------|---------------|------------------------------|
| AKS AL | L | | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

| Row | Col | <u>Number</u> | <u>Name</u> |
|-----|-----|---------------|-------------------------------|
| В | 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.

30-41 TASK 814

AKS ALL

EFFECTIVITY

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- (e) If the resistance is between 31.4 and 52 ohms, then install the lugs on the windshield heater and continue.
- (2) Do this test of the window heater resistance:
 - (a) Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|--------|-----------------------------------|
| AKS 00 | 1-022 | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | Number | <u>Name</u> |
|--------|------------|--------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> | | |
|---------|------------|---------------|-----------------------------------|--|--|
| AKS 001 | I-022 | | | | |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC | | |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC | | |

F/O Electrical System Panel, P6-11

| Row | Col | <u>Number</u> | <u>Name</u> |
|--------|-----|---------------|------------------------------|
| AKS AL | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |

F/O Electrical System Panel, P6-12

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------|
| В | 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.

30-41 TASK 814

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- (e) If the window resistance is between 55.7 and 100 ohms, then replace the lug on the window heater and continue.
- (3) Do this check of the wiring between the window heater and the applicable WHCU.

AKS 001-022

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

AKS 023-999

(b) Remove the WHCU. To remove the WHCU, do this task: Window Heat Control Unit (WHCU) Removal, AMM TASK 30-41-11-000-803.

AKS ALL

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

CAPT Electrical System Panel, P18-3

| Row | Col | <u>Number</u> | Name |
|--------|-------|---------------|------------------------------------|
| AKS 00 | 1-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Е | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Е | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |

F/O Electrical System Panel, P6-11

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|---------|------------|---------------|------------------------------|
| AKS ALI | L | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT |

F/O Electrical System Panel, P6-12

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

(d) 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 or AMM TASK 30-41-21-760-802).

WHCU M320

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

30-41 TASK 814

AKS ALL

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WHCU M321

| | WHCU |
|------------------|-----------------------------|
| WINDOW | CONNECTION |
| LEFT FRONT | D1044A |
| terminal 3 and 4 | pin 7, 8, 14, 20, or 21 |
| terminal 1 and 2 | ground |

WHCU M322

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

WHCU M323

| | WHCU |
|------------------|-----------------------------|
| WINDOW | CONNECTION |
| RIGHT FRONT | D1048A |
| terminal 3 and 4 | pin 7, 8, 14, 20, or 21 |
| terminal 1 and 2 | ground |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|---------|------------|--------|------------------------------------|
| AKS 001 | I-022 | | |
| D | 1 | C00226 | WINDOW HEAT CONTROL RIGHT FRONT AC |
| D | 2 | C00225 | WINDOW HEAT CONTROL LEFT SIDE AC |
| Ε | 1 | C00224 | WINDOW HEAT CONTROL LEFT FRONT AC |
| Ε | 2 | C00227 | WINDOW HEAT CONTROL RIGHT SIDE AC |
| | | | |

F/O Electrical System Panel, P6-11

| | - · · · - · · · · · · · · · · · · · · · | | | |
|---------|---|---------------|------------------------------|--|
| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> | |
| AKS ALI | L | | | |
| В | 8 | C00393 | WINDOW HEAT POWER RIGHT SIDE | |
| В | 9 | C00228 | WINDOW HEAT POWER LEFT FRONT | |

F/O Electrical System Panel, P6-12

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

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

AKS ALL

- 2) Do this test of the window heat system:
 - a) Push the BIT VERIFY switch only one time on the WHCU.
 - b) If the fault light goes out, then you corrected the fault.

-EFFECTIVITY 30-41 TASK 814



- (g) If you do not find a problem with the wiring, then continue.
- (4) 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 or Check the Electrical Resistance of the Window Heat Film, AMM TASK 30-41-21-760-802.
 - (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.
- (5) Install a new WHCU.

AKS 001-022

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

AKS 023-999

(b) To install the WHCU, do this task: Window Heat Control Unit (WHCU) Installation, AMM TASK 30-41-11-400-803.

AKS ALL

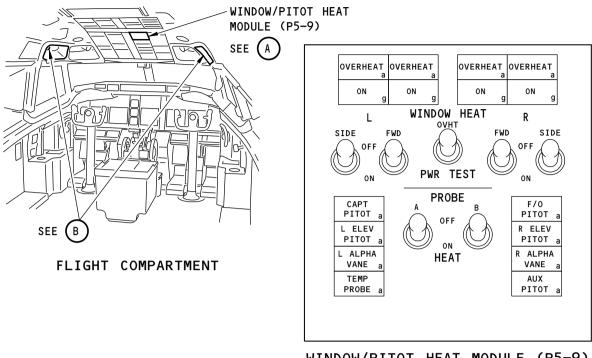
- (c) Do the post installation test in the installation procedure.
- (d) If the test operates correctly, then you corrected the fault.

——— END OF TASK ———

30-41 TASK 814

EFFECTIVITY





THERMAL SWITCH WINDOW A (EXAMPLE) WINDOW/PITOT HEAT MODULE (P5-9)

G58102 S0006743320_V1

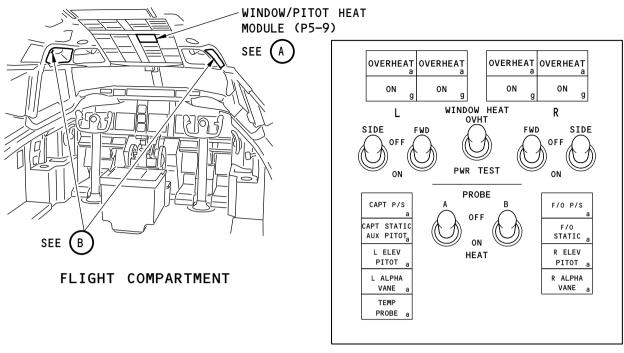
Control Cabin Window Anti-Icing Component Location Figure 301/30-41-00-990-801 (Sheet 1 of 3)

AKS ALL

30-41 TASK SUPPORT

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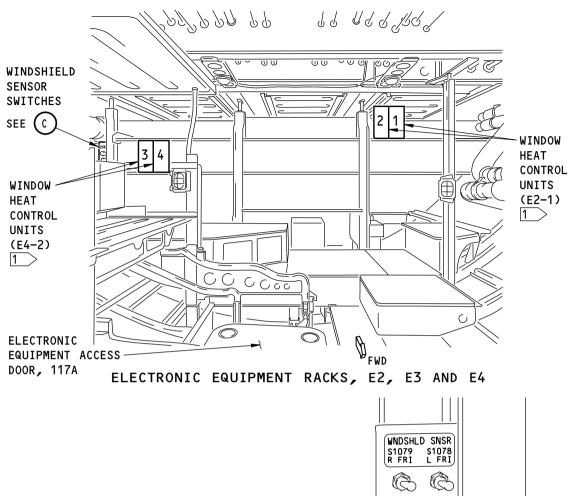
THERMAL SWITCH WINDOW (EXAMPLE) B WINDOW/PITOT HEAT MODULE (P5-9) (P5-9)

Control Cabin Window Anti-Icing Component Location Figure 301/30-41-00-990-801 (Sheet 2 of 3)

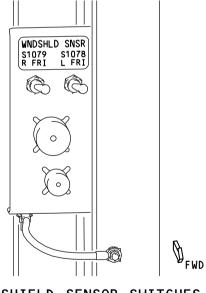
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| 1 | UNIT | ELECTRICAL EQUIPMENT NO. | WINDOW | |
|---|------|-----------------------------|--------|--|
| | 1 | M320 | R SIDE | |
| | 2 | M321 | L FWD | |
| | 3 | M322 | L SIDE | |
| | 4 | M323 | R FWD | |



WINDSHIELD SENSOR SWITCHES

(c)

G58103 S0006743324_V1

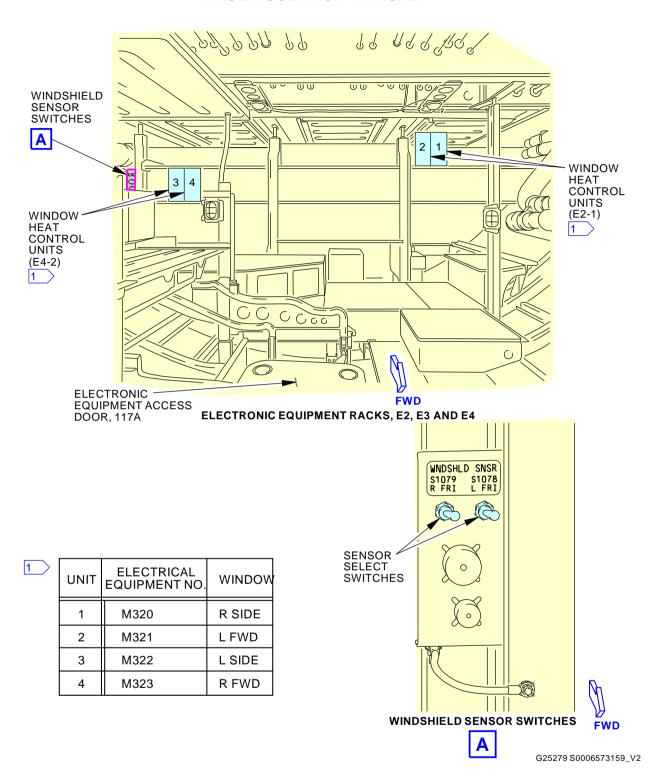
Control Cabin Window Anti-Icing Component Location Figure 301/30-41-00-990-801 (Sheet 3 of 3)

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

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D633A103-AKS



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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.
 - 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.

AKS ALL



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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 3 | C00054 | ANTI-ICE & RAIN WSHLD WIPER LEFT |

(e) Do a check of these pins on the left (D62) or right (D64) connector:

| D62 OR D64 | CONDITION |
|------------|------------------|
| pin 1 | ground |
| pin 2 | 20 to 28 VDC |
| pin 3 | 14.7 to 19.2 VDC |

- (f) If the pin conditions are correct, then do these steps:
 - 1) Reconnect the applicable left (D62) or right (D64) connector.
 - 2) Do the initial evaluation:
 - a) If the windshield wiper operation has returned to normal, then it is likely that the wiper motor thermal switch had opened and caused the wiper motor to shutdown. Do this task: Windshield Wiper Arm Force Check/Adjustment, AMM TASK 30-42-31-820-801.

NOTE: The internal thermal switch, in the motor assembly, is a self-resetting protective function that prevents excessive motor temperatures. The automatic shutdown may be caused by high wiper arm force, dry windshield operation, or damage to the wiper motor drive mechanism.

- <1> If the wiper force requires to be reduced, then do the repair confirmation at the end of this task. Otherwise, replace the windshield wiper motor in the step below.
- b) If the windshield wiper operation remains inoperative, then continue.
- 3) Replace the windshield wiper motor. To replace the motor,

These are the tasks:

Wiper Motor/Converter Removal, AMM TASK 30-42-21-000-801,

Wiper Motor/Converter Installation, AMM TASK 30-42-21-400-801.

- 4) Do the Repair Confirmation at the end of this task.
- (g) If pin 1 is not grounded, then do these steps:
 - 1) Repair the wiring between pin 1 on the connector and airplane ground (WDM 30-42-11).
 - 2) Connect the electrical connector to the wiper motor.
 - 3) Do the Repair Confirmation at the end of this task.
- (h) If pin 2 does not have 20 to 28 VDC, then do these steps (WDM 30-42-11):
 - Repair the wiring between pin 2 on the connector and the applicable circuit breakers:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |

AKS ALL



(Continued)

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|----------------------------------|
| В | 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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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 CONTROL |
|-------------|------------------|
| WIPER MOTOR | 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.
 - 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.

AKS ALL



(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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.

AKS ALL

30-42 TASKS 801-802



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 | VOLTAGE AT |
|--------------|-------------------|
| POSITION | 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.
 - 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.

AKS ALL



| (| (d) | If the windshield w | iper operates | correctly, then y | ou corrected the | problem. |
|---|-------|------------------------|---------------|-------------------|---------------------|-------------|
| | · ~ . | ii tiio miilaaliiala m | poi opoiatoo | 00110011, 111011 | , oa oon ootoa tiio | p. co.ciii. |

——— 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.

<u>CAUTION</u>: 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.

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- (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.



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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.

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 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 |

 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.

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<u>CAUTION</u>: 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.



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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 3 | C00054 | ANTI-ICE & RAIN WSHLD WIPER LEFT |

D. Related Data

- 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.

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(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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.
- 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)

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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:

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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.

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(3) Re-install the display unit. To install the unit, do this task: Display Unit Installation, AMM TASK 31-62-11-400-801.

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807. Windshield Wiper Does Not Remove Water Sufficiently - Fault Isolation

- A. Description
 - (1) The windshield wiper does not adequately clear water from the windshield.
- B. Possible Causes
 - (1) Windshield wiper
 - (2) Windshield wiper rigging
- C. Circuit Breakers
 - (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|-----------------------------------|
| В | 1 | C00055 | ANTI-ICE & RAIN WSHLD WIPER RIGHT |
| В | 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.

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- 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.
- 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:

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Windshield Wiper Blade Removal, AMM TASK 30-42-11-020-801,

Windshield Wiper Blade Installation, AMM TASK 30-42-11-400-801.

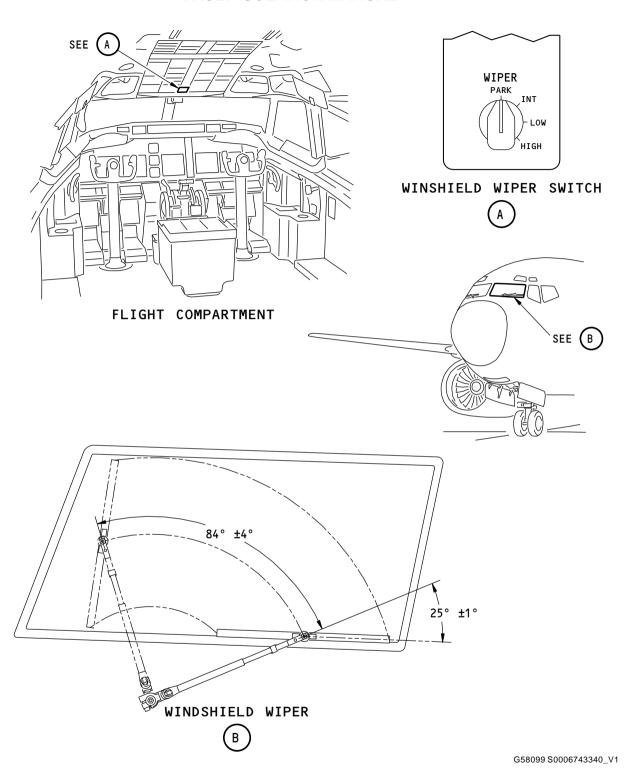
(d) Supply a continuous water spray to the windshield.

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.

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

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801. Drain Mast Does Not Heat - Fault Isolation

A. Description

(1) The drain mast does not get heat on the ground. The mast may or may not heat in the air.

B. Possible Causes

- (1) Drain mast, M1849 (forward) or M200 (aft)
- (2) Ground sensing relay, R594
- (3) Wiring problem

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 4 | C00700 | HEATERS DRAIN MAST AIR |

D. Related Data

- (1) (SSM 30-71-11)
- (2) (WDM 30-71-11)

E. Initial Evaluation

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

WARNING: DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (2) Measure the temperature of the forward and aft drain masts on the ground:
 - (a) If the temperature of both drain mast are not at least 10 degrees F (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure - Both Drain Masts Do Not Get Hot below.
 - (b) If the temperature of the forward drain mast is not at least 10 degrees (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure Forward Drain Mast Does Not Get Hot below.
 - (c) If the temperature of the aft drain mast is not at least 10 degrees F (6 degrees C) greater than the ambient temperature, then do the Fault Isolation Procedure - Aft Drain Mast Does Not Get Hot) below.
 - (d) If the temperature of both drain masts are at least 10 degrees F (6 degrees C) greater than the ambient temperature, then continue.

WARNING: DO NOT TOUCH THE DRAIN MAST. WHEN THE DRAIN MAST HEATER OPERATES, THE DRAIN MAST IS SUFFICIENTLY HOT TO BURN YOU.

- (3) Do this check of the forward and aft drain masts in the air mode:
 - (a) Put the airplane in the air mode. To put the airplane in the air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.

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

CAPT Electrical System Panel, P18-3

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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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 |

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4) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| E | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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 | TB220′ |
|--------|----------|
| pin A2 | YA25 |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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.

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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.

| TB220 | 01 | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Е | 3 | C00234 | HEATERS DRAIN MAST GND |
| Е | 4 | C00700 | HEATERS DRAIN MAST AIR |

(b) Do a check of the wiring between these terminals of block TB2201 in the E2-2 shelf and the aft drain mast, M200:

| TB2201 | M200 |
|--------|--------|
| YA25 | black |
| ground | term G |

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Ε | 3 | C00234 | HEATERS DRAIN MAST GND |
| Ε | 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 | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| Е | 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.



802. Drain Mast Overheats - Fault Isolation

A. Description

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(1) The drain mast overheats. The drain mast is noticeably hot on the ground or there is visual evidence of overheating.

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B. Possible Causes

(1) Ground sensing relay, R594

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C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|------------------------|
| E | 3 | C00234 | HEATERS DRAIN MAST GND |
| Е | 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 | <u>Col</u> | Number | <u>Name</u> |
|-----|------------|--------|------------------------|
| Ε | 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

- 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

| <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|------------------------|
| Ε | 4 | C00700 | HEATERS DRAIN MAST AIR |

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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 | |
|----------------|--------|-------------|--|
| | \sim | IAOIN | |

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- EFFECTIVITY -



801. Ice Detection System Failure - Fault Isolation

A. Description

- (1) This task for the Ice Detection System is composed of these components:
 - (a) Ice Detector Probe, located on the forward left fuselage near the other air data probes
 - (b) Ice Detection Module, located on the P5 aft overhead panel
 - (c) Ice Detection System status light, located on the P1-3 panel
 - (d) ICE DETECTOR light, located on the anti-ice panel, P5.

B. Possible Causes

- (1) Ice detector probe, M1616
- (2) Ice detection module, P5-83
- (3) Circuit breaker
- (4) Wiring problem.

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| В | 5 | C01250 | ICE DETECTOR POWER |

D. Related Data

- (1) Component Location (Figure 301).
- (2) (SSM 30-81-11)
- (3) (WDM 30-81-11)

E. Initial Evaluation

(1) Do the Fault Isolation Procedure if the ice detection system fails which is shown by these indications:

NOTE: These light indicators can be on when the airplane is in the air or on the ground, with the power on.

- (a) Amber ICE DETECTOR light on the anti-ice panel (P5)
- (b) Master CAUTION lights and ANTI-ICE annunciators on the P7 panel.

F. Fault Isolation Procedure

- (1) Replace the ice detector probe, M1616.
 - (a) These are the tasks:

Ice Detector Probe Removal, AMM TASK 30-81-01-000-801,

Ice Detector Probe Installation, AMM TASK 30-81-01-400-801.

- (b) Do the Repair Confirmation at the end of this task.
 - 1) If the test operates correctly, then you corrected the fault.
 - 2) If the fault indicator lights do not go off, then continue.
- (2) Do this check of the wiring:

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(a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| В | 5 | C01250 | ICE DETECTOR POWER |

- (b) Disconnect the connector D10578, from the Ice detector probe M1616.
- (c) Disconnect the connector D40840P, from the Load Control Center-Left (P18).
- (d) Do a wiring check between these pins of connector D10578, at the ice detector probe M1616, and connector D40840P, at the Load Control Center-Left (P18) (WDM 30-81-11):

| D1 | 10578 | D40840P |
|----|-------|---------|
| 1 | | 22 |
| 2 | | 20 |
| 4 | | 21 |
| 5 | | 19 |

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D10578, to the Ice detector probe M1616.
 - Re-connect connector D40840P, to the Load Control Center-Left (P18).
 - 4) Do the Repair Confirmation at the end of this task.
 - a) If the test operates correctly, then you corrected the fault.
 - If you do not find a problem with the wiring, then continue.
- (g) Re-connect connector D10578, to the Ice detector probe M1616.
- (h) Re-connect connector D40840P, to the Load Control Center-Left (P18).
- (3) Replace the Ice detection module, P5-83.
 - NOTE: A printed circuit assembly (PCA) fault indicator LED light comes on if the detector module fails. This light is a red LED. You see this LED through a hole in the module case.
 - (a) These are the tasks:
 - Ice Detector System Logic Module Removal, AMM TASK 30-81-02-000-801 Ice Detector System Logic Module Installation, AMM TASK 30-81-02-400-801.
 - (b) Do the Repair Confirmation at the end of this task.
 - 1) If the test operates correctly, then you corrected the fault.

G. Repair Confirmation

(f)

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

CAPT Electrical System Panel, P18-3

| Row | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|-----|------------|---------------|--------------------|
| В | 5 | C01250 | ICE DETECTOR POWER |

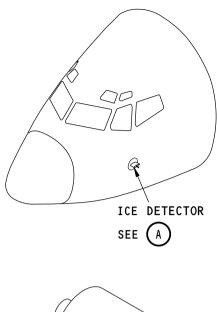
- (2) Do this task: Ice Detection System Operational Test, AMM TASK 30-81-00-710-801.
 - (a) If the test operates correctly, then you corrected the fault.

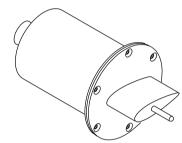
| | END | OF | TASK | |
|--|------------|----|-------------|--|
|--|------------|----|-------------|--|

AKS ALL

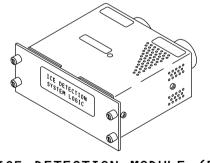
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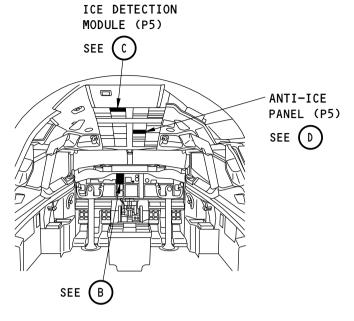








ICE DETECTION MODULE (P5)

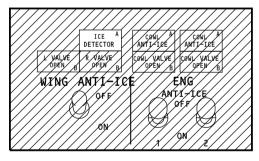


FLIGHT COMPARTMENT



(P1-3 PANEL)





ANTI-ICE PANEL (P5)

(D)

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Ice Detection System Component Location Figure 301/30-81-00-990-801

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