CHAPTER

28

FUEL

CHAPTER 28
FUEL

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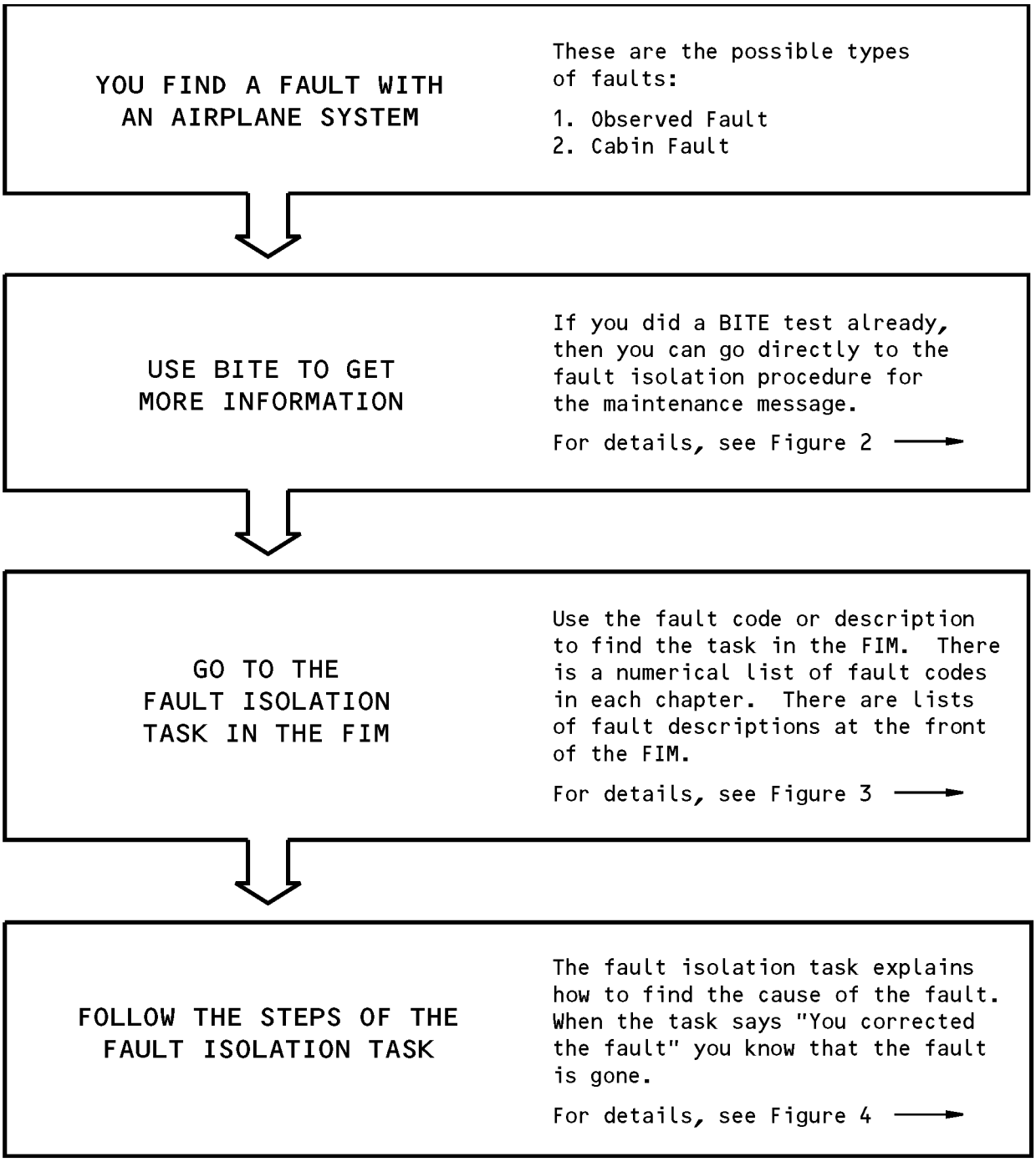


Basic Fault Isolation Process
Figure 1

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).

Getting Fault Information from BITE
Figure 2

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

Finding the Fault Isolation Task in the FIM
Figure 3

ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

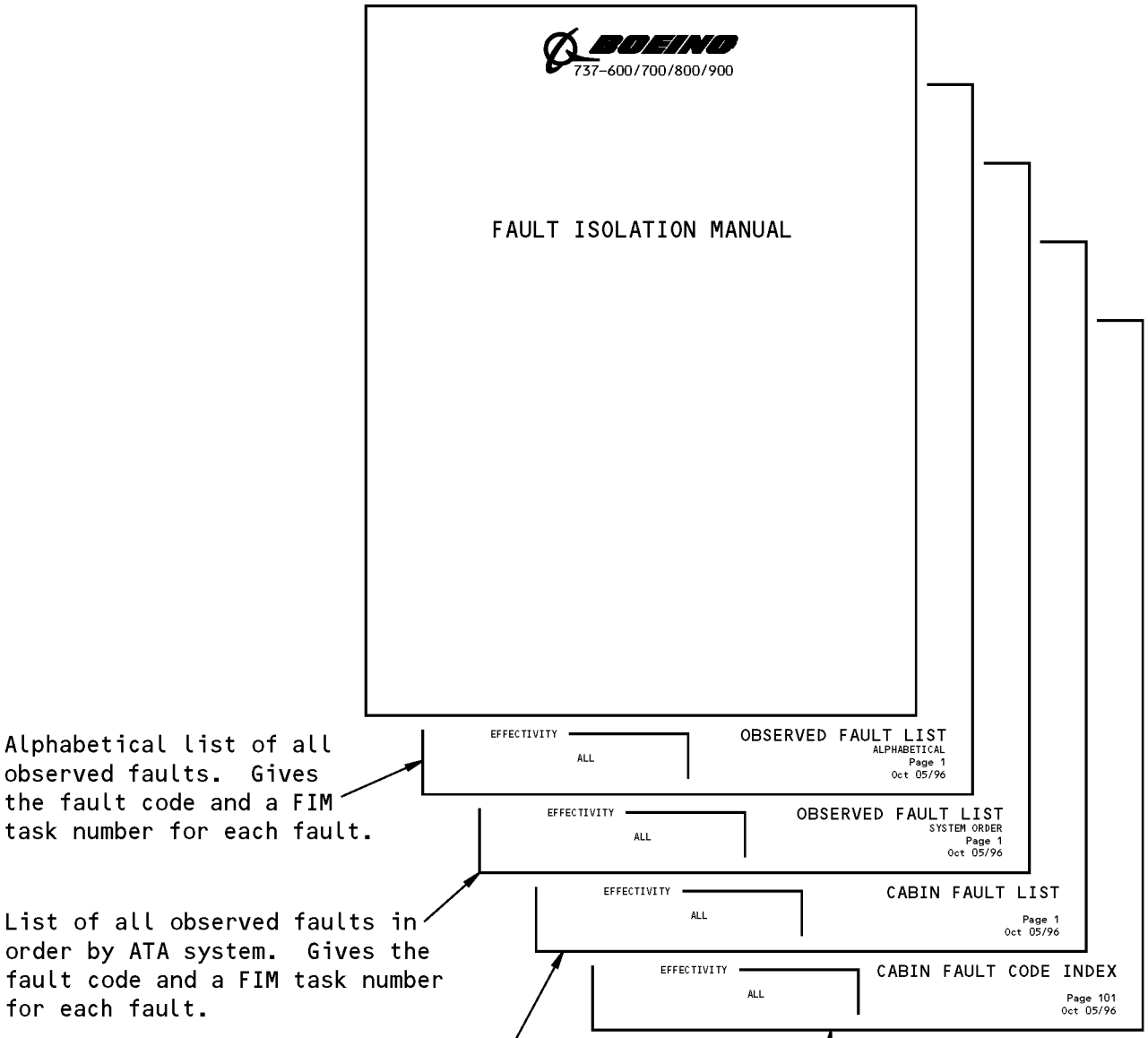
INITIAL EVALUATION PARAGRAPH

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

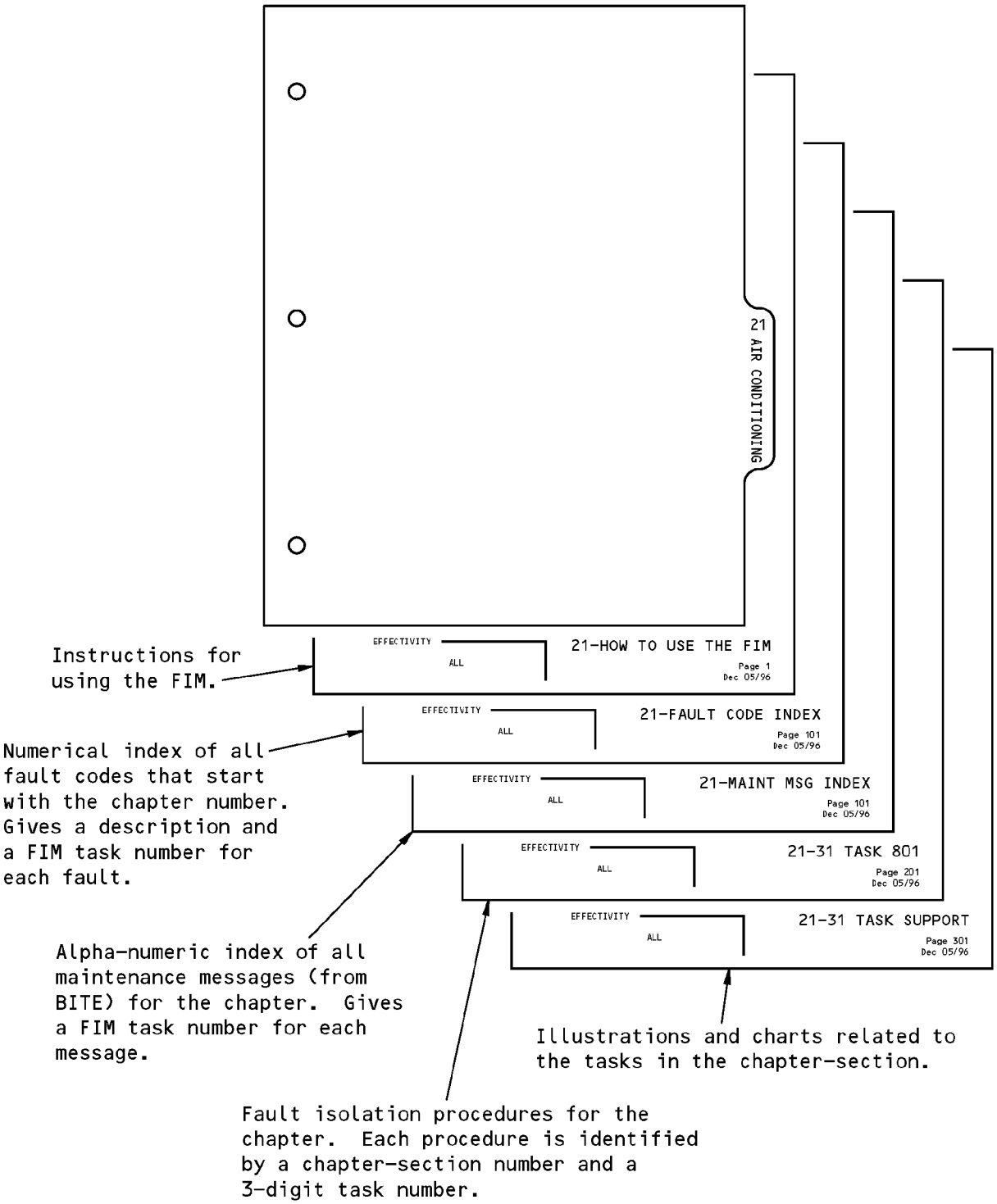
FAULT ISOLATION STEPS

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

Doing the Fault Isolation Task
Figure 4



Subjects at Front of FIM
Figure 5



Subjects in Each FIM Chapter
Figure 6

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
282 010 01	Refuel quantity indicator: blank - tank no. 1.	28-21 TASK 804
282 010 02	Refuel quantity indicator: blank - tank no. 2.	28-21 TASK 804
282 010 43	Refuel quantity indicator: blank - center tank.	28-21 TASK 804
282 010 48	Refuel quantity indicator: blank - all tanks.	28-21 TASK 804
282 011 01	Refuel quantity indicator: display is not correct with switch at TEST GAGES - tank no. 1.	28-21 TASK 802
282 011 02	Refuel quantity indicator: display is not correct with switch at TEST GAGES - tank no. 2.	28-21 TASK 802
282 011 43	Refuel quantity indicator: display is not correct with switch at TEST GAGES - center tank.	28-21 TASK 802
282 011 48	Refuel quantity indicator: display is not correct with switch at TEST GAGES - all tanks.	28-21 TASK 802
282 012 01	Refuel quantity indicator: shows Ind FAIL - tank no. 1.	28-21 TASK 805
282 012 02	Refuel quantity indicator: shows Ind FAIL - tank no. 2.	28-21 TASK 805
282 012 43	Refuel quantity indicator: shows Ind FAIL - center tank.	28-21 TASK 805
282 012 48	Refuel quantity indicator: shows Ind FAIL - all tanks.	28-21 TASK 805
282 013 01	Refuel quantity indicator: shows ARINC error message - tank no. 1.	28-21 TASK 817
282 013 02	Refuel quantity indicator: shows ARINC error message - tank no. 2.	28-21 TASK 817
282 013 43	Refuel quantity indicator: shows ARINC error message - center tank.	28-21 TASK 817
282 013 48	Refuel quantity indicator: shows ARINC error message - all tanks.	28-21 TASK 817
282 015 01	Refuel quantity indicator: flashes - tank no. 1.	28-21 TASK 816
282 015 02	Refuel quantity indicator: flashes - tank no. 2.	28-21 TASK 816
282 015 43	Refuel quantity indicator: flashes - center tank.	28-21 TASK 816
282 020 01	Refuel valve light: light does not go off after pressing the press-to-test switch - tank no. 1.	28-21 TASK 806
282 020 02	Refuel valve light: light does not go off after pressing the press-to-test switch - tank no. 2.	28-21 TASK 806
282 020 43	Refuel valve light: light does not go off after pressing the press-to-test switch - center tank.	28-21 TASK 806
282 020 48	Refuel valve light: light does not go off after pressing the press-to-test switch - all tanks.	28-21 TASK 806
282 030 01	Refuel valve position indicator light does not come on with valves selected open and refueling manifold pressurized - tank no. 1.	28-21 TASK 807

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
282 030 02	Refuel valve position indicator light does not come on with valves selected open and refueling manifold pressurized - tank no. 2.	28-21 TASK 807
282 030 43	Refuel valve light: light does not come on with valves selected open and refueling manifold pressurized - center tank.	28-21 TASK 807
282 030 48	Refuel valve light: light does not come on with valves selected open and refueling manifold pressurized - all tanks.	28-21 TASK 807
282 040 00	Refueling: all refueling is prevented.	28-21 TASK 808
282 050 00	Refueling: fuel spill at surge tank.	28-21 TASK 801
282 070 01	Refueling: valve does not close with switch at CLOSED - tank no. 1.	28-21 TASK 806
282 070 02	Refueling: valve does not close with switch at CLOSED - tank no. 2.	28-21 TASK 806
282 070 43	Refueling: valve does not close with switch at CLOSED - center tank.	28-21 TASK 806
282 070 48	Refueling: valve does not close with switch at CLOSED - all tanks.	28-21 TASK 806
282 080 00	Refueling panel light: light does not come on with ground power on the airplane.	28-21 TASK 810
282 100 00	Fuel transfer (migration): Unwanted fuel transfer from a main tank to the center tank.	28-21 TASK 803
282 101 00	Fuel transfer (migration): Unwanted fuel transfer from the center tank to the No. 1 tank.	28-21 TASK 814
282 102 00	Fuel transfer (migration): Unwanted fuel transfer from the center tank to the No. 2 tank.	28-21 TASK 815
282 110 00	Crossfeed VALVE OPEN light: stays on bright when the crossfeed selector is moved to the on position.	28-22 TASK 807
282 120 00	Crossfeed VALVE OPEN light: stays on bright when the crossfeed selector is moved to the off position.	28-22 TASK 807
282 125 00	Crossfeed VALVE OPEN light: does not come on when the valve is in transit.	28-22 TASK 808
282 130 43	LOW PRESSURE light for the fuel pump: light on - center tank, left pump.	28-22 TASK 801
282 140 43	LOW PRESSURE light for the fuel pump: light on - center tank, right pump.	28-22 TASK 802
282 150 01	LOW PRESSURE light for the fuel pump: light on - no. 1 aft fuel pump.	28-22 TASK 803
282 150 02	LOW PRESSURE light for the fuel pump: light on - no. 2 aft fuel pump.	28-22 TASK 805

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
282 160 01	LOW PRESSURE light for the fuel pump: light on - no. 1 fwd and aft fuel pumps.	28-22 TASK 803
282 160 02	LOW PRESSURE light for the fuel pump: light on - no. 2 fwd and aft fuel pumps.	28-22 TASK 805
282 170 01	LOW PRESSURE light for the fuel pump: light on - no. 1 fwd fuel pump.	28-22 TASK 804
282 170 02	LOW PRESSURE light for the fuel pump: light on - no. 2 fwd fuel pump.	28-22 TASK 806
282 180 51	SPAR VALVE CLOSED light: slow to go from bright to dim when start lever moved to CUTOFF - engine 1.	28-22 TASK 809
282 180 52	SPAR VALVE CLOSED light: slow to go from bright to dim when start lever moved to CUTOFF - engine 2.	28-22 TASK 810
282 190 51	SPAR VALVE CLOSED light: slow to go from bright to off when start lever moved to IDLE - engine 1.	28-22 TASK 809
282 190 52	SPAR VALVE CLOSED light: slow to go from bright to off when start lever moved to IDLE - engine 2.	28-22 TASK 810
282 200 51	SPAR VALVE CLOSED light: stays on bright when start lever moved to CUTOFF - engine 1.	28-22 TASK 809
282 200 52	SPAR VALVE CLOSED light: stays on bright when start lever moved to CUTOFF - engine 2.	28-22 TASK 810
282 210 51	SPAR VALVE CLOSED light: stays on bright when start lever moved to IDLE - engine 1.	28-22 TASK 809
282 210 52	SPAR VALVE CLOSED light: stays on bright when start lever moved to IDLE - engine 2.	28-22 TASK 810
282 240 51	SPAR VALVE CLOSED light: does not come on when the valve is in transit - engine 1.	28-22 TASK 811
282 240 52	SPAR VALVE CLOSED light: does not come on when the valve is in transit - engine 2.	28-22 TASK 812
282 251 00	Fuel suction feed: engine does not continue running the full five minutes during Engine Fuel Suction Feed Operational Test.	28-22 TASK 819
282 301 01	Fuel tank: boost pump circuit breaker open - No. 1 tank, aft pump.	28-22 TASK 814
282 301 02	Fuel tank: boost pump circuit breaker open - No. 2 tank, aft pump.	28-22 TASK 816
282 301 43	Fuel tank: boost pump circuit breaker open - center tank, left pump.	28-22 TASK 817
282 302 01	Fuel tank: boost pump circuit breaker open - No. 1 tank, forward pump.	28-22 TASK 813
282 302 02	Fuel tank: boost pump circuit breaker open - No. 2 tank, forward pump.	28-22 TASK 815

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
282 302 43	Fuel tank: boost pump circuit breaker open - center tank, right pump.	28-22 TASK 818
284 010 01	Fuel quantity indication, flight compartment: fluctuates or is too high or too low - no. 1 tank.	28-41 TASK 814
284 010 02	Fuel quantity indication, flight compartment: fluctuates or is too high or too low - no. 2 tank.	28-41 TASK 814
284 010 43	Fuel quantity indication, flight compartment: fluctuates or is too high or too low - center tank.	28-41 TASK 814
284 020 01	Fuel quantity indication, flight compartment: error or blank - no. 1 tank.	28-41 TASK 813
284 020 02	Fuel quantity indication, flight compartment: error or blank - no. 2 tank.	28-41 TASK 813
284 020 43	Fuel quantity indication, flight compartment: error or blank - center tank.	28-41 TASK 813
284 020 48	Fuel quantity indication, flight compartment: error or blank - all tanks.	28-41 TASK 813
284 022 00	Fuel quantity indication, flight compartment: CONFIG message shows.	28-41 TASK 820
284 023 00	Fuel quantity indication, flight compartment: IMBAL message shows.	28-41 TASK 820
284 024 00	Fuel quantity indication, flight compartment: LOW message shows.	28-41 TASK 820
284 030 00	Fuel temperature indicator: does not operate correctly.	28-43 TASK 801
284 101 00	FQIS BITE INOP message: shows on CDU.	28-41 TASK 819

LRU/SYSTEM	SHORT NAME	CHAPTER
Air Data Inertial Reference System	ADIRS	34
Air Traffic Controller Transponder - 1 (Left)	ATC XPDR - 1 (L)	34
Air Traffic Controller Transponder - 2 (Right)	ATC XPDR - 2 (R)	34
Airborne Vibration Monitor System Signal Conditioner	AVM SIG COND	77
Antiskid Control Unit	ANTISKID	32
Automatic Direction Finder Receiver - 1	ADF RECVR - 1	34
Autothrottle System	A/T	22
Auxiliary Power Unit	APU	49
Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
Cabin Pressure Controller	CAB PRESS CON	21
Cabin Temperature Controller	CAB TEMP CONT	21
Cargo Electronic Unit - Forward	CEU - FWD	26
Cargo Electronic Unit - Lower	CEU - LOWER	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Electronic Unit - Main Forward	CEU - MAIN FWD	26
Common Display System	CDS	31
Compartment Overheat Detection Control Module	WING/BODY OHT	26
Digital Flight Control System	DFCS	22
Distance Measurement Equipment Interrogator	DME INTRROGTR	34
Electrical Meters, Battery, and Galley Power Module	P5-13	24
Electronic Engine Controller - 1	ENGINE - 1	73
Electronic Engine Controller - 2	ENGINE - 2	73
Emergency Locator Transmitter	ELT	23
Engine Accessory Unit	ENG ACCY UNIT	78
Engine and Auxiliary Power Unit Fire Detection Control Module	ENG/APU FIRE	26
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31
Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28
Generator Control Unit - 1	GCU - 1	24
Generator Control Unit - 2	GCU - 2	24
Ground Proximity Computer	GROUND PROX	34
Head Up Display	HUD	34

LRU/SYSTEM	SHORT NAME	CHAPTER
High Frequency Transceiver	HF XCVR	23
Low Limit (35 Degree F) Controller - Left	35 DEG CONT L	21
Low Limit (35 Degree F) Controller - Right	35 DEG CONT R	21
Multi-Mode Receiver	MMR	34
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
Window Heat Control Unit - Right Side	WHCU - R SIDE	30

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FQIS	28-41001 NO FMC DATA ON FQIS 6	28-41 TASK 812
FQIS	28-41002 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41101 1 OR MORE TANK UNIT OPEN	28-41 TASK 818
FQIS	28-41102 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41103 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41104 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41105 HI-Z OP/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41106 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41107 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41108 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41109 PROCESSOR FAILED	28-41 TASK 808
FQIS	28-41110 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41111 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41113 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41114 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41115 ARINC OUTPUT BUS FAILED	28-41 TASK 810
FQIS	28-41201 TANK UNIT LO-Z OPEN/GND	28-41 TASK 818
FQIS	28-41202 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41203 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41204 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41205 HI-Z OP/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41206 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41207 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41208 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41209 PROCESSOR FAILED	28-41 TASK 808
FQIS	28-41210 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41211 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41213 PROGRAM PINS INVALID	28-41 TASK 811

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FQIS	28-41214 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41215 ARINC OUTPUT BUS FAILED	28-41 TASK 810
FQIS	28-41301 1 OR MORE TANK UNIT OPEN	28-41 TASK 818
FQIS	28-41302 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41303 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41304 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41305 HIZ OPEN/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41306 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41307 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41308 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41309 PROCESSOR FAILED	28-41 TASK 808
FQIS	28-41310 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41311 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41313 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41314 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41315 ARINC OUTPUT BUS FAILED	28-41 TASK 810

801. Fuel Spill at Surge Tank - Fault Isolation

A. Description

(1) Fuel spills out of the fuel vent at one of the surge tanks during the refueling operation.

(2) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Fueling float switch, S574 (No. 1 tank), S576 (center tank), or S578 (No. 2 tank)

(2) Fueling shutoff valve, V44 (No. 1 tank), V45 (No. 2 tank), or V46 (center tank)

(3) Airplane is not level

HAP 036-046, 054, 101-105

(4) NGS float valve in the center tank has failed open.

HAP ALL

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

HAP 036-046, 054, 101-105

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

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
D	17	C01657	NITROGEN GENERATION CONTROL
E	15	C01680	NGS ALT PWR

HAP ALL

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Make sure the airplane has a ground attitude of 1.14 degrees nose-down pitch and 0.0 degree roll.

NOTE: This attitude permits you to put the maximum quantity of fuel in the tanks.

(2) Obey all precautions for pressure refueling (AMM TASK 12-11-00-650-801).

(3) Put a 20 gallon (76 liter) container, STD-1158 under each of the surge tanks.

(4) Do the pressure refueling procedure for the center tank only. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(a) Make sure the other two fueling shutoff valves are closed.

(b) Monitor the fuel quantity in the center tank.

(c) Make sure automatic shutoff occurs (the VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity increases to approximately 30,000 lb (13,608 kg).

(d) If automatic shutoff does not occur, then do the Fault Isolation Procedure below for the center tank.

(e) If automatic shutoff occurs as expected, then continue.

(5) Transfer fuel from the center tank to the No. 1 tank until automatic shutoff occurs. To do it, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802.

(a) Make sure automatic shutoff occurs (the No. 1 tank VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity in the No. 1 tank increases to approximately 9000 pounds.

(b) If automatic shutoff does not occur, then do the Fault Isolation Procedure below for the No. 1 tank.

(c) If automatic shutoff occurs as expected, then continue.

(6) Transfer fuel from the center tank to the No. 2 tank until automatic shutoff occurs. To do it, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802.

(a) Make sure automatic shutoff occurs (the No. 2 tank VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity in the No. 2 tank increases to approximately 9000 pounds.

(b) If automatic shutoff does not occur, then do the Fault Isolation Procedure below for the No. 2 tank.

(c) If automatic shutoff occurs as expected, then there was an intermittent fault.

NOTE: It is possible that the fault was caused by an unusual airplane attitude during the refueling operation or by fuel expansion.

F. Fault Isolation Procedure

(1) If the VALVE POSITION LIGHT for the fueling shutoff valve did not go off, then do these steps:

(a) Replace the fueling float switch for the applicable tank, S574 (No. 1 tank), S576 (center tank), or S578 (No. 2 tank).

These are the tasks:

Float Switch Removal, AMM TASK 28-21-71-000-801 or Float Switch Removal, AMM TASK 28-21-71-020-801,

Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802.

(b) Examine the mounting bracket for the fueling float switch to see if it is bent or at the incorrect level.

1) Repair the mounting bracket if it is necessary.

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

HAP 036-046, 054, 101-105

(2) Do a check of the NGS float valve in the center tank.

NOTE: It is possible that the NGS float valve in the center tank has failed open.

(a) If the float valve has failed open, then replace the float valve.

These are the tasks:

Float Valve Removal, AMM TASK 47-21-02-000-801,

Float Valve Installation, AMM TASK 47-21-02-420-801.

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

HAP ALL

(3) If the applicable VALVE POSITION LIGHT is off, then do these steps:

(a) Push the VALVE POSITION LIGHT to make sure it is OK.

NOTE: The lights are "press-to-test".

(b) Replace the VALVE POSITION LIGHT if it does not come on when you push it.

(c) If the VALVE POSITION LIGHT is OK, then replace the applicable fueling shutoff valve.

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

G. Repair Confirmation

(1) Obey all precautions for pressure refueling (AMM TASK 12-11-00-650-801).

(2) Put a 20 gallon (76 liter) container, STD-1158 under each of the surge tanks.

(3) Do the pressure refueling procedure for the applicable tank. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(a) Make sure the other two fueling shutoff valves are closed.

(b) Monitor the fuel quantity in the applicable tank.

(c) Make sure automatic shutoff occurs (the VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity increases to its full capacity (approximately 30,000 pounds for the center tank, 9000 pounds for the No. 1 or No. 2 tank).

1) If the automatic shutoff occurs, then you corrected the fault.

(4) Set all of the refuel valve switches to the CLOSE position.

(5) Stop the fuel truck pump.

(6) Disconnect the fuel hose nozzle.

(7) Disconnect the bonding cable that you connected between the fueling source and the airplane.

(8) If there is some unwanted fuel at the refuel station, remove the unwanted fuel.

(9) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(10) Disconnect the ground cables for the fuel truck.

(11) Disconnect the ground cables for the airplane.

(12) Remove electrical power if it is not necessary for other tasks (AMM TASK 24-22-00-860-812).

—————— END OF TASK ——————

802. Refuel Quantity Indicator Displays Incorrectly When Test Switch is Pressed - Fault Isolation

A. Description

(1) You push the FUELING INDICATION TEST SWITCH, S160 on the P15 Fueling Control Panel to the TEST GAGES position and one or more or the indicators does not enter the test mode as expected (all segments alternating on then off at two second intervals). If one of the indicators shows Ind FAIL, this shows an internal fault in the applicable indicator. The indicators can also be blank or show one or more missing segments. If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(2) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) Refuel Quantity Indicator, N193 (No. 1 tank), N194 (No. 2 tank), or N195 (center tank)

(2) The FUELING INDICATION TEST SWITCH, S160

(3) The wiring in the P15 Panel

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Set the FUELING INDICATION TEST SWITCH on the P15 Fueling Control Panel to the TEST GAGES position.

(a) On each of the refuel quantity indicators do a check to see if all segments on the display come on for approximately two seconds and then go off for two seconds alternately until the FUELING INDICATION TEST SWITCH is released.

NOTE: If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(b) If all segments on each display do not come on for approximately two seconds and then go off for approximately two seconds, then do the Fault Isolation Procedure below.

(c) If all segments on each display come on for approximately two seconds and then go off for approximately two seconds, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the wiring:

(a) Remove the refuel quantity indicator, N193 (No. 1 tank), N194 (No. 2 tank), or N195 (center tank). To remove it, do this task: Refuel Quantity Indicator Removal, AMM TASK 28-41-61-000-801.

(b) For tank No. 1, do these voltage checks:

1) Do a check for 28 VDC between pin 24 and pin 19 (ground) of connector D11318.

2) Do a check for 28 VDC between pin 24 and pin 23 (ground) of connector D11318.

3) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11318 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(c) For tank No. 2, do these voltage checks:

1) Do a check for 28 VDC between pin 24 of connector D11320 and pin 19 (ground).

2) Do a check for 28 VDC between pin 24 of connector D11320 and pin 23 (ground).

3) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11320 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N194. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(d) For the center tank, do these voltage checks:

1) Do a check for 28 VDC between pin 24 and pin 19 (ground) of connector D11322.

2) Do a check for 28 VDC between pin 24 and pin 23 (ground) of connector D11322.

3) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11322 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N195. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(e) If there is 28 VDC at pin 24, then continue.

(2) Do this check of the FUELING INDICATION TEST SWITCH:

(a) For tank No. 1, do a check for a short circuit between these pins of connector D11318:

1) Do a check for a short circuit between pin 2 and pin 19 of connector D11318.

2) Do a check for a short circuit between pin 2 and pin 23 of connector D11318.

3) If there is a short circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:

a) Replace the FUELING INDICATION TEST SWITCH, S160.

b) Re-install the refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(b) For tank No. 2, do a check for a short circuit between these pins of connector D11320:

1) Do a check for a short circuit between pin 2 and pin 19 of connector D11320.

2) Do a check for a short circuit between pin 2 and pin 23 of connector D11320.

3) If there is a short circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:

a) Replace the FUELING INDICATION TEST SWITCH, S160.

b) Re-install the refuel quantity indicator, N194. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(c) For the center tank, do a check for a short circuit between these pins of connector D11322:

1) Do a check for a short circuit between pin 2 and pin 19 of connector D11322.

2) Do a check for a short circuit between pin 2 and pin 23 of connector D11322.

3) If there is a short circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:

a) Replace the FUELING INDICATION TEST SWITCH, S160.

b) Re-install the refuel quantity indicator, N195. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(d) If there is not a short circuit from pin 2 to pin 19 or from pin 2 to pin 23, then continue.

(3) Do this check of the FUELING INDICATION TEST SWITCH:

(a) Push and hold the FUELING INDICATION TEST SWITCH in the TEST GAGES position.

(b) For tank No. 1, with the FUELING INDICATION TEST SWITCH in the TEST GAGES position, do a check for an open circuit between these pins of connector D11318:

1) Do a check for an open circuit between pin 2 and pin 19 of connector D11318.

2) Do a check for an open circuit between pin 2 and pin 23 of connector D11318.

3) If there is an open circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:.

a) Release the FUELING INDICATION TEST SWITCH.

b) Replace the FUELING INDICATION TEST SWITCH, S160.

c) Re-install the refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(c) For tank No. 2, with the FUELING INDICATION TEST SWITCH in the TEST GAGES position, do these checks for an open circuit between these pins of connector D11320:

1) Do a check for an open circuit between pin 2 and pin 19 of connector D11320.

2) Do a check for an open circuit between pin 2 and pin 23 of connector D11320.

3) If there is an open circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:.

a) Release the FUELING INDICATION TEST SWITCH.

b) Replace the FUELING INDICATION TEST SWITCH, S160.

c) Re-install the refuel quantity indicator, N194. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(d) For the center tank, with the FUELING INDICATION TEST SWITCH in the TEST GAGES position, do a check for an open circuit between these pins of connector D11322:

1) Do a check for an open circuit between pin 2 and pin 19 of connector D11322.

2) Do a check for an open circuit between pin 2 and pin 23 of connector D11322.

3) If there is an open circuit from pin 2 to pin 19 or from pin 2 to pin 23, then do these steps:.

a) Release the FUELING INDICATION TEST SWITCH.

b) Replace the FUELING INDICATION TEST SWITCH, S160.

c) Re-install the refuel quantity indicator, N195. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

(e) If there is not an open circuit from pin 2 to pin 19 or from pin 2 to pin 23, then continue.

(4) Install a new refuel quantity indicator, N193 (tank No. 1), N194 (tank No. 4), or N195 (center tank). To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

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

G. Repair Confirmation

(1) Set the FUELING INDICATION TEST SWITCH on the P15 Fueling Control Panel to the TEST GAGES position.

(a) On each of the refuel quantity indicators, make sure all segments on the display come on for approximately two seconds and then go off for two seconds alternately until the FUELING INDICATION TEST SWITCH is released.

NOTE: If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(b) If all segments on each display come on for approximately two seconds and then go off for approximately two seconds, then you corrected the fault.

(c) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

———————— END OF TASK ————————

803. Unwanted Fuel Transfer from the No. 1 Tank to the Center Tank - Fault Isolation

A. Description

(1) Fuel moved from the No. 1 tank to the center tank without a commanded fuel transfer.

(2) Unwanted particles (debris) in the fuel tank is a common cause of unwanted fuel transfer. Even small particles can cause a valve not to seal correctly. This can cause a large quantity of fuel to transfer. Note that debris in the fuel tank can cause leakage in more than one valve at a time.

(3) Problems with the fuel scavenge system can also cause unwanted transfer from the No. 1 tank to the center tank.

(4) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Unwanted particles (debris) in the fuel tank

(2) Leakage in the fuel scavenge system

(3) Leakage in one of the boost pumps

(4) Leakage in the engine fuel-feed manifold

(5) Leakage in the fueling manifold

(6) Leakage in the tank wall (Rib No. 5)

C. Initial Evaluation

(1) Transfer all of the fuel from the center tank and the No. 2 tank into the No. 1 tank. To do this, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802

(2) Drain the center tank down to the level of the sumps. To do this, do this task: Drain the Fuel from the Sumps after Defueling, AMM TASK 12-11-00-650-804.

NOTE: It is helpful if the airplane is as close as possible to the nominal attitude, roll = 0 degrees, pitch = -1.14 degrees, as specified in (AMM TASK 12-11-00-650-804).

(a) Wait for the fuel to stop draining from the sump completely.

(b) Leave the center tank sump drain open (as a diagnostic tool).

(3) Fill the No. 1 tank to its full capacity.

(4) Make sure the crossfeed valve is closed.

(5) Monitor the center tank sump drain for 5 minutes with no boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with all boost pumps off.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(6) Set the L FWD and the L AFT boost pumps to ON.

(7) Monitor the center tank sump drain for 5 minutes with the two boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with all boost pumps off.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(8) If fuel does not drip from the center tank sump drain under any conditions, then there was an intermittent fault.

(9) If fuel drips from the center tank sump drain, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

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

(1) Do these steps to look for leakage in the fuel scavenge system and in the output tubing of the L FWD boost pump:

(a) Set the L FWD PUMP switch, on the P5 Overhead Panel, to the ON position.

(b) Let the pump operate for 15 minutes.

(c) Monitor the center tank sump drain (still open) for drops of fuel.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(d) Monitor the No. 1 tank fuel quantity to see if it decreases.

(e) Set the L FWD PUMP switch, on the P5 Overhead Panel, to the OFF position.

(f) If fuel started to drip from the center tank sump drain or if the drip rate increased while the L FWD PUMP was on, then do these steps:

1) Do this task: Nozzle Assembly of the Fuel Scavenge Jet Pump - Removal, AMM TASK 28-22-17-020-801.

2) Examine the nozzle of the fuel scavenge jet pump for unwanted particles (debris).

a) If you find unwanted particles on the nozzle of the fuel scavenge jet pump, do these steps:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

b) Prepare to go into the fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

c) Do this task: Fuel Scavenge Jet Pump - Removal, AMM TASK 28-22-17-000-801.

d) Examine the fuel scavenge jet pump for unwanted particles.

NOTE: Do a careful check for particles that keep the outlet check valve open.

e) If it is necessary, install a new fuel scavenge jet pump. To do this, do this task: Fuel Scavenge Jet Pump - Installation, AMM TASK 28-22-17-400-801

f) Do this task: Fuel Scavenge Float-Operated Shutoff Valve - Removal, AMM TASK 28-22-16-000-801.

g) Examine the float-operated shutoff valve for unwanted particles.

NOTE: Do a careful check for particles that keep the valve open.

h) If it is necessary, install a new float-operated shutoff valve. To do this, do this task: Fuel Scavenge Float-Operated Shutoff Valve - Installation, AMM TASK 28-22-16-400-801

i) If it is necessary, replace the applicable couplings in the fuel scavenge system.

These are the tasks:

Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801,

Fuel Line, Fitting and Coupling - Installation, AMM TASK 28-22-15-400-801.

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

3) If there is no indication of unwanted particles on the fuel scavenge nozzle, do a check for leakage at these locations in the tank:

a) The fuel scavenge jet pump

b) The couplings of the fuel scavenge tubing

c) The engine fuel feed tubing and couplings downstream of the L FWD boost pump

d) If you find problems, repair the problems that you find. Do the Repair Confirmation at the end of this task.

(g) If fuel did not start to drip from the center tank sump drain and the drip rate did not increase while the L FWD PUMP was on, then continue:

(2) Do these steps to look for leakage in the output tubing for the L AFT boost pump:

(a) Set the L AFT PUMP switch, on the P5 Overhead Panel, to the ON position.

(b) Let the pump operate for 15 minutes.

(c) Monitor the center tank sump drain (still open) for drops of fuel.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(d) Monitor the No. 1 tank fuel quantity to see if it decreases.

(e) Set the L AFT PUMP switch, on the P5 Overhead Panel, to the OFF position.

(f) If fuel started to drip from the center tank sump drain or if the drip rate increased while the L AFT PUMP was on, then do these steps:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

1) Prepare to go into the fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

2) Pressurize the engine fuel-feed manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but only pressurize to 4 psig.

3) Do a check for leakage in the engine fuel feed tubing and couplings downstream of the L AFT boost pump.

4) If you find problems, repair the problems that you find.

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

(g) If fuel did not start to drip from the center tank sump drain and if the drip rate did not increase while the L AFT PUMP was on, then continue.

(3) Do these steps to examine the boost pumps for indications of leakage:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Prepare to go into the fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Examine the boost pump discharge check valves for the center tank. To do this, do this task: Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801.

(c) If there are indications of leakage, then repair the problems that you find.

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

2) If the Repair Confirmation is not OK, then continue.

(d) If there are no indications of leakage, then continue.

(4) Do these steps to look for indications of leakage in the fueling manifold and the fuel-feed manifold:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Pressurize the engine fuel-feed manifold and the fueling manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but open the defuel valve and only pressurize to 4 psig.

(c) Do an inspection of the full length of the fueling manifold and the couplings of the fuel-feed manifold for indications of leakage.

1) Listen for air leakage or use soap solution if it is necessary.

(d) If you find leakage, repair the problem that you find. To do it, do this task: Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801.

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

a) If the Repair Confirmation is not OK, then continue.

(e) If you do not find leakage, then continue.

(5) Examine the fuel tank sealant on Rib No. 5 (the tank wall between the center tank and the No. 1 tank) for indication of leakage.

(a) If you find indications of leakage, repair the bad sealant. To do it, do this task: Repair of Sealant Leaks in the Fuel Tank Structure, AMM TASK 28-11-00-300-803.

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

E. Repair Confirmation (Recommended)

(1) Close the fuel tanks that you opened to do the leak detection. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Close the center tank sump drain valve if it is open.

(3) Do these steps to make sure there is no unwanted fuel transfer:

(a) Transfer all of the fuel out of the center tank. To do it, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802.

(b) Fill the No. 1 and the No. 2 tank with fuel. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(c) Let the airplane stand for four hours.

1) Monitor the center tank fuel quantity for indications of fuel transfer to the center tank.

2) If there is no fuel in the center tank after the four hours, then you corrected the fault.

F. Repair Confirmation (alternative)

(1) Close the fuel tanks that you opened to do the leak detection. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Close the center tank sump drain valve if it is open.

(3) If there is no indication of unwanted fuel transfer on subsequent flights, then you corrected the fault.

———————— END OF TASK ————————

804. Refuel Quantity Indicator Is Blank - Fault Isolation

A. Description

(1) One or all of the refuel quantity indicators is blank when it would usually show the fuel quantity in the applicable tank.

(2) (SDS SUBJECT 28-21-00)

(3) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) Fuel Quantity Indicating System (FQIS) in-tank wire harness

(2) FQIS tank unit or compensator

(3) Refuel quantity indicator, N193 (tank No. 1), N194 (tank No. 2), N195 (center tank)

(4) Wiring to the refuel quantity indicator.

(5) Fuel quantity processor unit (FQPU), M1827

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Make sure the refueling panel floodlights are on.

(a) If the refueling panel floodlights are not on, then do this task: Fueling Station Flood Light Does Not Come On - Fault Isolation, 28-21 TASK 810.

(b) If the refuel quantity indicator is blank, then do the Fault Isolation Procedure below.

(c) If the refuel quantity indicator is not blank, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the refuel quantity indicator:

(a) Set the FUELING INDICATION TEST SWITCH to the TEST GAGES position.

(b) On each of the refuel quantity indicators do a check to see if all segments on the display come on for approximately two seconds and then go off for two seconds alternately until the FUELING INDICATION TEST SWITCH is released.

NOTE: If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(c) If all segments on each display do not come on for approximately two seconds and then go off for approximately two seconds, then, do this task: Refuel Quantity Indicator Displays Incorrectly When Test Switch is Pressed - Fault Isolation, 28-21 TASK 802.

(d) If all segments on each display come on for approximately two seconds and then go off for approximately two seconds, then continue.

(2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the FQIS BITE test shows a maintenance message, then do the corrective action for that message.

1) Look at the refuel indicators to see if they show the fuel quantity correctly.

2) If the refuel indicators show the fuel quantity correctly, then you corrected the fault.

a) If it is necessary, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802

b) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

3) If the refuel indicators do not show the fuel quantity correctly, then continue.

(b) If the FQIS BITE test does not show a maintenance message, then continue.

(3) Do this check of the wiring:

(a) Remove the refuel quantity indicator, N193 (tank No. 1), N194 (tank No. 2), or N195 (center tank). To remove it, do this task: Refuel Quantity Indicator Removal, AMM TASK 28-41-61-000-801.

(b) For tank No. 1, do these voltage checks for 28 VDC between these pins of connector D11318:

1) Do a check for 28 VDC between pin 24 and pin 19 (ground) of connector D11318

2) Do a check for 28 VDC between pin 24 and pin 23 (ground) of connector D11318

3) If there is 28 VDC at pin 24, then do these steps:

a) Install a new refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

b) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

c) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

4) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11318 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

c) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

d) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

(c) For tank No. 2, do a check for 28 VDC between these pins of connector D11320:

1) Do a check for 28 VDC between pin 24 and pin 19 (ground) of connector D11320

2) Do a check for 28 VDC between pin 24 and pin 23 (ground) of connector D11320

3) If there is 28 VDC at pin 24, then do these steps:

a) Install a new refuel quantity indicator, N194. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

b) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

c) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

4) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11320 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N194. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

c) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

d) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

(d) For the center tank, do a check for 28 VDC between these pins of connector D11322:

1) Do a check for 28 VDC between pin 24 and pin 19 (ground) of connector D11322

2) Do a check for 28 VDC between pin 24 and pin 23 (ground) of connector D11322

3) If there is 28 VDC at pin 24, then do these steps:

a) Install a new refuel quantity indicator, N195. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801.

b) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

c) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

4) If there is not 28 VDC at pin 24, then do these steps:

a) Repair the wiring from pin 24 on connector D11318 to pin 21 on connector D4578 on the P15 refueling panel.

b) Re-install the refuel quantity indicator, N193. To install it, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

c) Look at the refuel quantity indicators to see if they show the fuel quantity correctly.

d) If the refuel quantity indicators show the fuel quantity correctly, then you corrected the fault.

(e) If it is necessary, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(f) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

——————— END OF TASK ———————

805. Refuel Quantity Indicator Shows Ind FAIL - Fault Isolation

A. Description

(1) A refuel quantity indicator shows Ind FAIL on the display instead of the correct fuel quantity.

(2) (SDS SUBJECT 28-21-00)

(3) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) Refuel quantity indicator, N193 (tank No. 1), N194 (tank No. 2), N195 (center tank)

(2) Refuel quantity indicator electrical connector, D11318 (tank No. 1), D11320 (tank No. 2), D11322 (center tank)

C. Related Data

(1) SSM 28-44-11

(2) WDM 28-44-11

D. Fault Isolation Procedure

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Do this check of the electrical connector:

(a) Remove the refuel quantity indicator, N193 (tank No. 1), N194 (tank No. 2), or N195 (center tank) (AMM TASK 28-41-61-000-801).

(b) Examine the applicable electrical connector for damage or corrosion (WDM 28-44-11).

1) Repair all damage that you find.

(c) For tank No. 1, do these continuity checks between these pins of connector D11318:

1) Do a check for continuity between these pins (WDM 28-44-11):

D11318		D11318
pin 6	- - - - - - - - - - - - - - - - - -	pin 15
pin 8	- - - - - - - - - - - - - - - - - -	pin 15
pin 14	- - - - - - - - - - - - - - - - - -	pin 15
pin 7	- - - - - - - - - - - - - - - - - -	pin 16

2) If there is not continuity between these pins, then repair the connector.

3) If there is continuity, then replace the tank No. 1 refuel quantity indicator (AMM TASK 28-41-61-400-801).

(d) For tank No. 2, do these continuity checks between these pins of connector D11320:

1) Do a check for continuity between these pins (WDM 28-44-11):

D11320		D11320
pin 6	- - - - - - - - - - - - - - - - - -	pin 7
pin 6	- - - - - - - - - - - - - - - - - -	pin 14
pin 7	- - - - - - - - - - - - - - - - - -	pin 14
pin 8	- - - - - - - - - - - - - - - - - -	pin 15
pin 8	- - - - - - - - - - - - - - - - - -	pin 16
pin 15	- - - - - - - - - - - - - - - - - -	pin 16

2) If there is not continuity between these pins, then repair the connector.

3) If there is continuity, then replace the tank No. 2 refuel quantity indicator (AMM TASK 28-41-61-400-801).

(e) For the center tank, do these continuity checks between these pins of connector D11322:

1) Do a check for continuity between these pins (WDM 28-44-11):

D11322		D11322
pin 6	- - - - - - - - - - - - - - - - - -	pin 15
pin 7	- - - - - - - - - - - - - - - - - -	pin 15
pin 14	- - - - - - - - - - - - - - - - - -	pin 15
pin 8	- - - - - - - - - - - - - - - - - -	pin 16

2) If there is not continuity between these pins, then repair the connector.

3) If there is continuity, then replace the center tank refuel quantity indicator (AMM TASK 28-41-61-400-801).

(3) If it is necessary, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(4) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

END OF TASK

806. VALVE POSITION LIGHT for the Fueling Shutoff Valve Does Not Go Off When The Valve Switch Is Set To CLOSED - Fault Isolation

A. Description

(1) The VALVE POSITION LIGHT for a fueling shutoff valve does not go off when you set the switch for that valve to the CLOSED position.

(2) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank)

(2) Switch for the fueling shutoff valve, S157 (tank No. 1), S158 (tank No. 2), or S159 (center tank)

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Make sure all of the fueling shutoff valve switches are in the CLOSED position.

(3) Do this check of the VALVE POSITION LIGHT for the fueling shutoff valve:

(a) Set the applicable switch for the fueling shutoff valve to OPEN.

(b) Make sure the applicable VALVE POSITION LIGHT comes on.

(c) Set the applicable switch for the fueling shutoff valve to CLOSED.

(d) Do a check to see if the applicable VALVE POSITION LIGHT goes off.

1) If the VALVE POSITION LIGHT does not go off, then do the Fault Isolation Procedure below.

2) If the VALVE POSITION LIGHT goes off, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check for electrical power to the fueling shutoff valve:

(a) For tank No. 1, do these steps:

1) Disconnect the electrical connector D890 from the fueling shutoff valve that shows the problem.

2) Set the switch for the fueling shutoff valve for the No. 1 tank to the OPEN position.

3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D890.

4) Set the switch for the fueling shutoff valve for the No. 1 tank to the CLOSED position.

5) Do a check for 0 VDC between pins 3 and 2 of D890.

6) If there is 0 VDC between pins 3 and 2 with the switch set to CLOSED, then do these steps:

a) Replace the fueling shutoff valve, V44.

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

7) If there is not 0 VDC between pins 3 and 2 of D890, then continue.

a) Re-connect connector D890 to the fueling shutoff valve.

(b) For tank No. 2, do these steps:

1) Disconnect the electrical connector D894 from the fueling shutoff valve that shows the problem.

2) Set the switch for the fueling shutoff valve for the No. 2 tank to the OPEN position.

3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D894.

4) Set the switch for the fueling shutoff valve for the No. 2 tank to the CLOSED position.

5) Do a check for 0 VDC between pins 3 and 2 of D894.

6) If there is 0 VDC between pins 3 and 2 with the switch set to CLOSED, then do these steps:

a) Replace the fueling shutoff valve V45.

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

7) If there is not 0 VDC between pins 3 and 2 of D894, then continue.

a) Re-connect connector D894 to the fueling shutoff valve.

(c) For the center tank, do these steps:

1) Disconnect the electrical connector D892 from the fueling shutoff valve that shows the problem.

2) Set the switch for the fueling shutoff valve for the center tank to the OPEN position.
3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D892.
4) Set the switch for the fueling shutoff valve for the center tank to the CLOSED position.
5) Do a check for 0 VDC between pins 3 and 2 of D892.
6) If there is 0 VDC between pins 3 and 2 with the switch set to CLOSED, then do these steps:
   a) Replace the fueling shutoff valve V46.
      These are the tasks:
      Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,
      Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.
   b) Do the Repair Confirmation procedure at the end of this task.
7) If there is not 0 VDC between pins 3 and 2 of D892, then continue.
   a) Re-connect connector D892 to the fueling shutoff valve.

(2) Replace the applicable switch for the fueling shutoff valve, S157 (tank No. 1), S158 (tank No. 2), or S159 (center tank).
   (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do this check of the VALVE POSITION LIGHT for the fueling shutoff valve:
   (a) Set the applicable switch for the fueling shutoff valve to OPEN.
   (b) Make sure the applicable VALVE POSITION LIGHT comes on.
   (c) Set the applicable switch for the fueling shutoff valve to CLOSED.
   (d) Make sure the applicable VALVE POSITION LIGHT goes off.
      1) If the indication light goes off, then you corrected the fault.

——————— END OF TASK ———————

807. Fueling Shutoff Valve Position Indicator Light Does not Come on When The Valve Switch Is Set to OPEN - Fault Isolation

A. Description

(1) You set the switch for a fueling shutoff valve to the OPEN position and the VALVE POSITION LIGHT does not come on.

(2) The VALVE POSITION LIGHT for the fueling shutoff valve shows that the solenoid of the fueling shutoff valve is energized. Thus, the fueling shutoff valve is enabled to open when more than 6 psi of fuel pressure is supplied. The VALVE POSITION LIGHT does not necessarily show that the fueling shutoff valve is open. Thus, for each fueling shutoff valve, the applicable VALVE POSITION LIGHT must come on when the applicable valve switch is set to the OPEN position and the applicable fuel tank is not full. The VALVE POSITION LIGHT will not come on if the applicable tank for that valve is full.

(3) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank)

(2) Switch for the fueling shutoff valve, S157 (tank No. 1), S158 (tank No. 2), or S159 (center tank)

(3) Fueling float switch, S574 (tank No. 1), S576 (center tank), or S578 (tank No. 2)

(4) VALVE POSITION LIGHT for the fueling shutoff valve, L282 (tank No. 1), L283 (tank No. 2), or L284 (center tank)

(5) Wiring

(6) Refuel quantity indicator, N193, N194, or N195

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Make sure the floodlights for the fueling control panel are on.

(a) If the floodlights for the fueling control panel are not on, then, do this task: Fueling Station Flood Light Does Not Come On - Fault Isolation, 28-21 TASK 810.

(b) If the floodlights for the fueling control panel are on, then continue.

(3) Make sure the applicable tank for the fueling shutoff valve with the problem is not full.

(4) Do this check of the indication light for the fueling shutoff valve:

(a) Set the applicable switch for the fueling shutoff valve to OPEN.

(b) Make sure the applicable VALVE POSITION LIGHT for the fueling shutoff valve comes on.

1) If the VALVE POSITION LIGHT does not come on, then do the Fault Isolation Procedure below.

2) If the VALVE POSITION LIGHT comes on, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the VALVE POSITION LIGHT for the fueling shutoff valve:

(a) Push the applicable VALVE POSITION LIGHT that shows the fueling valve position and make sure the VALVE POSITION LIGHT comes on.

NOTE: The lights are PRESS-TO-TEST.

(b) If the VALVE POSITION LIGHT does not come on, then replace the VALVE POSITION LIGHT, L282 (tank No. 1), L283 (tank No. 2), or L284 (center tank).

(c) If the VALVE POSITION LIGHT comes on, then continue.

(2) Do this check for electrical power to the fueling shutoff valve:

(a) For tank No. 1, do these steps:

1) Disconnect the electrical connector D890 from the fueling shutoff valve that shows the problem.
2) Set the switch for the fueling shutoff valve for the No. 1 tank to the OPEN position.
3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D890.
4) If there is 28 VDC between pins 3 and 2 of D890, then do these steps:
   a) Replace the fueling shutoff valve, V44.
      These are the tasks:
      Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,
      Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.
   b) Do the Repair Confirmation at the end of this task.
5) If there is not 28 VDC between pins 3 and 2 of D890, then continue.
   a) Re-connect connector D890 to the fueling shutoff valve.

(b) For tank No. 2, do these steps:

1) Disconnect the electrical connector D894 from the fueling shutoff valve that shows the problem.
2) Set the switch for the fueling shutoff valve for the No. 2 tank to the OPEN position.
3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D894.
4) If there is 28 VDC between pins 3 and 2 of D894, then do these steps:
   a) Replace the fueling shutoff valve, V45.
      These are the tasks:
      Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,
      Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.
   b) Do the Repair Confirmation at the end of this task.
5) If there is not 28 VDC between pins 3 and 2 of D894, then continue.
   a) Re-connect connector D894 to the fueling shutoff valve.

(c) For the center tank, do these steps:

1) Disconnect the electrical connector D892 from the fueling shutoff valve that shows the problem.
2) Set the switch for the fueling shutoff valve for the center tank to the OPEN position.
3) Do a check for 28 VDC from pins 3 and 2 (ground) of the connector D892.
4) If there is 28 VDC between pins 3 and 2 of D892, then do these steps:
   a) Replace the fueling shutoff valve, V46.
      These are the tasks:
      Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,
      Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.
   b) Do the Repair Confirmation at the end of this task.
5) If there is not 28 VDC between pins 3 and 2 of D892, then continue.
   a) Reconnect connector D892 to the fueling shutoff valve.

(3) Do this check of the fueling float switch and the related wiring:

(a) For tank No. 1, do these steps:

1) Disconnect connector D4578J on the wing refuel panel, P15.

2) Do a check for an open circuit between these pins:

D4578J		D4578J
pin 1	- - - - - - - - - - - - - - - - - -	pin 8

3) If there is an open circuit (the fueling float switch is open and in the "full" position) and the No. 1 tank is not full, then do these steps:

a) Do a check for continuity between these pins (WDM 28-44-11):

D4578J		D39905
pin 1	- - - - - - - - - - - - - - - - - -	pin 20
pin 8	- - - - - - - - - - - - - - - - - -	pin 21

b) If there is not continuity between these pins, then repair the wiring. Do the Repair Confirmation procedure at the end of this task.

c) Remove the fueling float switch, S574. To do this, do this task: Float Switch Removal, AMM TASK 28-21-71-000-801 or Float Switch Removal, AMM TASK 28-21-71-020-801

d) Do a continuity check of wire 2001B-20 from the location where you cut the wire to remove the float switch to pin 21 on connector D39907.

e) Do a continuity check of wire 2001R-20 from the location where you cut the wire to remove the float switch to pin 20 on connector D39907.

f) If there is not continuity from the cut wires to connector D39907, then repair the wiring. Install the float switch again. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

g) If there is continuity from the cut wires to connector D39907, then install a new fueling float switch, S574. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

4) If there is continuity between pins 1 and 8, then continue.

a) Re-connect connector D4578J.

(b) For tank No. 2, do these steps:

1) Disconnect connector D4578J on the wing refuel panel, P15.

2) Do a check for an open circuit between these pins:

D4578J		D4578J
pin 7	- - - - - - - - - - - - - - - - - -	pin 9

3) If there is an open circuit (the fueling float switch is open and in the "full" position) and the No. 2 tank is not full, then do these steps:

a) Remove the fueling float switch, S578. To do this, do this task: Float Switch Removal, AMM TASK 28-21-71-000-801 or Float Switch Removal, AMM TASK 28-21-71-020-801

b) Do a continuity check of wire 1024-20 from the location where you cut the wire to remove the float switch to pin 9 on connector D4578J.

c) Do a continuity check of wire 1018-20 from the location where you cut the wire to remove the float switch to pin 7 on connector D4578J.

d) If there is not continuity from the cut wires to connector D4578J, then repair the wiring. Install the float switch again. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

e) If there is continuity from the cut wires to connector D39907, then install a new fueling float switch, S574. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

4) If there is continuity between pins 7 and 9, then continue.

a) Re-connect connector D4578J.

(c) For the center tank, do these steps:

1) Disconnect connector D4578J on the wing refuel panel, P15.

2) Do a check for an open circuit between these pins:

D4578J		D4578J
pin 14	- - - - - - - - - - - - - - - - - -	pin 18

3) If there is an open circuit (the fueling float switch is open and in the "full" position) and the center tank is not full, then do these steps:

a) Remove the fueling float switch, S576.

These are the tasks:

Float Switch Removal, AMM TASK 28-21-71-000-801 or Float Switch Removal, AMM TASK 28-21-71-020-801,

Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802.

b) Do a continuity check of wire 1019-20 from the location where you cut the wire to remove the float switch to pin 14 on connector D4578J.

c) Do a continuity check of wire 1026-20 from the location where you cut the wire to remove the float switch to pin 18 on connector D4578J.

d) If there is not continuity from the cut wires to connector D4578J, then repair the wiring. Install the float switch again. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

e) If there is continuity from the cut wires to connector D39907, then install a new fueling float switch, S576. To do this, do this task: Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802

Do the Repair Confirmation procedure at the end of this task.

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

4) If there is continuity between pins 14 and 18, then continue.

a) Re-connect connector D4578J.

(4) Do these steps to do a check of the wiring in the wing refuel panel and the refuel quantity indicators, N193, N194, and N195:

(a) For the No. 1 tank, do these steps:

1) With the switch for the No. 1 tank set to OPEN, do a continuity check from pin 1 to pin 12 on connector D4578P on the wing refuel panel.

2) If there is no continuity from pin 1 to pin 12, then remove the refuel quantity indicator for the No. 1 tank.

a) Do a continuity check from pin 11 on connector D11318 to pin 1 on connector D4578P. If there is not continuity, repair the wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

b) Do a continuity check from pin 10 on connector D11318 to pin 12 on connector D4578P. If there is not continuity, replace switch S157. If the problem continues, repair the related wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

c) On the refuel indicator for tank No. 1, do a continuity check from pin 10 to pin 11 on the connector at the rear of the indicator. If there is no continuity, install a new refuel indicator, N193. Do the Repair Confirmation procedure at the end of this task.

(b) For the No. 2 tank, do these steps:

1) With the switch for the No. 2 tank set to OPEN, do a continuity check from pin 1 to pin 12 on connector D4578P on the wing refuel panel.

2) If there is no continuity from pin 1 to pin 12, then remove the refuel quantity indicator for the center tank, N194.

a) Do a continuity check from pin 11 on connector D11320 to pin 7 on connector D4578P. If there is not continuity, repair the wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

b) Do a continuity check from pin 10 on connector D11320 to pin 12 on connector D4578P. If there is not continuity, replace switch S158. If the problem continues, repair the related wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

c) On the refuel indicator for the No. 2 tank, do a continuity check from pin 10 to pin 11 on the connector at the rear of the indicator. If there is no continuity, install a new refuel indicator, N194. Do the Repair Confirmation procedure at the end of this task.

(c) For the center tank, do these steps:

1) With the switch for the center tank set to OPEN, do a continuity check from pin 1 to pin 12 on connector D4578P on the wing refuel panel.

2) If there is no continuity from pin 1 to pin 12, then remove the refuel quantity indicator for the center tank, N195.

a) Do a continuity check from pin 11 on connector D11322 to pin 14 on connector D4578P. If there is not continuity, repair the wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

b) Do a continuity check from pin 10 on connector D11322 to pin 12 on connector D4578P. If there is not continuity, replace switch S159. If the problem continues, repair the related wiring. Install the refuel quantity indicator again. Do the Repair Confirmation procedure at the end of this task.

c) On the refuel indicator for the center tank, do a continuity check from pin 10 to pin 11 on the connector at the rear of the indicator. If there is no continuity, install a new refuel indicator, N195. Do the Repair Confirmation procedure at the end of this task.

G. Repair Confirmation

(1) Do this check of the VALVE POSITION LIGHT for the fueling shutoff valve.

(a) Set the applicable switch for the fueling shutoff valve to OPEN.

(b) Make sure the applicable VALVE POSITION LIGHT comes on.

1) If the VALVE POSITION LIGHT comes on, then you corrected the fault.

(c) Set the applicable switch back to the CLOSED position.

1) Make sure the VALVE POSITION LIGHT goes off again.

(2) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

END OF TASK

808. Fuel Does Not Flow Into The Fuel Tank With Fueling Shutoff Valve Switch in the OPEN Position and Refueling Manifold Pressurized

A. Description

(1) Fuel pressure from a pressurized fuel source is applied to the fueling receptacle and the fueling shutoff valve switch is set to the OPEN position (AMM TASK 12-11-00-650-802), but fuel does not flow into the applicable fuel tank. That is, you do not see the fuel quantity in the applicable tank increase on the indicator or the flowmeter on the fuel source shows no fuel flow.

B. Possible Causes

(1) Fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank)

(2) Switch for the fueling shutoff valve, S157 (tank No. 1), S158 (tank No. 2), or S159 (center tank)

(3) Fueling float switch, S574 (tank No. 1), S576 (center tank), or S578 (tank No. 2)

(4) Fueling receptacle (if fuel does not flow into all three fuel tanks)

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Do a check make sure the fuel tank with the problem is not full.

(3) Do a check to see if the VALVE POSITION LIGHT for the fueling shutoff valve comes on when the fueling shutoff valve switch is set to the OPEN position.

(a) If the VALVE POSITION LIGHT does not come on when the fueling shutoff valve switch is set to the OPEN position, then, do this task: Fueling Shutoff Valve Position Indicator Light Does not Come on When The Valve Switch Is Set to OPEN - Fault Isolation, 28-21 TASK 807

(4) Do these steps to prepare for pressure fueling if you did not do them before:

(a) Do this task: Precautions and Limits for the Refuel Operation, AMM TASK 12-11-00-650-801.

WARNING: MAKE SURE THERE IS ELECTRICAL CONTINUITY BETWEEN THE FUEL SOURCE AND THE AIRPLANE. AN EXPLOSION CAN OCCUR.

(b) Attach the bonding cable on the nozzle of the fuel hose to the ground jack on the wing.

NOTE: The bonding cable is not necessary if there is electrical continuity between the nozzle and the receptacle.

(c) Attach the nozzle on the fuel hose to the fueling receptacle.

1) Open the valve in the nozzle on the fuel hose.

2) Make sure the nozzle and the fueling receptacle have a good seal.

WARNING: MAKE SURE THE FUEL SOURCE DOES NOT HAVE MORE THAN A MAXIMUM PRESSURE OF 50 PSI. YOU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(5) Do these steps to do a check for a fueling shutoff valve that does not open during the refuel operation:

(a) Make sure all of the fueling shutoff valve switches are set to the CLOSED position and the VALVE POSITION lights are off.

(b) Start the pump on the fuel truck or the fuel source.

(c) Monitor the fuel source to make sure the pressure is not more than 50 psi.

(d) The flowmeter on the fuel truck or the fuel source must show no fuel flow.

(e) Set the fueling shutoff valve switch for the tank(s) that has the problem to OPEN.

(f) If the flowmeter on the fuel source shows fuel flow and the fuel tank quantity increases at the usual rate, then there was an intermittent fault.

(g) If there is no fuel flow on the flowmeter or if the fuel flow is much slower than usual, then do these steps:

1) Stop the fuel pump on the truck.

2) Do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) If only one tank will not accept fuel when the fueling shutoff valve switch is in the OPEN position, then replace the applicable fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank).

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

(2) If all three tanks will not accept fuel when the fueling shutoff valve switch is in the OPEN position, then replace the fueling receptacle.

These are the tasks:

Fueling Receptacle Removal, AMM TASK 28-21-11-000-801,

Fueling Receptacle Installation, AMM TASK 28-21-11-400-801.

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

G. Repair Confirmation

(1) Do these steps to prepare for pressure fueling if you did not do them before:

(a) Do this task: Precautions and Limits for the Refuel Operation, AMM TASK 12-11-00-650-801.

WARNING: MAKE SURE THERE IS ELECTRICAL CONTINUITY BETWEEN THE FUEL SOURCE AND THE AIRPLANE. AN EXPLOSION CAN OCCUR.

(b) Attach the bonding cable on the nozzle of the fuel hose to the ground jack on the wing.

NOTE: The bonding cable is not necessary if there is electrical continuity between the nozzle and the receptacle.

(c) Attach the nozzle on the fuel hose to the fueling receptacle.

1) Open the valve in the nozzle on the fuel hose.

2) Make sure the nozzle and the fueling receptacle have a good seal.

WARNING: MAKE SURE THE FUEL SOURCE DOES NOT HAVE MORE THAN A MAXIMUM PRESSURE OF 50 PSI. YOU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(2) Do these steps to do a check for a fueling shutoff valve that does not open during the refuel operation:

(a) Make sure all of the fueling shutoff valve switches are set to the CLOSED position and the VALVE POSITION lights are off.

(b) Start the pump on the fuel truck or the fuel source.

(c) Monitor the fuel source to make sure the pressure is not more than 50 psi.

(d) The flowmeter on the fuel truck or the fuel source must show no fuel flow.

(e) Set the fueling shutoff valve switch for the tank(s) that has the problem to OPEN.

(f) If the flowmeter on the fuel source shows fuel flow and the fuel tank quantity increases at the usual rate, then you corrected the fault.

——————— END OF TASK ———————

809. Fuel Flow Into The Fuel Tank Does Not Stop With Fueling Shutoff Valve Switch in the CLOSED Position

A. Description

(1) You did the pressure fueling operation (AMM TASK 12-11-00-650-802), but fuel continued to flow into one [or more] of the tanks when the applicable fueling shutoff valve switch is set to the CLOSED position. That is, the fuel quantity in the applicable tank continues to increase on the indicator or the flowmeter on the fuel source continues to show fuel flow.

B. Possible Causes

(1) Fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank)

(2) Switch for the fueling shutoff valve, S157 (tank No. 1), S158 (tank No. 2), or S159 (center tank)

(3) Fueling float switch, S574 (tank No. 1), S576 (center tank), or S578 (tank No. 2)

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Do a check to see if the VALVE POSITION LIGHT for the fueling shutoff valve goes off when the fueling shutoff valve switch is set to the CLOSED position.

(a) If the VALVE POSITION LIGHT does not go off when the fueling shutoff valve switch is set to the closed position, then, do this task: Fueling Shutoff Valve Position Indicator Light Does not Come on When The Valve Switch Is Set to OPEN - Fault Isolation, 28-21 TASK 807.

(3) Do these steps to prepare for pressure fueling if you did not do them before:

(a) Do this task: Precautions and Limits for the Refuel Operation, AMM TASK 12-11-00-650-801.

WARNING: MAKE SURE THERE IS ELECTRICAL CONTINUITY BETWEEN THE FUEL SOURCE AND THE AIRPLANE. AN EXPLOSION CAN OCCUR.

(b) Attach the bonding cable on the nozzle of the fuel hose to the ground jack on the wing.

NOTE: The bonding cable is not necessary if there is electrical continuity between the nozzle and the receptacle.

(c) Attach the nozzle on the fuel hose to the fueling receptacle.

1) Open the valve in the nozzle on the fuel hose.

2) Make sure the nozzle and the fueling receptacle have a good seal.

WARNING: MAKE SURE THE FUEL SOURCE DOES NOT HAVE MORE THAN A MAXIMUM PRESSURE OF 50 PSI. YOU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(4) Do these steps to do a check for an open fueling shutoff valve of the pressure fueling system during the refuel operation:

(a) Make sure all of the fueling shutoff valve switches are set to the CLOSED position and the VALVE POSITION lights are off.

(b) Start the pump on the fuel truck or the fuel source.

(c) Monitor the fuel source to make sure the pressure is not more than 50 psi.

(d) The flowmeter on the fuel truck or the fuel source must show no fuel flow.

(e) If there is no fuel flow on the flowmeter, then there was an intermittent fault.

(f) If there is some fuel flow shown on the flowmeter, then do these steps:

1) Monitor the fuel quantity in each tank until you see an increase in the fuel quantity in one of the tanks.

2) Stop the fuel pump on the truck.

3) Do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Replace the applicable fueling shutoff valve, V44 (tank No. 1), V45 (tank No. 2), or V46 (center tank).

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

G. Repair Confirmation

(1) Make sure the VALVE POSITION LIGHT for the fueling shutoff valve goes off when the fueling shutoff valve switch is set to the CLOSED position.

(2) Do these steps to prepare for pressure fueling if you did not do them before:

(a) Do this task: Precautions and Limits for the Refuel Operation, AMM TASK 12-11-00-650-801.

WARNING: MAKE SURE THERE IS ELECTRICAL CONTINUITY BETWEEN THE FUEL SOURCE AND THE AIRPLANE. AN EXPLOSION CAN OCCUR.

(b) Attach the bonding cable on the nozzle of the fuel hose to the ground jack on the wing.

NOTE: The bonding cable is not necessary if there is electrical continuity between the nozzle and the receptacle.

(c) Attach the nozzle on the fuel hose to the fueling receptacle.

1) Open the valve in the nozzle on the fuel hose.

2) Make sure the nozzle and the fueling receptacle have a good seal.

WARNING: MAKE SURE THE FUEL SOURCE DOES NOT HAVE MORE THAN A MAXIMUM PRESSURE OF 50 PSI. YOU CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(3) Do these steps to do a check for an open fueling shutoff valve of the pressure fueling system during the refuel operation:

(a) Make sure all of the fueling shutoff valve switches are set to the CLOSED position and the VALVE POSITION lights are off.

(b) Start the pump on the fuel truck or the fuel source.

(c) Monitor the fuel source to make sure the pressure is not more than 50 psi.

(d) The flowmeter on the fuel truck or the fuel source must show no fuel flow.

(e) If there is no fuel flow on the flowmeter, then you corrected the fault.

——————— END OF TASK ———————

810. Fueling Station Flood Light Does Not Come On - Fault Isolation

A. Description

(1) There are two flood lights at the refueling station. One flood light lights the fueling receptacle. The other flood light lights the P15 refueling panel. If power is supplied to the fueling station, these two flood lights should come one when the Refuel Acces Panel - Slat Station 143.27, 621GB is opened.

B. Possible Causes

(1) Flood lights, L279 or L280

(2) Refueling Power Control Relay, R11

(3) Fueling Power Control Switch, S156

(4) Wiring from the R11 relay to the flood lights, L279 and L280

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(a) If one floodlight for the refueling panel is not on, then do the Fault Isolation Procedure - One Floodlight Not On below.

(b) If both floodlights for the refueling panel are not on, then do the Fault Isolation Procedure - Both Floodlights Not On below.

(c) If both floodlights are on, then there was an intermittent fault.

F. Fault Isolation Procedure - One Floodlight Not On

(1) Replace the applicable floodlight L279 or L280.

(a) If the two floodlights come on when the following access panel is opened, then you corrected the fault:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

1) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

G. Fault Isolation Procedure - Both Floodlights Not On

(1) Do this test to find out if there is 28 VDC power to the floodlights:
   (a) Set the switch for the fueling shutoff valve for the No. 2 tank to OPEN.
   (b) If the VALVE POSITION LIGHT for the No. 2 tank comes on, then do these steps:
      1) Replace the two floodlights, L279 and L280.
      2) If the two floodlights come on when the following access panel is opened, then you corrected the fault:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

   (c) If the VALVE POSITION LIGHT does not come on, then continue.
      1) Set the switch for the fueling shutoff valve for the No. 2 tank back to CLOSED.

(2) Do this test of the fueling power control switch:
   (a) Set the FUELING INDICATION TEST SWITCH to FUEL DOOR SWITCH BYPASS.
   (b) If the two floodlights, L279 and L280, come on, then do these steps:
      1) Make sure the magnet for the fueling power control switch, S156 is correctly installed on the actuator bracket.
      2) If the magnet is not installed correctly, then do these steps:
         a) Remove and re-install the magnet.

            These are the tasks:

            Remove the Fueling Power Control Switch Sensor Magnet, AMM TASK 28-21-81-000-801,

            Install the Fueling Power Control Switch Sensor Magnet, AMM TASK 28-21-81-400-801.

         b) If the two floodlights come on when the following access panel is opened, then you corrected the fault:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

         c) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

      3) Make sure there is the correct gap between the magnet face and the switch sensor when you move the following access panel from the closed to the open position:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

a) To do a check of the gap, do this task: Remove the Actuator Switch for the Fueling Power Control Switch, AMM TASK 28-21-81-350-801

4) If the gap between the magnet face and the switch sensor is not correct, then do these steps:

a) Adjust the gap to make it correct. To adjust it, do this task: Remove the Actuator Switch for the Fueling Power Control Switch, AMM TASK 28-21-81-350-801.

b) If the two floodlights come on when the following access panel is opened, then you corrected the fault:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

c) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(c) If the two floodlights do not come on, then continue.

(3) Replace the refueling power control relay, R11.

NOTE: The R11 relay is on the P6 panel.

(a) If the two floodlights come on when the following access panel is opened, then you corrected the fault:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

1) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(b) If the two floodlights do not come on, then continue.

(4) Do this check of the wiring:

(a) Remove the refueling power control relay, R11.

(b) Disconnect connector D4578J at the refuel panel, P15.

(c) Do a check for an open circuit between these pins of connector D944 on the P6 panel and connector D4578J at the refuel panel:

D944		**D4578J**
pin A2	- - - - - - - - - - - - - - - - - -	pin 12

(d) If there is an open circuit, then do these steps:

1) Repair the wiring.

2) Re-install the refueling power control relay, R11.

3) Re-connect connector D4578J at the refuel panel.

4) If the two floodlights are on when the refuel access door is open, then you corrected the fault.

Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

——————— END OF TASK ———————

812. Unwanted Fuel Transfer into the Center Tank - Source Unknown - Fault Isolation

A. Description

(1) Fuel moved from the No. 1 or the No. 2 tank to the center tank without a commanded fuel transfer.

(2) Unwanted particles (debris) in the fuel tank is a common cause of unwanted fuel transfer. Even small particles can cause a valve not to seal correctly. This can cause a large quantity of fuel to transfer. Note that debris in the fuel tank can cause leakage in more than one valve at a time.

(3) Problems with the fuel scavenge system are only applicable to unwanted transfer from the No. 1 tank to the center tank.

(4) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Unwanted particles (debris) in the fuel tank

(2) Leakage in the fuel scavenge system (cause of transfer from No. 1 tank only)

(3) Leakage in one of the boost pumps

(4) Leakage in the engine fuel-feed manifold

(5) Leakage in the fueling manifold

(6) Leakage in the tank wall (Rib No. 5)

C. Initial Evaluation

(1) Transfer all of the fuel from the center tank and No. 2 tank into the No. 1 tank. To do this, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802

(2) Fill the No. 1 tank to its full capacity.

(3) Drain the center tank down to the level of the sumps. To do this, do this task: Drain the Fuel from the Sumps after Defueling, AMM TASK 12-11-00-650-804.

NOTE: It is helpful if the airplane is as close as possible to the nominal attitude, roll = 0 degrees, pitch = -1.14 degrees, as specified in (AMM TASK 12-11-00-650-804).

(a) Wait for the fuel to stop draining from the sump completely.

(b) Leave the center tank sump drain open (as a diagnostic tool).

(4) Make sure the crossfeed valve is closed.

(5) Monitor the center tank sump drain for 5 minutes with no boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with all boost pumps off.

1) If a large fuel quantity (more than a U.S. gallon) drains out of the center tank sump drain, do these steps:

a) Close the center tank sump drain and monitor the center tank fuel quantity.

b) Do this task: Unwanted Fuel Transfer from the No. 1 Tank to the Center Tank - Fault Isolation, 28-21 TASK 803.

(b) Set the L FWD boost pump switch and the L AFT boost pump switch, on the P5 overhead panel, to the ON position.

(6) Monitor the center tank sump drain for 5 minutes with the two boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with the two boost pumps operating.

1) If a large fuel quantity (more than one U.S. gallon) drains out of the center tank sump drain, then do these steps:

a) Close the center tank sump drain and monitor the center tank fuel quantity.

b) Do this task: Unwanted Fuel Transfer from the No. 1 Tank to the Center Tank - Fault Isolation, 28-21 TASK 803.

(b) Set the L FWD boost pump switch and the L AFT boost pump switch, on the P5 overhead panel, to the OFF position.

(7) Transfer all of the fuel from the No. 1 tank into the No. 2 tank. To do this, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802

(a) Make sure the No. 2 tank is filled to its full capacity.

(b) Make sure the center tank is still empty.

(c) Make sure the center tank sump drain is still open.

(8) Monitor the center tank sump drain for 5 minutes with no boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with all boost pumps off.

1) If a large fuel quantity (more than a U.S. gallon) drains out of the center tank sump drain, then do these steps:

a) Close the center tank sump drain and monitor the center tank fuel quantity.

b) Do this task: Unwanted Fuel Transfer from the No. 2 Tank to the Center Tank - Fault Isolation, 28-21 TASK 813.

(b) Set the R FWD boost pump switch and the R AFT boost pump switch, on the P5 overhead panel, to the ON position.

(9) Monitor the center tank sump drain for 5 minutes with the two boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with the two boost pumps operating.

1) If a large fuel quantity (more than one U.S. gallon) drains out of the center tank sump drain, do these steps:

a) Close the center tank sump drain and monitor the center tank fuel quantity.

b) Do this task: Unwanted Fuel Transfer from the No. 2 Tank to the Center Tank - Fault Isolation, 28-21 TASK 813.

(b) Set the R FWD boost pump switch and the R AFT boost pump switch, on the P5 overhead panel, to the OFF position.

(10) If the drip rate from center tank sump drain was more when the No. 1 tank was full than when the No. 2 tank was full, then, do this task: Unwanted Fuel Transfer from the No. 1 Tank to the Center Tank - Fault Isolation, 28-21 TASK 803

(11) If the drip rate from the center tank sump drain was more when the No. 2 tank was full than when the No. 1 tank was full, then, do this task: Unwanted Fuel Transfer from the No. 2 Tank to the Center Tank - Fault Isolation, 28-21 TASK 813

(12) If the drip rate from the center tank sump drain was the same when the No. 1 tank was full as when the No. 2 tank was full under all conditions, then there was an intermittent fault.

——————— END OF TASK ———————

813. Unwanted Fuel Transfer from the No. 2 Tank to the Center Tank - Fault Isolation

A. Description

(1) Fuel moved from the No. 1 or the No. 2 tank to the center tank without a commanded fuel transfer.

(2) Unwanted particles (debris) in the fuel tank is a common cause of unwanted fuel transfer. Even small particles can cause a valve not to seal correctly. This can cause a large quantity of fuel to transfer. Note that the debris in the fuel tank can cause leakage in more than one valve at a time.

(3) Problems with the fuel scavenge system are not applicable to unwanted transfer from the No. 2 tank to the center tank.

(4) (SDS SUBJECT 28-21-00)

B. Possible Causes

(1) Unwanted particles (debris) in the fuel tank

(2) Leakage in one of the boost pumps

(3) Leakage in the engine fuel-feed manifold

(4) Leakage in the fueling manifold

(5) Leakage in the tank wall (Rib No. 5)

C. Initial Evaluation

(1) Transfer all of the fuel from the center tank and the No. 1 tank into the No. 2 tank. To do this, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802

(2) Drain the center tank down to the level of the sumps. To do this, do this task: Drain the Fuel from the Sumps after Defueling, AMM TASK 12-11-00-650-804.

NOTE: It is helpful if the airplane is as close as possible to the nominal attitude, roll = 0 degrees, pitch = -1.14 degrees, as specified in (AMM TASK 12-11-00-650-804).

(a) Wait for the fuel to stop draining from the sump completely.

(b) Leave the center tank sump drain open (as a diagnostic tool).

(3) Fill the No. 2 tank to its full capacity.

(4) Make sure the crossfeed valve is closed.

(5) Monitor the center tank sump drain for 5 minutes with no boost pumps operating.

(a) Note the drip rate (if any) from the center tank sump drain with all boost pumps off.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(6) If fuel does not drip from the center tank sump drain under any conditions, then there was an intermittent fault.

(7) If fuel drips from the center tank sump drain, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

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

(1) Do these steps to look for leakage in the output tubing for the R AFT boost pump:

(a) Set the R AFT PUMP switch, on the P5 Overhead Panel, to the ON position.

(b) Let the pump operate for 15 minutes.

(c) Monitor the center tank sump drain (still open) for drops of fuel.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(d) Monitor the No. 2 tank fuel quantity to see if it decreases.

(e) Set the R AFT PUMP switch, on the P5 Overhead Panel, to the OFF position.

(f) If fuel started to drip from the center tank sump drain or if the drip rate increased while the R FWD PUMP was on, then do these steps:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

1) Prepare to go into the center fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

2) Pressurize the engine fuel-feed manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but only pressurize to 4 psig.

3) Do a check for leakage at the engine fuel feed tubing and couplings downstream of the R FWD boost pump.

4) If you find problems, repair the problems that you find.

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

(g) If fuel did not start to drip from the center tank sump drain and if the drip rate did not increase while the R FWD pump was on, then continue.

(2) Do these steps to look for leakage in the output tubing of the R FWD boost pump:

(a) Set the R FWD PUMP switch, on the P5 Overhead Panel, to the ON position.

(b) Let the pump operate for 15 minutes.

(c) Monitor the center tank sump drain (still open) for drops of fuel.

1) If a large fuel quantity drains out of the center tank sump drain, close the center tank sump drain and monitor the center tank fuel quantity.

(d) Monitor the No. 2 tank fuel quantity to see if it decreases.

(e) Set the R FWD PUMP switch, on the P5 Overhead Panel, to the OFF position.

(f) If fuel started to drip from the center tank sump drain or if the drip rate increased while the R AFT PUMP was on, then do these steps:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

1) Prepare to go into the center fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.
2) Pressurize the engine fuel-feed manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but only pressurize to 4 psig.

3) Do a check for leakage in the engine fuel feed tubing and couplings downstream of the R AFT boost pump.
4) If you find problems, repair the problems that you find.
   a) Do the Repair Confirmation at the end of this task.

(g) If fuel did not start to drip from the center tank sump drain and if the drip rate did not increase while the R AFT PUMP was on, then continue.

(3) Do these steps to examine the boost pumps for indications of leakage:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Prepare to go into the center fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Examine the boost pump discharge check valves for the center tank. To do this, do this task: Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801.

(c) If there are indications of leakage, then repair the problems that you find.
   1) Do the Repair Confirmation at the end of this task.
      a) If the Repair Confirmation is not OK, then continue.

(d) If there are no indications of leakage, then continue.

(4) Do these steps to look for indications of leakage in the fueling manifold and the fuel-feed manifold:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Pressurize the engine fuel-feed manifold and the fueling manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but open the defuel valve and only pressurize to 4 psig.

(c) Do an inspection of the full length of the fueling manifold and the couplings of the fuel-feed manifold for indications of leakage.
   1) Listen for air leakage or use soap solution if it is necessary.

(d) If you find leakage, repair the problem that you find. To do it, do this task: Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801.
   1) Do the Repair Confirmation at the end of this task.
      a) If the Repair Confirmation is not OK, then continue.

(e) If you do not find leakage, then continue.

(5) Examine the fuel tank sealant on Rib No. 5 (the tank wall between the center tank and the No. 2 tank) for indication of leakage.

(a) If you find indications of leakage, repair the bad sealant. To do it, do this task: Repair of Sealant Leaks in the Fuel Tank Structure, AMM TASK 28-11-00-300-803.

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

E. Repair Confirmation (Recommended)

(1) Close the fuel tanks that you opened to do the leak detection. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Close the center tank sump drain valve if it is open.

(3) Do these steps to make sure there is no unwanted fuel transfer:

(a) Transfer all of the fuel out of the center tank. To do it, do this task: Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802.

(b) Fill the No. 1 and the No. 2 tank with fuel. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(c) Let the airplane stand for four hours.

1) Monitor the center tank fuel quantity for indications of fuel transfer to the center tank.

2) If there is no fuel in the center tank after the four hours, then you corrected the fault.

F. Repair Confirmation (alternative)

(1) Close the fuel tanks that you opened to do the leak detection. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Close the center tank sump drain valve if it is open.

(3) If there is no indication of unwanted fuel transfer on subsequent flights, then you corrected the fault.

———————— END OF TASK ————————

814. Unwanted Fuel Transfer from the Center Tank to the No. 1 Tank - Fault Isolation

A. Description

(1) Fuel moved from the center tank to the No. 1 tank without a commanded fuel transfer.

(2) Usually fuel transfer into the No. 1 tank is observed during flight while the boost pumps operate. Fuel transfer from the center tank to the No. 1 tank is usually caused by failure of the fuel scavenge float valve to close completely or by leakage in the left boost pump bypass valve when it is pressurized by the center tank boost pump (override pump). Unwanted particles (debris) can cause the boost pump bypass valve to leak fuel into No. 1 tank. Even small particles can cause a valve not to seal correctly. This can cause a large quantity of fuel to transfer. Unwanted fuel transfer can also be caused by leakage in the boost pump discharge check valves, other parts of the engine fuel-feed manifold, the fueling manifold or the tank wall.

(3) The fuel scavenge system has a minimum transfer rate of 220 pounds/hour (100 kilograms/hour). Usually, fuel scavenge transfer rates are between approximately 220 pounds/hour (100 kilograms/hour) and 450 pounds/hour (200 kilograms/hour).

(4) (SDS SUBJECT 28-21-00)

(5) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Fuel scavenge float operated shutoff valve

(2) Leakage in the boost pump bypass valve

(3) Leakage in the boost pump discharge check valves for one of the No. 1 tank boost pumps

(4) Leakage in the engine fuel-feed manifold

(5) Leakage in the fueling manifold

(6) Leakage in the tank wall (Rib No. 5)

C. Initial Evaluation

(1) Make sure the No. 1 tank contains more than 6500 pounds (2960 kilograms) of fuel.

NOTE: This will make sure that the fuel scavenge float operated shutoff valve is closed if it is operating correctly.

(2) Make sure the center tank contains more than 1000 pounds (460 kilograms) of fuel.

NOTE: This will make sure there is sufficient fuel in the center tank to transfer into the No. 1 tank for troubleshooting.

(3) Make sure the crossfeed valve is closed.

(4) Do these steps to do a check for leakage through the float operated shutoff valve:

NOTE: When it is operating normally, the fuel scavenge system has a minimum transfer rate of 220 pounds/hour (100 kilograms/hour). Usually, fuel scavenge transfer rates are between approximately 220 pounds/hour (100 kilograms/hour) and 450 pounds/hour (200 kilograms/hour).

(a) Set the FUEL PUMP TANK 1 - FWD switch, on the P5 Overhead Panel, to ON.

(b) Let the FWD pump for the No. 1 tank operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 1 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP TANK 1 - FWD switch, on the P5 Overhead Panel, to the OFF position.

(f) If the fuel quantity in the No. 1 tank increases or if the fuel quantity in the center tank decreases, then do the Fault Isolation Procedure - Fuel Transfer through Fuel Scavenge System below.

(g) If the fuel quantity in the No. 1 tank does not increase and the fuel quantity in the center tank does not decrease, then continue.

(5) Do these steps to do a check for leakage through the fuel boost pump bypass valve or the engine fuel-feed system:

(a) Set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to ON.

(b) Let the left center boost pump (override) pump operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 1 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to OFF.

(f) If the fuel quantity in the No. 1 tank increases or if the fuel quantity in the center tank decreases, then do the Fault Isolation Procedure - Fuel Transfer Through Engine Fuel-Feed System below.

(g) If the fuel quantity in the No. 1 tank does not increase and the fuel quantity in the center tank does not decrease, then continue.

(6) If there is no indication of unwanted fuel transfer on subsequent flights, then there was an intermittent fault.

D. Fault Isolation Procedure - Fuel Transfer through Fuel Scavenge System

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

(1) Do these steps to look for leakage in the fuel scavenge system:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Prepare to go into the No. 1 fuel tank. To do this, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Examine the float-operated shutoff valve to see if it operates correctly.

NOTE: Do a careful check for particles that keep the valve open.

(c) If there are problems with the float-operated shutoff valve, then replace it.

These are the tasks:

Fuel Scavenge Float-Operated Shutoff Valve - Removal, AMM TASK 28-22-16-000-801,

Fuel Scavenge Float-Operated Shutoff Valve - Installation, AMM TASK 28-22-16-400-801.

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

(d) If there are no problems with the float-operated shutoff valve, then do these steps:

1) Do a check for leakage at the couplings of the fuel scavenge tubing in the No. 1 tank.

a) If it is necessary, replace the applicable couplings in the fuel scavenge system.

These are the tasks:

Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801,

Fuel Line, Fitting and Coupling - Installation, AMM TASK 28-22-15-400-801.

2) Do a check for leakage in the tubing of the fuel scavenge system in the No. 1 tank.

a) If you find problems, repair the problems that you find. Do the Repair Confirmation at the end of this task.

E. Fault Isolation Procedure - Fuel Transfer Through Leakage in the Engine Fuel Feed System

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

WARNING: BE PREPARED TO PUT THE BOOST PUMP IMPELLER IMMEDIATELY BACK INTO ITS POSITION TO STOP FUEL FLOW. IF THERE IS A FUEL LEAK AT THE DISCHARGE CHECK VALVE, FUEL CAN CONTINUOUSLY FLOW FROM THE PUMP.

(1) Do these steps to look for a leak in the AFT boost pump discharge check valve for the No. 1 tank:

(a) Loosen the mounting screws for the aft boost pump impeller. To do it, do this task: Remove the Motor Impeller, AMM TASK 28-22-41-000-801.

(b) Carefully pull the impeller unit away from the boost pump housing to see if there is any fuel leakage from the discharge check valve.

(c) If there is indication of fuel leakage, immediately install the impeller unit that you removed.

(d) If there is no indication of fuel leakage, set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to ON.

NOTE: This applies the pressure of the left center tank boost pump to the AFT boost pump discharge check valve.

(e) If there is indication of leakage, immediately turn off the FUEL PUMP CENTER TANK - LEFT switch and install the impeller unit that you removed. Do these steps:

1) Replace the aft boost pump discharge check valve for the No. 1 tank.

These are the tasks:

Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801,

Install the Discharge Check Valve, AMM TASK 28-22-71-400-801.

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

(f) If there is no indication of leakage from the aft boost pump discharge check valve, then continue. Re-install the boost pump that you removed and tighten the mounting screws. To do it, do this task: Install the Motor Impeller, AMM TASK 28-22-41-400-801

WARNING: BE PREPARED TO PUT THE BOOST PUMP IMPELLER IMMEDIATELY BACK INTO ITS POSITION TO STOP FUEL FLOW. IF THERE IS A FUEL LEAK AT THE DISCHARGE CHECK VALVE, FUEL CAN CONTINUOUSLY FLOW FROM THE PUMP.

(2) Do these steps to look for a leak in the FWD boost pump discharge check valve for the No. 1 tank:

(a) Loosen the mounting screws for the forward boost pump impeller. To do it, do this task: Remove the Motor Impeller, AMM TASK 28-22-41-000-801.

(b) Carefully pull the impeller unit away from the boost pump housing to see if there is any fuel leakage from the discharge check valve.

(c) If there is indication of fuel leakage, immediately replace the impeller unit.

(d) If there is no indication of fuel leakage, set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to ON.

NOTE: This applies the pressure of the left center tank boost pump to the FWD boost pump discharge check valve.

(e) If there is indication of leakage, immediately turn off the FUEL PUMP CENTER TANK - LEFT switch and install the impeller unit that you removed. Do these steps:

1) Replace the forward boost pump discharge check valve for the No. 1 tank.

These are the tasks:

Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801,

Install the Discharge Check Valve, AMM TASK 28-22-71-400-801.

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

(f) If there is no indication of leakage, then continue. Re-install the boost pump that you removed and tighten the mounting screws. To do it, do this task: Install the Motor Impeller, AMM TASK 28-22-41-400-801

(3) Do these steps to look for indications of leakage in the fueling manifold and the fuel-feed manifold:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Pressurize the engine fuel-feed manifold and the fueling manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but open the defuel valve and only pressurize to 4 psig.

(c) Do an inspection of the fuel boost pump bypass valve to see if there is leakage.

1) If there is leakage in the fuel boost pump bypass valve, replace the fuel boost pump bypass valve.

These are the tasks:

Remove the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-000-801,

Install the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-400-801.

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

2) If there is no leakage in the fuel boost pump bypass valve, then continue.

(d) Do an inspection of the full length of the fueling manifold and the couplings of the fuel-feed manifold in the No. 1 tank for indications of leakage.

1) Listen for air leakage or use soap solution if it is necessary.

(e) If you find leakage, repair the problem that you find. To do it, do this task: Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801.

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

a) If the Repair Confirmation is not OK, then continue.

(f) If you do not find leakage, then continue.

(4) Examine the fuel tank sealant on Rib No. 5 (the tank wall between the center tank and the No. 1 tank) for indication of leakage.

(a) If you find indications of leakage, repair the bad sealant. To do it, do this task: Repair of Sealant Leaks in the Fuel Tank Structure, AMM TASK 28-11-00-300-803.

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

F. Repair Confirmation (Recommended)

(1) Close the fuel tanks that you opened to do the leak detection or repairs. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Make sure the No. 1 tank contains more than 6500 pounds (2960 kilograms) of fuel.

NOTE: This will make sure that the fuel scavenge float operated shutoff valve is closed if it is operating correctly.

(3) Make sure the center tank contains more than 1000 pounds (460 kilograms) of fuel.

NOTE: This will make sure there is sufficient fuel in the center tank to transfer into the No. 1 tank for troubleshooting.

(4) Make sure the crossfeed valve is closed.

(5) Do these steps to make sure there is no leakage through the float operated shutoff valve:

(a) Set the FUEL PUMP TANK 1 - FWD switch, on the P5 Overhead Panel, to ON.

(b) Let the FWD pump for the No. 1 tank operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 1 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP TANK 1 - FWD switch, on the P5 Overhead Panel, to the OFF position.

(f) Make sure the fuel quantity in the No. 1 tank does not increase and the fuel quantity in the center tank does not decrease.

(6) Do these steps to make sure there is no leakage through the fuel boost pump bypass valve or the engine fuel-feed system:

(a) Set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to ON.

(b) Let the left center boost pump (override) pump operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 1 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP CENTER TANK - LEFT switch, on the P5 Overhead Panel, to OFF.

(f) If the fuel quantity in the No. 1 tank does not increase and the fuel quantity in the center tank does not decrease, then you corrected the fault.

G. Repair Confirmation (alternative)

(1) Close the fuel tanks that you opened to do the leak detection or repairs. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) If there is no indication of unwanted fuel transfer on subsequent flights, then you corrected the fault.

———————— END OF TASK ————————

815. Unwanted Fuel Transfer from the Center Tank to the No. 2 Tank - Fault Isolation

A. Description

(1) Fuel moved from the center tank to the No. 2 tank without a commanded fuel transfer.

(2) Usually fuel transfer into the No. 2 tank is observed during flight while the boost pumps operate. Fuel transfer from the center tank to the No. 2 tank is usually caused by leakage in the right boost pump bypass valve when it is pressurized by the center tank boost pump (override pump). Unwanted particles (debris) can cause the boost pump bypass valve to leak fuel into No. 2 tank. Even small particles can cause a valve not to seal correctly. This can cause a large quantity of fuel to transfer. Unwanted fuel transfer can also be caused by leakage in the boost pump discharge check valves, other parts of the engine fuel-feed manifold, the fueling manifold or the tank wall.

(3) (SDS SUBJECT 28-21-00)

(4) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Leakage in the boost pump bypass valve

(2) Leakage in the boost pump discharge check valves for one of the No. 2 tank boost pumps

(3) Leakage in the engine fuel-feed manifold

(4) Leakage in the fueling manifold

(5) Leakage in the tank wall (Rib No. 5)

C. Initial Evaluation

(1) Make sure the No. 2 tank contains more than 100 pounds (50 kilograms) of fuel.

NOTE: This will make sure that an increase in No. 2 tank fuel quantity can be measured by the FQIS.

(2) Make sure the center tank contains more than 1000 pounds (460 kilograms) of fuel.

NOTE: This will make sure there is sufficient fuel in the center tank to transfer into the No. 2 tank for troubleshooting.

(3) Make sure the crossfeed valve is closed.

(4) Do these steps to do a check for leakage through the fuel boost pump bypass valve or the engine fuel-feed system:

(a) Set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to ON.

(b) Let the right center boost pump (override) pump operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 2 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to OFF.

(f) If the fuel quantity in the No. 2 tank increases or if the fuel quantity in the center tank decreases, then do the Fault Isolation Procedure below.

(g) If the fuel quantity in the No. 2 tank does not increase and the fuel quantity in the center tank does not decrease, then continue.

(5) If there is no indication of unwanted fuel transfer on subsequent flights, then there was an intermittent fault.

D. Fault Isolation Procedure

WARNING: BE PREPARED TO PUT THE BOOST PUMP IMPELLER IMMEDIATELY BACK INTO ITS POSITION TO STOP FUEL FLOW. IF THERE IS A FUEL LEAK AT THE DISCHARGE CHECK VALVE, FUEL CAN CONTINUOUSLY FLOW FROM THE PUMP.

(1) Do these steps to look for a leak in the AFT boost pump discharge check valve for the No. 2 tank:

(a) Loosen the mounting screws for the aft boost pump impeller. To do it, do this task: Remove the Motor Impeller, AMM TASK 28-22-41-000-801.

(b) Carefully pull the impeller unit away from the boost pump housing to see if there is any fuel leakage from the discharge check valve.

(c) If there is indication of fuel leakage, immediately install the impeller unit that you removed.

(d) If there is no indication of fuel leakage, set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to ON.

NOTE: This applies the pressure of the right center tank boost pump to the AFT boost pump discharge check valve.

(e) If there is indication of leakage, immediately turn off the FUEL PUMP CENTER TANK - RIGHT switch and install the impeller unit that you removed. Do these steps:

1) Replace the aft boost pump discharge check valve for the No. 2 tank.

These are the tasks:

Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801,

Install the Discharge Check Valve, AMM TASK 28-22-71-400-801.

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

(f) If there is no indication of leakage from the aft boost pump discharge check valve, then continue. Re-install the boost pump that you removed and tighten the mounting screws. To do it, do this task: Install the Motor Impeller, AMM TASK 28-22-41-400-801

WARNING: BE PREPARED TO PUT THE BOOST PUMP IMPELLER IMMEDIATELY BACK INTO ITS POSITION TO STOP FUEL FLOW. IF THERE IS A FUEL LEAK AT THE DISCHARGE CHECK VALVE, FUEL CAN CONTINUOUSLY FLOW FROM THE PUMP.

(2) Do these steps to look for a leak in the FWD boost pump discharge check valve for the No. 2 tank:

(a) Loosen the mounting screws for the forward boost pump impeller. To do it, do this task: Remove the Motor Impeller, AMM TASK 28-22-41-000-801.

(b) Carefully pull the impeller unit away from the boost pump housing to see if there is any fuel leakage from the discharge check valve.

(c) If there is indication of fuel leakage, immediately replace the impeller unit.

(d) If there is no indication of fuel leakage, set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to ON.

NOTE: This applies the pressure of the right center tank boost pump to the FWD boost pump discharge check valve.

(e) If there is indication of leakage, immediately turn off the FUEL PUMP CENTER TANK - RIGHT switch and install the impeller unit that you removed. Do these steps:

1) Replace the forward boost pump discharge check valve for the No. 2 tank.

These are the tasks:

Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801,

Install the Discharge Check Valve, AMM TASK 28-22-71-400-801.

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

(f) If there is no indication of leakage, then continue. Re-install the boost pump that you removed and tighten the mounting screws. To do it, do this task: Install the Motor Impeller, AMM TASK 28-22-41-400-801

(3) Do these steps to look for indications of leakage in the fueling manifold and the fuel-feed manifold:

WARNING: OBEY THE FUEL TANK ENTRY PRECAUTIONS. FAILURE TO OBEY THE FUEL TANK ENTRY PRECAUTIONS CAN CAUSE INJURY OR DAMAGE.

(a) Do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(b) Pressurize the engine fuel-feed manifold and the fueling manifold to 4 psig. To do this, do this task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: Do the steps in (AMM TASK 28-22-15-710-801) but open the defuel valve and only pressurize to 4 psig.

(c) Do an inspection of the fuel boost pump bypass valve to see if there is leakage.

1) If there is leakage in the fuel boost pump bypass valve, replace the fuel boost pump bypass valve.

These are the tasks:

Remove the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-000-801,

Install the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-400-801.

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

2) If there is no leakage in the fuel boost pump bypass valve, then continue.

(d) Do an inspection of the full length of the fueling manifold and the couplings of the fuel-feed manifold in the No. 2 tank for indications of leakage.

1) Listen for air leakage or use soap solution if it is necessary.

(e) If you find leakage, repair the problem that you find. To do it, do this task: Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801.

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

a) If the Repair Confirmation is not OK, then continue.

(f) If you do not find leakage, then continue.

(4) Examine the fuel tank sealant on Rib No. 5 (the tank wall between the center tank and the No. 2 tank) for indication of leakage.

(a) If you find indications of leakage, repair the bad sealant. To do it, do this task: Repair of Sealant Leaks in the Fuel Tank Structure, AMM TASK 28-11-00-300-803.

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

E. Repair Confirmation (Recommended)

(1) Close the fuel tanks that you opened to do the leak detection or repairs. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) Make sure the No. 2 tank contains more than 100 pounds (50 kilograms) of fuel.

NOTE: This will make sure that an increase in No. 2 tank fuel quantity can be measured by the FQIS.

(3) Make sure the center tank contains more than 1000 pounds (460 kilograms) of fuel.

NOTE: This will make sure there is sufficient fuel in the center tank to transfer into the No. 2 tank for troubleshooting.

(4) Make sure the crossfeed valve is closed.

(5) Do these steps to make sure there is no leakage through the fuel boost pump bypass valve or the engine fuel-feed system:

(a) Set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to ON.

(b) Let the right center boost pump (override) pump operate for thirty minutes.

(c) Monitor the fuel quantity in the No. 2 tank to see if it increases.

(d) Monitor the fuel quantity in the center tank to see if it decreases.

(e) Set the FUEL PUMP CENTER TANK - RIGHT switch, on the P5 Overhead Panel, to OFF.

(f) If the fuel quantity in the No. 2 tank does not increase and the fuel quantity in the center tank does not decrease, then you corrected the fault.

F. Repair Confirmation (alternative)

(1) Close the fuel tanks that you opened to do the leak detection or repairs. To do it, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802.

(2) If there is no indication of unwanted fuel transfer on subsequent flights, then you corrected the fault.

——————— END OF TASK ———————

816. Refuel Quantity Indicator Flashes - Fault Isolation

A. Description

(1) One of the refuel quantity indicators flashes at an interval of approximately one second and shows the fuel quantity in the applicable tank.

(2) The flashing shows that the fuel quantity (as calculated by the fuel quantity processor) is more than the expected full tank shutoff quantity (total tank volume minus 2 percent expansion volume). The fueling float switch is designed to close the applicable fueling shutoff valve during pressure fueling when the applicable tank has an expansion volume of 2 percent. The fuel quantity processor causes the applicable refuel quantity indicator to flash when it calculates a fuel quantity of more than the full tank shutoff quantity. The design tolerance of the Fuel Quantity Indicating System (FQIS) is +/- 2 percent. Thus, because of variations in fuel density and in the rate of closure of the fueling shutoff valve, it is possible for a tank to contain more (or in a few cases less) than the expected full tank shutoff quantity and cause the fuel quantity display on the refuel panel to flash.

(3) AIRPLANES WITH FUEL QUANTITY PROCESSOR S345A001-010; This condition can occur because it is possible for processor S345A001-010 to read a fuel quantity that is more than the overfill quantity when the actual fuel quantity is less than the overfill quantity. If it is possible, replace processor S345A001-010 with S345A001-011 (for standard 737-600, -700, and -800) or S345A001-015 (for 737-700 Increased Gross Weight or the Boeing Business Jet) before you do more troubleshooting (AMM TASK 28-41-81-000-801).

(4) (SDS SUBJECT 28-21-00)

(5) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) Airplane is not level

(2) Fueling float switch, S574 (No. 1 tank), S576 (center tank), or S578 (No. 2 tank)

(3) Fueling shutoff valve, V44 (No. 1 tank), V45 (No. 2 tank), or V46 (center tank)

(4) Fuel quantity processor unit (FQPU), M1827

(5) Wiring

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-44-11)

(2) (WDM 28-44-11)

E. Initial Evaluation

(1) Make sure the airplane has a ground attitude of 1.14 degrees nose-down pitch and 0.0 degree roll.

NOTE: This attitude permits you to put the maximum quantity of fuel in the tanks.

(2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the FQIS BITE test shows a maintenance message, then do the Fault Isolation procedure below.

(3) Do the pressure refueling procedure for the applicable tank. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(a) Make sure the other two fueling shutoff valves are closed.

(b) Monitor the fuel quantity in the applicable tank.

(c) Make sure automatic shutoff occurs (the VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity increases to its full capacity (approximately 30,000 pounds (13,600 kilograms) for the center tank, 9000 pounds (4090 kilograms) for the No. 1 or No. 2 tank).

1) If automatic shutoff does not occur, then, do this task: Fuel Spill at Surge Tank - Fault Isolation, 28-21 TASK 801.

2) If the automatic shutoff occurs, then continue.

(4) Look at the P15 refueling panel with the following access panel fully open and power on.

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(a) If the refuel quantity indicator for the applicable tank flashes, then do the Fault Isolation Procedure below.

(b) If the refuel quantity indicator does not flash and shows the correct fuel quantity, then there was an intermittent fault.

F. Fault Isolation Procedure

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

(1) Do these steps to look for a problem with the FQIS:

(a) If the FQIS BITE test showed a maintenance message in the Initial Evaluation, then do the corrective action for that message to correct the fault.

1) Look at the refuel indicators to see if they show the fuel quantity correctly.

2) If the refuel indicators show the fuel quantity correctly, then you corrected the fault.

a) If it is necessary, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802

b) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

3) If the refuel indicators flash or do not show the fuel quantity correctly, then continue.

(b) If the FQIS BITE test did not show a maintenance message, then continue.

(2) If the VALVE POSITION LIGHT for the fueling shutoff valve did not go off, then do these steps:

(a) Replace the fueling float switch for the applicable tank, S574 (No. 1 tank), S576 (center tank), or S578 (No. 2 tank).

These are the tasks:

Float Switch Removal, AMM TASK 28-21-71-000-801 or Float Switch Removal, AMM TASK 28-21-71-020-801,

Float Switch Installation, AMM TASK 28-21-71-400-801 or Float Switch Installation, AMM TASK 28-21-71-400-802.

(b) Examine the mounting bracket for the fueling float switch to see if it is bent or at the incorrect level.

1) Repair the mounting bracket if it is necessary.

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

(3) If the applicable VALVE POSITION LIGHT went off, then do these steps:

(a) Replace the fueling shutoff valve.

These are the tasks:

Remove the Fueling Shutoff Valve, AMM TASK 28-21-51-000-801,

Install the Fueling Shutoff Valve, AMM TASK 28-21-51-400-801.

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

G. Repair Confirmation

(1) Obey all precautions for pressure refueling (AMM TASK 12-11-00-650-801).

(2) Do the pressure refueling procedure for the applicable tank. To do it, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(a) Make sure the other two fueling shutoff valves are closed.

(b) Monitor the fuel quantity in the applicable tank.

(c) Make sure automatic shutoff occurs (the VALVE POSITION LIGHT goes off and all fuel flow stops) before the fuel quantity increases to its full capacity (approximately 30,000 pounds (13,600 kilograms) for the center tank, 9000 pounds (4090 kilograms for the No. 1 or No. 2 tank).

1) If the automatic shutoff occurs, then you corrected the fault.

2) Look at the refuel indicators to see if they show the fuel quantity correctly.

3) If the refuel indicators show the fuel quantity correctly (without flashing), then you corrected the fault.

a) If it is necessary, do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802

b) Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(3) Remove electrical power if it is not necessary for other tasks (AMM TASK 24-22-00-860-812).

———————— END OF TASK ————————

817. Lower Refuel Quantity Indicator Display Shows the Message

A. Description

(1) The upper display of one or more of the refuel quantity indicators is blank. The related lower display shows the message "ARINC".

(2) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) The wiring from the Fuel Quantity Processor Unit (FQPU), M1827 to the Refueling Panel, P15

(2) Fuel quantity processor unit (FQPU), M1827

C. Circuit Breakers

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

(a) These are the circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	3	C00032	FUEL FUELING CONT
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (SSM 28-44-11)

(3) (WDM 28-41-11)

(4) (WDM 28-44-11)

E. Initial Evaluation

(1) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) If the upper display of one or more of the indicators is blank and the lower display shows the message "ARINC", then do the Fault Isolation Procedure below.

(3) If the upper display of each of the indicators shows the correct fuel quantity, then do these steps:

(a) Set the FUELING INDICATION TEST SWITCH on the P15 Fueling Control Panel to the TEST GAGES position.

(b) On each of the refuel quantity indicators do a check to see if all segments on the display come on for approximately two seconds and then go off for two seconds alternately until the FUELING INDICATION TEST SWITCH is released.

NOTE: If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(c) If the upper display of one or more of the indicators is blank and the lower display shows the message "ARINC", then do the Fault Isolation Procedure below.

(d) If all segments on each display come on for approximately two seconds and then go off for approximately two seconds, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) For a problem shown on the No. 1 tank refuel quantity indicator, do this check of the wiring:

(a) Remove the No. 1 tank refuel indicator, N193. To remove it, do this task: Refuel Quantity Indicator Removal, AMM TASK 28-41-61-000-801.

(b) Do a check for an open circuit from pin 17 on connector D11318 for the No. 1 tank refuel indicator to pin 24 on connector D11306.

(c) Do a check for an open circuit from pin 18 on connector D11318 for the No. 1 tank refuel indicator to pin 25 on connector D11306.

(d) If you find a problem with the wiring, repair the problem.

1) Re-install the fueling indicator for the No. 1 tank again. To do this, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

2) Do the Repair Confirmation procedure below.

(e) If you do not find a problem with the wiring, then replace the fuel quantity processor.

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

1) Do the Repair Confirmation procedure below.

(2) For a problem shown on the No. 2 tank refuel quantity indicator, do this check of the wiring:

(a) Remove the No. 2 tank refuel indicator, N194. To remove it, do this task: Refuel Quantity Indicator Removal, AMM TASK 28-41-61-000-801.

(b) Do a check for an open circuit from pin 17 on connector D11320 for the No. 2 tank refuel indicator to pin 24 on connector D11306.

(c) Do a check for an open circuit from pin 18 on connector D11320 for the No. 2 tank refuel indicator to pin 25 on connector D11306.

(d) If you find a problem with the wiring, repair the problem.

1) Re-install the No. 2 tank fueling indicator. To do this, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

2) Do the Repair Confirmation procedure below.

(e) If you do not find a problem with the wiring, then replace the fuel quantity processor.

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

1) Do the Repair Confirmation procedure below.

(3) For a problem shown on the center tank refuel quantity indicator, do this check of the wiring:

(a) Remove the center tank refuel indicator, N195. To remove it, do this task: Refuel Quantity Indicator Removal, AMM TASK 28-41-61-000-801.

(b) Do a check for an open circuit from pin 17 on connector D11322 for the center tank refuel indicator to pin 24 on connector D11306.

(c) Do a check for an open circuit from pin 18 on connector D11322 for the center tank refuel indicator to pin 25 on connector D11306.

(d) If you find a problem with the wiring, repair the problem.

1) Re-install the center tank fueling indicator. To do this, do this task: Refuel Quantity Indicator Installation, AMM TASK 28-41-61-400-801

2) Do the Repair Confirmation procedure below.

(e) If you do not find a problem with the wiring, then replace the fuel quantity processor.

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

1) Do the Repair Confirmation procedure below.

G. Repair Confirmation

(1) If the upper display of each of the indicators shows the correct fuel quantity, then do these steps:

(a) Set the FUELING INDICATION TEST SWITCH on the P15 Fueling Control Panel to the TEST GAGES position.

(b) On each of the refuel quantity indicators do a check to see if all segments on the display come on for approximately two seconds and then go off for two seconds alternately until the FUELING INDICATION TEST SWITCH is released.

NOTE: If the SWITCH is held for more than twenty (20) seconds, the test stops automatically and the indicators go back to indicating mode.

(c) If all segments on each display come on for approximately two seconds and then go off for approximately two seconds, then you corrected the fault.

——————— END OF TASK ———————

801. Center Tank Left Fuel Pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) The LOW PRESSURE light for the left center tank boost pump (override pump) is on. This means that the left center tank boost pump is not pressurizing the fuel feed manifold.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(a) If the two LOW PRESSURE lights for the center tank come on, the FUEL light on the pilots master caution panel will come on.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(b) If either one or both LOW PRESSURE lights for the center tank stay on for at least 10 seconds, then the FUEL light on the pilots master caution panel will come on.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(2) This fault condition is expected to occur during flight when the center tank becomes empty. The pilot usually turns off the center tank boost pumps at this time. The low pressure lights for the center tank boost pumps should go off when the switches for the center tank boost pumps are in the OFF position.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(3) This fault condition is expected to occur during flight when the center tank becomes empty. The auto shutoff system will turn off the center boost pumps after a 15 second time delay if the switches for the center boost pumps are in the ON position. The pilot usually turns off the center tank boost pumps at this time. The low pressure lights for the center tank boost pumps should go off when the switches for the center tank boost pumps are in the OFF position.

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(4) This fault condition is expected to occur during flight when the center tank becomes empty. The pilot usually turns off the center tank boost pumps at this time. If the center tank boost pump continues to operate when it has been commanded off, a series connected pump relay, R962, will provide the means of inhibiting the fuel pump through redundancy in turning off the pump.

HAP 001-013, 015-026 PRE SB 737-28-1172

(5) When the center tank has only a small quantity of fuel (approximately 3000 pounds (1360 kg) or less), it is possible for the low pressure light for the left center boost pump to come on during flight sooner than expected.

(a) The left center boost pump inlet is installed on the left side of the center tank immediately aft of spanwise beam No. 1 (the spanwise beam immediately forward of the rear spar). The right center boost pump is installed on the right side of the center tank immediately forward of the rear spar. Thus, the left center boost pump inlet is substantially forward of the right center boost pump inlet. In a landing attitude, the right center tank boost pump inlet becomes uncovered when the center tank fuel quantity decreases to approximately 1800 pounds (810 kg). The left center boost pump inlet stays covered when the center tank has a fuel quantity less than approximately 1800 pounds (810 kg) and the effective pitch of the airplane is negative. Negative pitch usually occurs during landings and braking situations on the ground. The left center boost pump inlet stays covered in this situation while the right center boost pump becomes uncovered because it is further aft.

(b) Thus, on takeoff, when the center tank has only a small quantity of fuel (approximately 3000 pounds (1360 kg) or less), this can cause the left center boost pump inlet to be uncovered. This is because the left center boost pump inlet is further forward in the center tank. The right center boost pump inlet stays covered in this situation because it is further aft. Thus, with low fuel in the center tank, it is possible for the low pressure light for the left center boost pump to come on unexpectedly during takeoff or other times when the airplane has a large positive pitch.

HAP ALL

(6) This fault condition can also occur because the center boost pump has lost its prime. If the center tank is filled to 14000 pounds (6400 kilograms), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(7) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the left center tank boost pump, S154

(2) Center tank left boost pump relay, R54

(3) Left center tank boost pump (override pump), M234

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(4) Left auto shutoff time delay (TD) relay, R934

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(5) Center tank left secondary relay, R962

HAP ALL

(6) Wiring

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT

HAP ALL

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(3) If the FUEL BOOST PUMP CENTER TANK LEFT (91D6) circuit breaker is open, then, do this task: Center Tank, Left Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 817.

(4) If the FUEL BOOST PUMP CENTER TANK LEFT (91D6) circuit breaker is closed, then continue.

(5) Make sure the center tank has a minimum of 14000 pounds (6400 kilograms) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

(6) If it is not possible to add 14000 pounds (6400 kilograms) to the center tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the left boost pump GFI relay, R54:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - Left Boost Pump GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the left boost pump GFI relay, R54, is not out and you cannot see the white band, then continue.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201 (Continued)

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	3	C01637	BOOST PMP CTR TNK L AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

D	7	C01639	BOOST PUMP CTR TNK L AUTO SHUT OFF-AC

HAP ALL

(9) On the P5 forward overhead panel, set the L CTR FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the left center boost pump comes on and then goes off (after a maximum of 90 seconds), then there was an intermittent fault.

NOTE: Refer to the Description section for a possible cause of the intermittent fault.

(b) If the LOW PRESSURE light for the left center boost pump comes on and stays on (for a minimum of 90 seconds), then do these steps:

1) With the L CTR FUEL PUMP switch ON, listen to the left center tank boost pump and touch it to make sure it operates.

2) If the left center boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the left center boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - Left Boost Pump GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure the center tank has a minimum of 14,000 lb (6350 kg) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

WARNING: OBEY THE PROCEDURE FOR THE INSTALLATION OF THE DOWNLOCK PINS. IF YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO THE UP POSITION, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) If the downlock pins are not installed, do this task: AMM TASK 32-00-01-480-801.

(5) Get access to the left fuel boost pump for the center tank (AMM TASK 28-22-41-000-801).

(6) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(7) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D802, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D802, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D802, is disconnected.

(d) Make sure the RESET button on the left boost pump GFI relay, R54, is pushed in.

(e) On the P5 Overhead Panel, set the L CTR FUEL PUMP switch to ON.

(f) After five minutes, set the L CTR FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the left boost pump GFI relay, R54, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the left center boost pump, M234, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the left center boost pump, M234.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the left center boost pump, M234.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D802.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

(1) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(a) This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

1) Left boost pump for the center tank, M234

HAP ALL

2) Left boost pump relay for the center tank, R54

3) Left boost pump switch for the center tank, S8

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

4) Left auto shutoff time delay (TD) relay, R934

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

5) Center tank left secondary relay, R962

HAP ALL

6) Wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(2) Do this check of the left boost pump for the center tank, M234:

(a) Make sure the L CTR FUEL PUMP switch is OFF.

(b) Disconnect connector D802 from the left center boost pump (WDM 28-23-11).

(c) Set the L CTR FUEL PUMP switch to ON.

(d) Do a check for 3-phase 208 VAC power between pins 1, 2, and 3 of connector D802 (WDM 28-23-11).

(e) If there is 3-phase 208 VAC power between pins 1, 2, and 3 of connector D802, then do these steps:

1) Replace the motor impeller unit of the left boost pump for the center tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(f) If there is not 3-phase 208 VAC between pins 1, 2, and 3 of D802, then continue. Set the L CTR FUEL PUMP switch to OFF. Reconnect the connector D802.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(3) Do these checks of the left boost pump relay for the center tank, R54 and the switch for the left center tank boost pump, S8 (SSM 28-23-11):

(a) Make sure the L CTR FUEL PUMP switch is ON.

(b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the left boost pump relay, R54.

NOTE: The left boost pump relay for the center tank, R54 is on the P91 panel in the electronic equipment compartment.

(c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Replace the left boost pump switch for the center tank, S8.

NOTE: The left boost pump switch for the center tank, S8, is on the P5 forward overhead panel in the flight compartment.

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

3) If the Repair Confirmation is not OK, then do these steps:

a) Do a check for an open circuit from pin 35, connector D626 on the P5-2 panel to pin X2 of relay R54.

b) Repair the wiring.

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

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12286 of the relay R54, then do these steps:

1) Replace the relay R54.
2) Do the Repair Confirmation at the end of this task.
3) If the Repair Confirmation is not OK, then continue.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(4) Do these checks of the left boost pump relay for the center tank, R54, the switch for the left center tank boost pump, S8, and the left auto shutoff TD relay, R934 (SSM 28-23-11):

(a) Make sure the L CTR FUEL PUMP switch is ON.

(b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the left boost pump relay, R54.

NOTE: The left boost pump relay for the center tank, R54 is on the P91 panel in the electronic equipment compartment.

(c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	3	C01637	BOOST PMP CTR TNK L AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

Row	Col	Number	Name
D	7	C01639	BOOST PUMP CTR TNK L AUTO SHUT OFF-AC

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

2) Disconnect the connector D626 from the P5-2 overhead panel in the flight compartment.
3) Do a voltage check for 115 VAC at pin 35 of connector D626.
a) If there is 115 VAC at pin 35, replace the left boost pump switch for the center tank, S8.

NOTE: The left boost pump switch for the center tank, S8, is on the P5 forward overhead panel in the flight compartment.

b) If there is not 115 VAC at pin 35, replace the left auto shutoff TD relay, R934, in the J20 junction box.

4) Connect the connector D626 to the P5-2 overhead panel.
5) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	3	C01637	BOOST PMP CTR TNK L AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

Row	Col	Number	Name
D	7	C01639	BOOST PUMP CTR TNK L AUTO SHUT OFF-AC

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

6) Do the Repair Confirmation at the end of this task.
7) If the Repair Confirmation is not OK, then do these steps:
a) If there was 115 VAC at pin 35 of connector D626 from the P5-2 overhead panel in the flight compartment, do a check of the pin and wiring from pin 34 of connector D626 to ground.

b) If there was not 115 VAC at pin 35 of connector D626, do a check for an open circuit from pin 35, connector D626 on the P5-2 panel to pin X2 of relay R54.

c) Repair the wiring.

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

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12286 of the relay R54, then do these steps:

1) Replace the relay R54.

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

3) If the Repair Confirmation is not OK, then continue.

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(5) Do these steps for the center tank left secondary relay:

(a) Replace the center tank left secondary relay, R962.

(b) Do this task: Center Tank Fuel Boost Pump Power Failed On - Functional Test, AMM TASK 28-22-00-720-806.

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

(d) If the Repair Confirmation is not OK, then continue.

HAP ALL

(6) Do this check of the wiring:

(a) Make sure the L CTR FUEL PUMP switch is OFF.

(b) Disconnect the connector D802 from the left boost pump for the center tank.

HAP 031-036 PRE SB 737-28A1248

(c) Do a check for an open circuit between these pins on D802 and these pins on D12286 for the boost pump center left relay, R54:

D802		D12286
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(d) Do a check for an open circuit between these pins on D802 and these pins on R962:

D802		R962
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

(e) Do a check for an open circuit between these pins on R962 and these pins on D12286 for the boost pump center left relay, R54:

R962		D12286
pin A2	- - - - - - - - - - - - - - - - - -	pin A1
pin B2	- - - - - - - - - - - - - - - - - -	pin B1
pin C2	- - - - - - - - - - - - - - - - - -	pin C1

HAP ALL

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

1) Repair the wiring.
2) Re-connect connector D802.
3) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

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

NOTE: This procedure isolates the fault to one of these possible causes:

- low pressure switch, S154
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S154:

NOTE: The low pressure switch, S154 is on the rear spar of the wing center section in the left main landing gear wheel well.

(a) Make sure the L CTR FUEL PUMP switch is ON.
(b) Disconnect the connector D876 from the low pressure switch.
(c) If the LOW PRESSURE light for the center boost pump goes off, then do these steps:

1) Replace the low pressure switch, S154.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

2) Do the Repair Confirmation at the end of this task.
3) If the Repair Confirmation is not OK, then continue.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the L CTR FUEL PUMP switch is ON.
(b) Do a check for a short circuit from pin 3, connector D876 to pin 2 (ground), connector D876.
(c) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.
2) Re-connect connector D876.
3) Do the Repair Confirmation at the end of this task.
4) If the Repair Confirmation is not OK, then continue.

(d) If there is not a short circuit from pin 3 to pin 2 (ground), then continue. Re-connect connector D876.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the left boost pump GFI relay, R54, is not out and you cannot see the white band.

HAP ALL

(2) Set the L CTR FUEL PUMP switch to ON.

(a) If the low pressure indication light for the left center boost pump comes on and then goes off, then you corrected the fault.

(b) Set the L CTR FUEL PUMP switch to OFF.

—————— END OF TASK ——————

802. Center Tank Right Fuel Pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) The LOW PRESSURE light for the right center tank boost pump (override pump) is on. This means that the right center tank boost pump is not pressurizing the fuel feed manifold.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(a) If the two LOW PRESSURE lights for the center tank come on, then the FUEL light on the pilots master caution panel will come on.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(b) If either one or both LOW PRESSURE lights for the center tank come on for at least 10 seconds, then the FUEL light on the pilots master caution panel will come on.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(2) This fault condition is expected to occur during flight when the center tank becomes empty. The pilot usually turns off the center tank boost pumps at this time. The low pressure lights for the center tank boost pumps should go off when the switches for the center tank boost pumps are in the OFF position.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(3) This fault condition is expected to occur during flight when the center tank becomes empty. The auto shutoff system will turn off the center boost pumps after a 15 second time delay if the switches for the center boost pumps are in the ON position. The pilot usually turns off the center tank boost pumps at this time. The low pressure lights for the center tank boost pumps should go off when the switches for the center tank boost pumps are in the OFF position.

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(4) This fault condition is expected to occur during flight when the center tank becomes empty. The pilot usually turns off the center tank boost pumps at this time. If the center tank boost pump continues to operate when it has been commanded off, a series connected pump relay, R963, will provide the means of inhibiting the fuel pump through redundancy in turning off the pump.

HAP 001-013, 015-026 PRE SB 737-28-1172

(5) When the center tank has only a small quantity of fuel (approximately 3000 pounds (1360 kg) or less), it is possible for the low pressure light for the right center boost pump to come on during flight sooner than expected.

(a) The left center boost pump inlet is installed on the left side of the center tank immediately aft of spanwise beam No. 1 (the spanwise beam immediately forward of the rear spar). The right center boost pump is installed on the right side of the center tank immediately forward of the rear spar. Thus, the right center boost pump inlet is substantially aft of the left center boost pump inlet. In level flight, the two boost pump inlets become uncovered when the center tank fuel quantity decreases to approximately 250 pounds (110 kg). The left center boost pump inlet is installed further forward in the center tank to permit the left boost pump to supply fuel from the center tank with low fuel in the center tank (approximately 1800 pounds [810 kg] or less). Negative effective pitch usually occurs during landings and braking situations on the ground. The left center boost pump inlet stays covered in this situation while the right center boost pump becomes uncovered because it is further aft.

(b) Thus, during landing, when the center tank has only a small quantity of fuel (approximately 1000 pounds (450 kg) or less), this can cause the right center boost pump inlet to be uncovered. This is because the right center boost pump inlet is further aft in the center tank. The left center boost pump inlet usually stays covered in this situation because it is further forward. Thus, with low fuel in the center tank, it is possible for the low pressure light for the right center boost pump to come on unexpectedly during landing or other times when the airplane has a negative effective pitch.

HAP ALL

(6) This fault condition can also occur because the center boost pump has lost its prime. If the center tank is filled to 14000 pounds (6400 kilograms), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(7) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the right center tank boost pump, S155

(2) Center tank right boost pump relay, R55

(3) Right center tank boost pump (override pump), M235

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(4) Right auto shutoff time delay (TD) relay, R935

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(5) Center tank right secondary relay, R963

HAP ALL

(6) Wiring

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(3) If the FUEL BOOST PUMP CENTER TANK RIGHT (92D6) circuit breaker is open, then, do this task: Center Tank, Right Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 818.

(4) If the FUEL BOOST PUMP CENTER TANK RIGHT (92D6) circuit breaker is closed, then continue.

(5) Make sure the center tank has a minimum of 14000 pounds (6400 kilograms) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

(6) If it is not possible to add 14000 pounds (6400 kilograms) to the center tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the right boost pump GFI relay, R55:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - Right Boost Pump GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the right boost pump GFI relay, R55, is not out and you cannot see the white band, then continue.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	7	C01638	BOOST PMP CTR TNK R AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

E	7	C01640	BOOST PUMP CTR TNK R AUTO SHUT OFF-AC

HAP ALL

(9) On the P5 forward overhead panel, set the R CTR FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the right center boost pump comes on and then goes off (after a maximum of 90 seconds), then there was an intermittent fault.

NOTE: Refer to the Description section for a possible cause of the intermittent fault.

(b) If the LOW PRESSURE light for the right center boost pump comes on and stays on (for a minimum of 90 seconds), then do these steps:

1) With the R CTR FUEL PUMP switch at ON, listen to the right center tank boost pump and touch it to make sure it operates.

2) If the right center boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the right center boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - Right Boost Pump GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure the center tank has a minimum of 14,000 lb (6350 kg) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

WARNING: OBEY THE PROCEDURE FOR THE INSTALLATION OF THE DOWNLOCK PINS. IF YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO THE UP POSITION, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(4) If the downlock pins are not installed, do this task: AMM TASK 32-00-01-480-801.

(5) Get access to the right fuel boost pump for the center tank (AMM TASK 28-22-41-000-801).

(6) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(7) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D804, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D804, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D804, is disconnected.

(d) Make sure the RESET button on the right boost pump GFI relay, R55, is pushed in.

(e) On the P5 Overhead Panel, set the R CTR FUEL PUMP switch to ON.

(f) After five minutes, set the R CTR FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the right boost pump GFI relay, R55, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the right center boost pump, M235, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the right center boost pump, M235.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the right center boost pump, M235.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D804.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

(1) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(a) This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

1) Right boost pump for the center tank, M235

HAP ALL

2) Right boost pump relay for the center tank, R55

3) Right boost pump switch for the center tank, S9

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

4) Right auto shutoff time delay (TD) relay, R935

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

5) Center tank right secondary relay, R963

HAP ALL

6) Wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(2) Do this check of the right boost pump for the center tank, M235:

(a) Make sure the R CTR FUEL PUMP switch is OFF.

(b) Disconnect connector D804 from the right center boost pump (WDM 28-23-11).

(c) Set the R CTR FUEL PUMP switch to ON.

(d) Do a check for 3-phase 208 VAC between pins 1, 2, and 3 of connector D804 (WDM 28-23-11).

(e) If there is 3-phase 208 VAC between pins 1, 2, and 3 of connector D804, then do these steps:

1) Replace the motor impeller unit of the right boost pump for the center tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(f) If there is not 3-phase 208 VAC between pins 1, 2, and 3 of D804, then continue. Set the R CTR FUEL PUMP switch to OFF. Reconnect the connector D804.

HAP 001-013, 015-026, 028-030 PRE SB 737-28A1206

(3) Do these checks of the right boost pump relay for the center tank, R55 and the switch for the right center tank boost pump, S9 (SSM 28-23-11):

(a) Make sure the R CTR FUEL PUMP switch is set to ON.

(b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the center tank boost pump relay, R55.

NOTE: The right boost pump relay for the center tank, R55 is on the P92 panel in the Electronic Equipment Compartment.

(c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Replace the right boost pump switch for the center tank, S9.

NOTE: The right boost pump switch for the center tank, S9, is on the P5 forward overhead panel in the flight compartment.

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

3) If the Repair Confirmation procedure is not OK, then do these steps:

a) Do a check for an open circuit from pin 35, connector D628 on the P5-2 panel to pin X2 of relay R55.

b) Repair the wiring.

c) Do the Repair Confirmation procedure at the end of this task.

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12288 of the relay R55, then do these steps:

1) Replace the relay, R55.

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

3) If the Repair Confirmation procedure is not OK, then continue.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

(4) Do these checks of the right boost pump relay for the center tank, R55, the switch for the right center tank boost pump, S9, and the right auto shutoff TD relay, R935 (SSM 28-23-11):

(a) Make sure the R CTR FUEL PUMP switch is ON.

(b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the right boost pump relay, R55.

NOTE: The right boost pump relay for the center tank, R55 is on the P92 panel in the electronic equipment compartment.

(c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	7	C01638	BOOST PMP CTR TNK R AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

Row	Col	Number	Name
E	7	C01640	BOOST PUMP CTR TNK R AUTO SHUT OFF-AC

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

2) Disconnect the connector D628 from the P5-2 overhead panel in the flight compartment.

3) Do a voltage check for 115 VAC at pin 35 of connector D628.

a) If there is 115 VAC at pin 35, replace the right boost pump switch for the center tank, S9.

NOTE: The right boost pump switch for the center tank, S9, is on the P5 forward overhead panel in the flight compartment.

b) If there is not 115 VAC at pin 35, replace the right auto shutoff TD relay, R935, in the J4 junction box.

4) Connect the connector D628 to the P5-2 overhead panel.

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	7	C01638	BOOST PMP CTR TNK R AUTO SHUT OFF-DC

HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

E	7	C01640	BOOST PUMP CTR TNK R AUTO SHUT OFF-AC

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

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

7) If the Repair Confirmation is not OK, then do these steps:

a) If there was 115 VAC at pin 35 of connector D628 from the P5-2 overhead panel in the flight compartment, do a check of the pin and wiring from pin 34 of connector D628 to ground.

b) If there was not 115 VAC at pin 35 of connector D628, do a check for an open circuit from pin 35, connector D628 on the P5-2 panel to pin X2 of relay R55.

c) Repair the wiring.

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

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12288 of the relay R55, then do these steps:

1) Replace the relay R55.

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

3) If the Repair Confirmation is not OK, then continue.

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(5) Do these steps for the center tank right secondary relay:

(a) Replace the center tank right secondary relay, R963.

(b) Do this task: Center Tank Fuel Boost Pump Power Failed On - Functional Test, AMM TASK 28-22-00-720-806.

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

(d) If the Repair Confirmation is not OK, then continue.

HAP ALL

(6) Do this check of the wiring:

(a) Make sure the R CTR FUEL PUMP switch is OFF.

(b) Disconnect the connector D804 from the right boost pump for the center tank.

HAP 031-036 PRE SB 737-28A1248

(c) Do a check for an open circuit between these pins on D804 and these pins on D12288 for the boost pump center right relay, R55:

D804		D12288
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

HAP 031-036 PRE SB 737-28A1248 (Continued)

HAP 001-013, 015-026, 028-030, 037-054, 101-999; HAP 031-036 POST SB 737-28A1248

(d) Do a check for an open circuit between these pins on D804 and these pins on R963:

D804		R963
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

(e) Do a check for an open circuit between these pins on R963 and D12288 for the boost pump center right relay, R55:

R963		D12288
pin A2	- - - - - - - - - - - - - - - - - -	pin A1
pin B2	- - - - - - - - - - - - - - - - - -	pin B1
pin C2	- - - - - - - - - - - - - - - - - -	pin C1

HAP ALL

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

1) Repair the wiring.
2) Reconnect connector D804.
3) Do the Repair Confirmation procedure at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

NOTE: You must do the Initial Evaluation before you do this Fault Isolation Procedure.

This procedure isolates the fault to one of these possible causes:

- low pressure switch, S155
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S155:

NOTE: The low pressure switch, S155 is on the rear spar of the wing center section in the right main landing gear wheel well.

(a) Make sure the R CTR FUEL PUMP switch is ON.

(b) Disconnect the connector D878 from the low pressure switch.

(c) If the LOW PRESSURE light for the right center boost pump goes off, then do these steps:

1) Replace the low pressure switch, S155.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

2) Do the Repair Confirmation at the end of this task.
3) If the Repair Confirmation is not OK, then continue.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the R CTR FUEL PUMP switch is ON.

(b) Do a check for a short circuit from pin 3, connector D878 to pin 2 (ground), connector D878.

(c) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.
2) Re-connect connector D878.
3) Do the Repair Confirmation at the end of this task.
4) If the Repair Confirmation is not OK, then continue.

(d) If there is not a short circuit from pin 3 to pin 2 (ground), then continue. Reconnect connector D878.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the right boost pump GFI relay, R55, is not out and you cannot see the white band.

HAP ALL

(2) On the P5-2 panel, set the R CTR FUEL PUMP switch to ON.

(a) If the low pressure indication light for the right center boost pump comes on and then goes off, then you corrected the fault.

(b) Set the R CTR FUEL PUMP switch to OFF.

——————— END OF TASK ———————

803. No. 1 Tank AFT pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) On the P5 panel, the No. 1 tank AFT LOW PRESSURE light is on. This means that the No. 1 tank aft boost pump is not pressurizing the fuel feed manifold. When the two low pressure lights for the No. 1 tank come on, the FUEL light on the master caution panel also comes on.

(2) This LOW PRESSURE light is expected to be on when the AFT boost pump for the No. 1 tank is off.

(3) This fault condition can also occur because the No. 1 tank aft boost pump has lost its prime. If the No. 1 tank is filled to 500 lb (227 kg), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(4) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the tank No. 1 aft boost pump, S150

(2) Tank No. 1 Aft boost pump relay, R18

(3) Tank No. 1 aft boost pump, M46

(4) Wiring

(5) The wiring or logic in the P5-2 module

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	11	C00313	INDICATOR MASTER DIM SECT 1
F	12	C00318	INDICATOR MASTER DIM SECT 6

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(3) If the FUEL BOOST PUMP TANK 1 AFT (92D2) circuit breaker is open, then, do this task: No. 1 Tank, Aft Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 814.

(4) If the FUEL BOOST PUMP TANK 1 AFT (92D2) circuit breaker is closed, then continue.

(5) Make sure the No. 1 tank has a minimum of 500 lb (227 kg) of fuel.

NOTE: This step makes sure that the boost pump is primed correctly.

(6) If it is not possible to add 500 lb (227 kg) to the No. 1 tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the BOOST PUMP TANK 1 AFT GFI relay, R18:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - BOOST PUMP TANK 1 AFT GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the BOOST PUMP TANK 1 AFT GFI relay , R18, is not out and you cannot see the white band, then continue.

HAP ALL

(8) On the P5 forward overhead panel, set the AFT 1 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the aft boost pump for the No. 1 tank goes off (after a maximum of 90 seconds), then there was an intermittent fault.

(b) If the LOW PRESSURE light for the aft boost pump for the No. 1 tank stays on (for a minimum of 90 seconds), then do these steps:

1) With the AFT 1 FUEL PUMP switch at ON, listen to the aft boost pump for the No. 1 tank and touch it to make sure it operates.

2) If the boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - BOOST PUMP TANK 1 AFT GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure there is minimum of 500 lb (227 kg) of fuel in the No. 1 tank.

NOTE: This step makes sure that the boost pump is correctly primed.

(4) Get access to the aft boost pump for the No. 1 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D70, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D70, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D70, is disconnected.

(d) Make sure the RESET button on the BOOST PUMP TANK 1 AFT GFI relay, R18, is pushed in.

(e) On the P5 Overhead Panel, set the AFT 1 FUEL PUMP switch to ON.

(f) After five minutes, set the AFT 1 FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the BOOST PUMP TANK 1 AFT GFI relay, R18, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the No. 1 aft boost pump, M46, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the aft boost pump, M46, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the aft boost pump, M46, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D70.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

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

NOTE: This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

- aft boost pump for the No. 1 tank, M46

HAP ALL

- aft boost pump relay for the No. 1 tank, R18
- aft boost pump switch for the No. 1 tank, S4
- wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(1) Do this check of the aft boost pump for the No. 1 tank, M46:
   (a) Make sure the AFT 1 FUEL PUMP switch is OFF.
   (b) Disconnect connector D70 from the aft boost pump for the No. 1 tank (WDM 28-23-11).
   (c) Set the AFT 1 FUEL PUMP switch to ON.
   (d) Do a check for 3-phase 208 VAC between pins 1, 2, and 3 of connector D70 (WDM 28-23-11).
   (e) If there is 3-phase 208 VAC between pins 1, 2, and 3 of connector D70, then do these steps:
      1) Replace the motor impeller unit of the aft boost pump for the No. 1 tank.

         These are the tasks:

         Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

         Install the Motor Impeller, AMM TASK 28-22-41-400-801.
      2) Do the Repair Confirmation at the end of this task.
   (f) If there is not 3-phase 208 VAC between pins 1, 2, and 3 of D70, then continue. Set the AFT 1 FUEL PUMP switch to OFF. Reconnect the connector D70.

HAP ALL

(2) Do these checks of the aft boost pump relay for the No. 1 tank, R18, and the switch for the No. 1 tank aft boost pump, S4 (SSM 28-23-11):
   (a) Make sure the AFT 1 FUEL PUMP switch is set to ON.
   (b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the aft boost pump relay for the No. 1 tank, R18.

      NOTE: The aft boost pump relay for the No. 1 tank, R18, is on the P92 panel in the Electronic Equipment compartment.
   (c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:
      1) Replace the aft boost pump switch for the No. 1 tank, S4.

         NOTE: The aft boost pump switch for the No. 1 tank, S4, is on the P5 forward overhead panel in the flight compartment.
      2) Do the Repair Confirmation at the end of this task.
      3) If the Repair Confirmation is not OK, then do these steps:
         a) Do a check for an open circuit from pin 37, connector D628 on the P5-2 panel to pin X2 of relay R18.
         b) Do a check of the wiring for a ground or loose pin at pin 36, connector D628 on the P5-2 panel.
         c) Repair the wiring.
         d) Do the Repair Confirmation at the end of this task.

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12278 of the relay R18, then do these steps:

1) Replace the relay R18.

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

3) If the Repair Confirmation procedure is not OK, then continue.

(3) Do this check of the wiring:

(a) Make sure the AFT 1 FUEL PUMP switch is OFF.

(b) Disconnect the connector D70 from the aft boost pump for the No. 1 tank.

(c) Do a check for an open circuit between these pins on D70 and these pins on D12278 for the boost pump tank 1 relay, R18:

D70		D12278
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

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

1) Repair the wiring.

2) Reconnect connector D70.

3) Do the Repair Confirmation procedure at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

NOTE: You must do the Initial Evaluation before you do this Fault Isolation Procedure.

This procedure isolates the fault to one of these possible causes:

- low pressure switch, S150
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S150:

NOTE: The low pressure switch, S150 is on the rear spar in the left main landing gear wheel well.

(a) Make sure the AFT 1 FUEL PUMP switch is ON.

(b) Disconnect the connector D868 from the low pressure switch.

(c) If the LOW PRESSURE light for the No. 1 tank aft boost pump goes off, then do these steps:

1) Replace the low pressure switch, S150.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

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

3) If the Repair Confirmation is not OK, then continue.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the AFT 1 FUEL PUMP switch is ON.

(b) Do a check for a short circuit from pin 3, connector D868 to pin 2 (ground), connector D868.

(c) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.

2) Re-connect connector D868.

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

4) If the Repair Confirmation is not OK, then continue.

(d) If there is not a short circuit from pin 3 to pin 2 (ground), then continue. Reconnect connector D868.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the BOOST PUMP TANK 1 AFT GFI relay, R18, is not out and you cannot see the white band.

HAP ALL

(2) On the P5-2 panel, set the AFT 1 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the aft boost pump for the No. 1 tank goes off (after a maximum of 90 seconds), then you corrected the fault.

(b) Set the AFT 1 FUEL PUMP switch to OFF.

END OF TASK

804. No. 1 Tank FWD pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) On the P5 panel, the No. 1 tank FWD LOW PRESSURE light is on. This means that the No. 1 tank forward boost pump is not pressurizing the fuel feed manifold. When the two low pressure lights for the No. 1 tank come on, the FUEL light on the master caution panel also comes on.

(2) This LOW PRESSURE light is expected to be on when the FWD boost pump for the No. 1 tank is off.

(3) This fault condition can also occur because the No. 1 forward boost pump has lost its prime. If the No. 1 tank is filled to 500 lb (227 kg), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(4) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the tank No. 1 forward boost pump, S151

(2) Tank No. 1 forward boost pump relay, R19

(3) Tank No. 1 forward boost pump, M47

(4) Wiring

(5) The wiring or logic in the P5-2 module

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(3) If the FUEL BOOST PUMP TANK 1 FWD (91D2) circuit breaker is open, then, do this task: No. 1 Tank, Forward Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 813.

(4) If the FUEL BOOST PUMP TANK 1 FWD (91D2) circuit breaker is closed, then continue.

(5) Make sure the No. 1 tank has a minimum of 500 lb (227 kg) of fuel.

NOTE: This step makes sure that the boost pump is primed correctly.

(6) If it is not possible to add 500 lb (227 kg) to the No. 1 tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the BOOST PUMP TANK 1 FWD GFI relay, R19:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - BOOST PUMP TANK 1 FWD GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the BOOST PUMP TANK 1 FWD GFI relay, R19, is not out and you cannot see the white band, then continue.

HAP ALL

(8) On the P5 forward overhead panel, set the FWD 1 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the forward boost pump for the No. 1 tank goes off (after a maximum of 90 seconds), then there was an intermittent fault.

(b) If the LOW PRESSURE light for the forward boost pump for the No. 1 tank stays on (for a minimum of 90 seconds), then do these steps:

1) With the FWD 1 FUEL PUMP switch ON, listen to the forward boost pump for the No. 1 tank and touch it to make sure it operates.

2) If the boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - BOOST PUMP TANK 1 FWD GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure there is minimum of 500 lb (227 kg) of fuel in the No. 1 tank.

NOTE: This step makes sure that the boost pump is correctly primed.

(4) Get access to the fwd boost pump for the No. 1 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D72, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D72, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D72, is disconnected.

(d) Make sure the RESET button on the BOOST PUMP TANK 1 FWD GFI relay, R19, is pushed in.

(e) On the P5 Overhead Panel, set the FWD 1 FUEL PUMP switch to ON.

(f) After five minutes, set the FWD 1 FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the BOOST PUMP TANK 1 FWD GFI relay, R19, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the No. 1 fwd boost pump, M47, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the fwd boost pump, M47, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the fwd boost pump, M47, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D72.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

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

NOTE: This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

- forward boost pump for the No. 1 tank, M46

HAP ALL

- forward boost pump relay for the No. 1 tank, R19
- forward boost pump switch for the No. 1 tank, S5
- wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(1) Do this check of the forward boost pump for the No. 1 tank, M47:
   (a) Make sure the FWD 1 FUEL PUMP switch is OFF.
   (b) Disconnect connector D72 from the forward boost pump for the No. 1 tank (WDM 28-23-11).
   (c) Set the FWD 1 FUEL PUMP switch to ON.
   (d) Do a check for 3-phase 208 VAC between pins 1, 2, and 3 of connector D72 (WDM 28-23-11).
   (e) If there is 3-phase 208 VAC between pins 1, 2, and 3 of connector D72, then do these steps:
      1) Replace the motor impeller unit of the forward boost pump for the No. 1 tank.

         These are the tasks:

         Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

         Install the Motor Impeller, AMM TASK 28-22-41-400-801.
      2) Do the Repair Confirmation procedure at the end of this task.
   (f) If there is not 3-phase 115 VAC at pins 1, 2, and 3 of D72, then continue. Set the FWD 1 FUEL PUMP switch to OFF. Reconnect the connector D72.

HAP ALL

(2) Do these checks of the forward boost pump relay for the No. 1 tank, R19 and the switch for the No. 1 tank forward boost pump, S5 (SSM 28-23-11):
   (a) Make sure the FWD 1 FUEL PUMP switch is ON.
   (b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the forward boost pump relay for the No. 1 tank, R19.

      NOTE: The forward boost pump relay for the No. 1 tank, R19 is on the P91 panel in the Electronic Equipment Compartment.
   (c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:
      1) Replace the forward boost pump switch for the No. 1 tank, S5.

         NOTE: The forward boost pump switch for the No. 1 tank, S5, is on the P5 forward overhead panel in the flight compartment.
      2) Do the Repair Confirmation procedure at the end of this task.
      3) If the Repair Confirmation procedure is not OK, then do these steps:
         a) Do a check for an open circuit from pin 37, connector D626 on the P5-2 panel to pin X2 of relay R19.
         b) Do a check of the wiring for a ground or loose pin at pin 36, connector D626 on the P5-2 panel.
         c) Repair the wiring.
         d) Do the Repair Confirmation procedure at the end of this task.
   (d) If there is 115 VAC from pin X1 to pin X2 at connector D12280 of the relay R19, then do these steps:
      1) Replace the relay R19.
      2) Do the Repair Confirmation at the end of this task.
      3) If the Repair Confirmation procedure is not OK, then continue.

(3) Do this check of the wiring:
   (a) Make sure the FWD 1 FUEL PUMP switch is OFF.

(b) Disconnect the connector D72 from the forward boost pump for the No. 1 tank.

(c) Do a check for an open circuit between these pins on D72 and these pins on D12280 for the No. 1 forward boost pump relay, R19:

D72		D12280
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

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

1) Repair the wiring.

2) Reconnect connector D72.

3) Do the Repair Confirmation procedure at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

NOTE: You must do the Initial Evaluation before you do this Fault Isolation Procedure.

This procedure isolates the fault to one of these possible causes:

- low pressure switch, S151
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S151:

NOTE: The low pressure switch, S151 is on the front spar behind the Krueger flaps on the left wing.

(a) Make sure the FWD 1 FUEL PUMP switch is ON.

(b) Disconnect the connector D870 from the low pressure switch.

(c) If the LOW PRESSURE light for the No. 1 tank forward boost pump goes off, then do these steps:

1) Replace the low pressure switch, S151.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

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

3) If the Repair Confirmation is not OK, then continue. Re-connect connector D870.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the FWD 1 FUEL PUMP switch is ON.

(b) Disconnect connector D870 from the low pressure switch, S151.

(c) Do a check for a short circuit from pin 3, connector D870 to pin 2 (ground), connector D870.

(d) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.

2) Re-connect connector D870.

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

4) If the Repair Confirmation is not OK, then continue.

(e) If there is not a short circuit from pin 3 to pin 2 (ground), then continue.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the BOOST PUMP TANK 1 FWD GFI relay, R19, is not out and you cannot see the white band.

HAP ALL

(2) On the P5-2 panel, set the FWD 1 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the forward boost pump for the No. 1 tank goes off (after a maximum of 90 seconds), then you corrected the fault.

(b) Set the FWD 1 FUEL PUMP switch to OFF.

——————— END OF TASK ———————

805. No. 2 Tank AFT pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) On the P5 panel, the No. 2 tank AFT LOW PRESSURE light is on. This means that the No. 2 tank aft boost pump is not pressurizing the fuel feed manifold. When the two low pressure lights for the No. 2 tank come on, the FUEL light on the master caution panel also comes on.

(2) This LOW PRESSURE light is expected to be on when the AFT boost pump for the No. 2 tank is off.

(3) This fault condition can also occur because the No. 2 aft boost pump has lost its prime. If the No. 2 tank is filled to 500 lb (227 kg), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(4) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the tank No. 2 aft boost pump, S152

(2) Tank No. 2 aft boost pump relay, R20

(3) Tank No. 2 aft boost pump, M48

(4) Wiring

(5) The wiring or logic in the P5-2 module

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT

HAP ALL

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(a) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT

HAP ALL

(3) If the FUEL BOOST PUMP TANK 2 AFT (91D4) circuit breaker is open, then, do this task: No. 2 Tank, Aft Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 816.

(4) If the FUEL BOOST PUMP TANK 2 AFT (91D4) circuit breaker is closed, then continue.

(5) Make sure the No. 2 tank has a minimum of 500 lb (227 kg) of fuel.

NOTE: This step makes sure that the boost pump is primed correctly.

(6) If it is not possible to add 500 lb (227 kg) to the No. 2 tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the BOOST PUMP TANK 2 AFT GFI relay, R20:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - BOOST PUMP TANK 2 AFT GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the BOOST PUMP TANK 2 AFT GFI relay, R20, is not out and you cannot see the white band, then continue.

HAP ALL

(8) On the P5 forward overhead panel, set the AFT 2 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the aft boost pump for the No. 2 tank goes off (after a maximum of 90 seconds), then there was an intermittent fault.

(b) If the LOW PRESSURE light for the aft boost pump for the No. 2 tank stays on (for a minimum of 90 seconds), then do these steps:

1) With the AFT 2 FUEL PUMP switch ON, listen to the aft boost pump for the No. 2 tank and touch it to make sure it operates.

2) If the boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - BOOST PUMP TANK 2 AFT GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure there is minimum of 500 lb (227 kg) of fuel in the No. 2 tank.

NOTE: This step makes sure that the boost pump is correctly primed.

(4) Get access to the aft boost pump for the No. 2 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D74, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D74, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D74, is disconnected.

(d) Make sure the RESET button on the BOOST PUMP TANK 2 AFT GFI relay, R20, is pushed in.

(e) On the P5 Overhead Panel, set the AFT 2 FUEL PUMP switch to ON.

(f) After five minutes, set the AFT 2 FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the BOOST PUMP TANK 2 AFT GFI relay, R20, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the No. 2 aft boost pump, M48, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the aft boost pump, M48, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the aft boost pump, M48, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D74.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

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

NOTE: This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

- aft boost pump for the No. 2 tank, M48

HAP ALL

- aft boost pump relay for the No. 2 tank, R20
- aft boost pump switch for the No. 2 tank, S7
- wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(1) Do this check of the aft boost pump for the No. 2 tank, M48:

(a) Make sure the AFT 2 FUEL PUMP switch is OFF.

(b) Disconnect connector D74 from the aft boost pump for the No. 2 tank (WDM 28-23-11).

(c) Set the AFT 2 FUEL PUMP switch to ON.

(d) Do a check for 3-phase 208 VAC between pins 1, 2, and 3 of connector D74 (WDM 28-23-11).

(e) If there is 3-phase 208 VAC between pins 1, 2, and 3 of connector D74, then do these steps:

1) Replace the motor impeller unit of the aft boost pump for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(f) If there is not 3-phase 208 VAC between pins 1, 2, and 3 of D74, then continue. Set the AFT 2 FUEL PUMP switch to OFF. Reconnect the connector D74.

HAP ALL

(2) Do these checks of the aft boost pump relay for the No. 2 tank, R20 and the switch for the No. 2 tank aft boost pump, S7 (SSM 28-23-11):

(a) Do a voltage check for 115 VAC from pin X1 to pin X2 of the aft boost pump relay, R20, for the No. 2 tank.

NOTE: The aft boost pump relay for the No. 2 tank, R20, is on the P91 panel in the Electronic Equipment Compartment.

(b) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Replace the aft boost pump switch for the No. 2 tank, S7.

NOTE: The aft boost pump switch for the No. 2 tank, S7, is on the P5 forward overhead panel in the flight compartment.

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

3) If the Repair Confirmation procedure is not OK, then do these steps:

a) Do a check for an open circuit from pin 39, connector D626 on the P5-2 panel to pin X2 of relay R20.

b) Do a check of the wiring for a ground or loose pin at pin 38, connector D626 on the P5-2 panel.

c) Repair the wiring.

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

(c) If there is 115 VAC from pin X1 to pin X2 at connector D12282 of the relay R20, then do these steps:

1) Replace the relay R20.

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

3) If the Repair Confirmation is not OK, then continue.

(3) Do this check of the wiring:

(a) Make sure the AFT 2 FUEL PUMP switch is OFF.

(b) Disconnect the connector D74 from the aft boost pump for the No. 2 tank.

(c) Do a check for an open circuit between these pins on D74 and these pins on D12282 for the boost pump tank 2 aft relay, R20:

D76		D12282
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

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

1) Repair the wiring.

2) Reconnect connector D74.

3) Do the Repair Confirmation procedure at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

NOTE: You must do the Initial Evaluation before you do this Fault Isolation Procedure.

This procedure isolates the fault to one of these possible causes:

- low pressure switch, S152
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S152:

NOTE: The low pressure switch, S152 is on the rear spar in the right main landing gear wheel well.

(a) Make sure the AFT 2 FUEL PUMP switch is ON.

(b) Disconnect the connector D872 from the low pressure switch.

(c) If the LOW PRESSURE light for the No. 2 tank aft boost pump goes off, then do these steps:

1) Replace the low pressure switch, S152.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

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

3) If the Repair Confirmation is not OK, then continue.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the AFT 2 FUEL PUMP switch is ON.

(b) Do a check for a short circuit from pin 3, connector D872 to pin 2 (ground), connector D872.

(c) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.

2) Re-connect connector D872.

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

4) If the Repair Confirmation is not OK, then continue.

(d) If there is not a short circuit from pin 3 to pin 2 (ground), then continue.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the BOOST PUMP TANK 2 AFT GFI relay, R20, is not out and you cannot see the white band.

HAP ALL

(2) On the P5-2 panel, set the AFT 2 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the aft boost pump for the No. 2 tank goes off (after a maximum of 90 seconds), then you corrected the fault.

(b) Set the AFT 2 FUEL PUMP switch to OFF.

——————— END OF TASK ———————

806. No. 2 Tank FWD pump LOW PRESSURE light is on - Fault Isolation

A. Description

(1) On the P5 panel, the No. 2 tank FWD LOW PRESSURE light is on. This means that the No. 2 tank forward boost pump is not pressurizing the fuel feed manifold. When the two low pressure lights for the No. 2 tank come on, the FUEL light on the master caution panel also comes on.

(2) This LOW PRESSURE light is expected to be on when the FWD boost pump for the No. 2 tank is off.

(3) This fault condition can also occur because the No. 2 forward boost pump has lost its prime. If the No. 2 tank is filled to 500 lb (227 kg), as described in the initial evaluation, the boost pump will become primed. You can also use one of the alternative boost pump priming procedures given in (AMM TASK 28-22-41-420-801).

(4) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Low pressure switch for the tank No. 2 forward boost pump, S153

(2) Tank No. 2 forward boost pump relay, R21

(3) Tank No. 2 forward boost pump, M49

(4) Wiring

(5) The wiring or logic in the P5-2 module

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD

HAP ALL

(3) If the FUEL BOOST PUMP TANK 2 FWD (92D4) circuit breaker is open, then, do this task: No. 2 Tank, Forward Boost Pump Circuit Breaker Open - Fault Isolation, 28-22 TASK 815.

(4) If the FUEL BOOST PUMP TANK 2 FWD (92D4) circuit breaker is closed, then continue.

(5) Make sure the No. 2 tank has a minimum of 500 lb (227 kg) of fuel.

NOTE: This step makes sure that the boost pump is primed correctly.

(6) If it is not possible to add 500 lb (227 kg) to the No. 2 tank, then, do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

WARNING: DO NOT CLOSE A GFI RELAY FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

(7) Do a visual inspection of the BOOST PUMP TANK 2 FWD GFI relay, R21:

(a) If the RESET button is out, and you can see the white band, then do the Fault Isolation Procedure - BOOST PUMP TANK 2 FWD GFI Relay Open below.

NOTE: The RESET button, found at the top edge of the GFI relay, moves out to show a narrow white band when the GFI circuit turns off the relay due to a ground fault, or when you push the TEST button found on the top surface of the relay.

(b) If the RESET button on the BOOST PUMP TANK 2 FWD GFI relay, R21, is not out and you cannot see the white band, then continue.

HAP ALL

(8) On the P5 forward overhead panel, set the FWD 2 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the forward boost pump for the No. 2 tank goes off (after a maximum of 90 seconds), then there was an intermittent fault.

(b) If the LOW PRESSURE light for the forward boost pump for the No. 2 tank stays on (for a minimum of 90 seconds), then do these steps:

1) With the FWD 2 FUEL PUMP switch ON, listen to the forward boost pump for the No. 2 tank and touch it to make sure it operates.

2) If the boost pump operates, then do the Fault Isolation Procedure - Boost Pump Operates below.

3) If the boost pump does not operate, then do the Fault Isolation Procedure - Boost Pump Does Not Operate below.

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

F. Fault Isolation Procedure - BOOST PUMP TANK 2 FWD GFI Relay Open

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure that you do the Initial Evaluation before you start the Fault Isolation Procedure.

(3) Make sure there is minimum of 500 lb (227 kg) of fuel in the No. 2 tank.

NOTE: This step makes sure that the boost pump is correctly primed.

(4) Get access to the fwd boost pump for the No. 2 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the electrical connector and the boost pump:

(a) Disconnect the electrical connector, D76, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D76, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D76, is disconnected.

(d) Make sure the RESET button on the BOOST PUMP TANK 2 FWD GFI relay, R21, is pushed in.

(e) On the P5 Overhead Panel, set the FWD 2 FUEL PUMP switch to ON.

(f) After five minutes, set the FWD 2 FUEL PUMP switch on the P5 Overhead Panel, to OFF.

(g) If the RESET button on the BOOST PUMP TANK 2 FWD GFI relay, R21, is not out and you cannot see the white band, then do one of these steps:

NOTE: The circuit on the airplane side of the electrical connector is good.

1) For the No. 2 fwd boost pump, M49, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

a) If the insulation resistance test is not OK, then replace the fwd boost pump, M49, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

2) Replace the fwd boost pump, M49, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(h) If the RESET button on the GFI relay is out, and you can see the white band, then continue.

NOTE: The circuit on the airplane side of the electrical connector is bad.

(i) Make sure to reconnect the connector, D76.

HAP ALL

G. Fault Isolation Procedure - Boost Pump Does Not Operate

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

NOTE: This procedure isolates the fault to one of these possible causes:

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

- forward boost pump for the No. 2 tank, M49

HAP ALL

- forward boost pump relay for the No. 2 tank, R21
- forward boost pump switch for the No. 2 tank, S6
- wiring

HAP 001-013, 015-026, 028-038 PRE SB 737-28A1201

(1) Do this check of the forward boost pump for the No. 2 tank, M49:

(a) Make sure the FWD 2 FUEL PUMP switch is OFF.

(b) Disconnect connector D76 from the forward boost pump for the No. 2 tank (WDM 28-23-11).

(c) Set the FWD 2 FUEL PUMP switch to ON.

(d) Do a check for 3-phase 208 VAC between pins 1, 2, and 3 of connector D76 (WDM 28-23-11).

(e) If there is 3-phase 208 VAC between pins 1, 2, and 3 of connector D76, then do these steps:

1) Replace the motor impeller unit of the forward boost pump for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

(f) If there is not 3-phase 208 VAC between pins 1, 2, and 3 of D76, then continue. Set the FWD 2 FUEL PUMP switch to OFF. Reconnect the connector D76.

HAP ALL

(2) Do these checks of the forward boost pump relay for the No. 2 tank, R21 and the switch for the No. 2 tank forward boost pump, S6 (SSM 28-23-11):

(a) Make sure the FWD 2 FUEL PUMP switch is ON.

(b) Do a voltage check for 115 VAC from pin X1 to pin X2 of the forward boost pump relay, R21, for the No. 2 tank.

NOTE: The forward boost pump relay for the No. 2 tank, R21, is on the P92 panel in the Electronic Equipment Compartment.

(c) If there is not 115 VAC from pin X1 to pin X2, then do these steps:

1) Replace the forward boost pump switch for the No. 2 tank, S6.

NOTE: The forward boost pump switch for the No. 2 tank, S6, is on the P5 forward overhead panel in the flight compartment.

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

3) If the Repair Confirmation procedure is not OK, then do these steps:

a) Do a check for an open circuit from pin 39, connector D628 on the P5-2 panel to pin X2 of relay R21.

b) Do a check of the wiring for a ground or loose pin at pin 38, connector D628 on the P5-2 panel.

c) Repair the wiring.

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

(d) If there is 115 VAC from pin X1 to pin X2 at connector D12284 of the relay R21, then do these steps:

1) Replace the relay R21.

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

3) If the Repair Confirmation procedure is not OK, then continue.

(3) Do this check of the wiring:

(a) Make sure the FWD 2 FUEL PUMP switch is OFF.

(b) Disconnect the connector D76 from the forward boost pump for the No. 2 tank.

(c) Do a check for an open circuit between these pins on D76 and these pins on D12284 for the No. 2 forward boost pump relay, R21:

D76		D12284
pin 1	- - - - - - - - - - - - - - - - - -	pin A1
pin 2	- - - - - - - - - - - - - - - - - -	pin B1
pin 3	- - - - - - - - - - - - - - - - - -	pin C1

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

1) Repair the wiring.

2) Reconnect connector D76.

3) Do the Repair Confirmation procedure at the end of this task.

H. Fault Isolation Procedure - Boost Pump Operates

NOTE: You must do the Initial Evaluation before you do this Fault Isolation Procedure.

This procedure isolates the fault to one of these possible causes:

- low pressure switch, S153
- P5-2 module
- wiring

(1) Do this check of the low pressure switch, S153:

NOTE: The low pressure switch, S153 is on the front spar behind the Krueger flaps on the right wing.

(a) Make sure the FWD 2 FUEL PUMP switch is ON.

(b) Disconnect the connector D874 from the low pressure switch.

(c) If the LOW PRESSURE light for the No. 2 tank forward boost pump goes off, then do these steps:

1) Replace the low pressure switch, S153.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801,

Install the Pressure Switch, AMM TASK 28-42-11-420-801.

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

3) If the Repair Confirmation is not OK, then continue. Re-connect connector D874.

(2) Do these steps to do a check of the wiring from the low pressure switch to the low pressure light (WDM 28-43-11):

(a) Make sure the FWD 2 FUEL PUMP switch is ON.

(b) Disconnect connector D874 from the low pressure switch, S153.

(c) Do a check for a short circuit from pin 3, connector D874 to pin 2 (ground), connector D874.

(d) If there is a short circuit from pin 3 to pin 2 (ground), then do these steps:

1) Repair the short circuit.

2) Re-connect connector D874.

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

4) If the Repair Confirmation is not OK, then continue.

(e) If there is not a short circuit from pin 3 to pin 2 (ground), then continue.

(3) Replace the P5-2 module on the P5 forward overhead panel.

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

I. Repair Confirmation

HAP 039-054, 101-999; HAP 001-013, 015-026, 028-038 POST SB 737-28A1201

(1) Make sure that the RESET button on the BOOST PUMP TANK 2 FWD GFI relay, R21, is not out and you cannot see the white band.

HAP ALL

(2) On the P5-2 panel, set the FWD 2 FUEL PUMP switch to ON.

(a) If the LOW PRESSURE light for the forward boost pump for the No. 2 tank goes off (after a maximum of 90 seconds), then you corrected the fault.

(b) Set the FWD 2 FUEL PUMP switch to OFF.

——————— END OF TASK ———————

807. VALVE OPEN Light for the Crossfeed Valve Stays on Bright - Fault Isolation

A. Description

(1) The VALVE OPEN light for the crossfeed valve stays on bright when you turn the CROSSFEED switch to the valve-open or the valve-closed position. When the valve operates correctly, the VALVE OPEN light comes on bright while the crossfeed valve changes position. The light stays on dim when the valve is open. The light is off when the valve is closed.

(2) The switches in the actuator send data about the valve position to the P5-2 module. Usually, when the valve is open, pin 2 and pin 3 on the actuator are connected. When the valve is closed, pin 3 is connected to pin 5 and to pin 6.

(3) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Crossfeed valve actuator, V39

(2) Crossfeed valve body

(3) Crossfeed valve switch, S3

(4) Wiring from the P5-2 module to the crossfeed valve actuator

(5) Crossfeed valve indication (VALVE OPEN) light, L3

(6) The wiring or logic in the P5-2 module

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	7	C00361	FUEL CROSS FEED VALVE

D. Related Data

(1) (SSM 28-22-11)

(2) (WDM 28-22-11)

E. Initial Evaluation

(1) Turn the CROSSFEED switch on the P5 panel to the valve-open position.

(a) Do a check to see if the VALVE OPEN light comes on bright while the valve changes position and then stays on dim when the valve is fully open.

(b) If the VALVE OPEN light stays on bright and does not become dim, then do the Fault Isolation Procedure below.

(c) If the VALVE OPEN light comes on bright and then stays on dim, then continue.

(2) Turn the CROSSFEED switch on the P5 panel to the valve-closed position.

(a) Do a check to see if the VALVE OPEN light comes on bright while the valve changes position and then goes off when the valve is fully closed.

(b) If the VALVE OPEN light stays on bright and does not go off, then do the Fault Isolation Procedure below.

(c) If the VALVE OPEN light comes on bright and then goes off, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the crossfeed valve actuator, V39 and the crossfeed valve body while the valve opens:

(a) Do a check to see if the manual override handle on the crossfeed valve actuator changes from the closed to the open position when you turn the CROSSFEED switch in the flight compartment to the valve-open position.

(b) Carefully try to move the manual override handle to the open position with your hand to make sure it is fully open.

(c) If the manual override handle did not move completely to the open position when you set the CROSSFEED switch to the valve-open position, then do these steps:

1) Remove the actuator from the valve body. To remove the actuator, do this task: Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804.

a) Do not disconnect connector D792 from the actuator.

2) With the actuator disconnected from the mounting plate, do these steps:

a) Turn the CROSSFEED switch to valve-closed position.

b) Wait for the actuator to move to the closed position.

c) Turn the CROSSFEED switch to the valve-open position.

3) If the manual override handle moves completely to the open position, then do these steps:

a) Replace the valve body.

These are the tasks:

Remove the Engine Fuel Crossfeed Valve Body, AMM TASK 28-22-21-000-803,

Install the Engine Fuel Crossfeed Valve Body, AMM TASK 28-22-21-400-803.

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

4) If the manual override handle does not move completely to the open position, then do these steps:

a) Replace the valve actuator.

These are the tasks:

Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804,

Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-801 or Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-804.

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

(d) If the manual override handle moved completely to the open position when you set the CROSSFEED switch in the flight compartment to the valve-open position, then continue.

(2) Do this check of the crossfeed valve actuator, V39 and the valve body while the valve closes.

(a) Do a check to see if the manual override handle on the crossfeed valve actuator changes from the open to the closed position when you set the CROSSFEED switch in the flight compartment to the valve-close position.

(b) Carefully try to move the manual override handle to the closed position with your hand to make sure it is fully closed.

(c) If the manual override handle did not move completely to the closed position when you set the CROSSFEED switch to the valve-closed postion, then do these steps:

1) Remove the actuator from the valve body. To remove the actuator, do this task: Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804.

a) Do not disconnect connector D792 from the actuator.

2) With the actuator disconnected from the mounting plate, set the CROSSFEED switch to the valve-open position and then to the valve-closed position.

3) If the manual override handle moves completely to the closed position, then do these steps:

a) Replace the valve body.

These are the tasks:

Remove the Engine Fuel Crossfeed Valve Body, AMM TASK 28-22-21-000-803,

Install the Engine Fuel Crossfeed Valve Body, AMM TASK 28-22-21-400-803.

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

4) If the manual override handle does not move completely to the closed position, then do these steps:

a) Replace the valve actuator.

These are the tasks:

Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804,

Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-801 or Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-804.

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

(d) If the manual override handle moved completely to the closed position when you set the CROSSFEED switch in the flight compartment to the valve-closed position, then continue.

1) Turn the CROSSFEED switch to the valve-closed position if it is not set to the valve-closed position.

(3) Do this check of the indication switches in the crossfeed valve actuator while the valve is closed:

(a) Disconnect connector D792 on the actuator.

(b) Do a continuity check from pin 5 to pin 3 on the receptacle on the actuator for connector D792.

1) If there is not continuity from pin 5 to pin 3, then do these steps:

a) Replace the actuator.

These are the tasks:

Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804,

Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-801 or Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-804.

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

2) If there is continuity from pin 5 to pin 3, then continue.

a) Re-connect connector D792 to the actuator.

b) Turn the CROSSFEED switch on the P5 panel to the valve-open position.

(4) Do this check of the indication switches in the crossfeed valve actuator while the valve is open:

(a) Disconnect connector D792 on the actuator (WDM 28-22-11).

(b) Do a continuity check from pin 2 to pin 3 on the receptacle on the actuator for connector D792.

1) If there is not continuity from pin 2 to pin 3, then do these steps:

a) Replace the actuator.

These are the tasks:

Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-801 or Remove the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-000-804,

Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-801 or Install the Actuator of the Engine Fuel Crossfeed Valve, AMM TASK 28-22-21-400-804.

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

2) If there is continuity from pin 2 to pin 3, then continue.

a) Re-connect connector D792 to the actuator.

(5) Do this check of the crossfeed valve indication wiring while the valve is open:

(a) With the CROSSFEED switch in the valve-open position, remove connector D628 from the P5-2 module (WDM 28-22-11).

(b) Do a continuity check from pin 6 to pin 1 of connector D628.

(c) If there is not continuity from pin 6 to pin 1 of connector D628, then do these steps:

1) Repair the wiring from connector D628, pin 6 to D792, pin 2 or from connector D628, pin 1 to D792, pin 3.

2) Re-connect connector D628.

3) Do the Repair Confimation at the end of this task.

(d) If there is continuity from pin 6 to pin 1 of connector D628, then continue.

(6) Do this check of the crossfeed valve indication wiring while the valve is closed:

(a) Turn the CROSSFEED switch to the valve-closed position.

(b) Disconnect connector D628 from the P5-2 module (WDM 28-22-11).

(c) Do a continuity check from pin 6 to pin 7 of connector D628.

(d) If there is not continuity from pin 6 to pin 7 of connector D628, then do these steps:

1) Repair the wiring from connector D628, pin 6 to D792, pin 2 or from connector D628, pin 7 to D792, pin 5.

2) Re-connect connector D628.

3) Do the Repair Confimation at the end of this task.

(e) If there is continuity from pin 6 to pin 7 of connector D628, then replace the P5-2 module of the P5 panel.

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

G. Repair Confirmation

(1) Turn the CROSSFEED switch on the P5 panel to the valve-open position.

(a) Make sure the VALVE OPEN light comes on bright while the valve changes position and then stays on dim when the valve is fully open.

(2) Turn the CROSSFEED switch on the P5 panel to the valve-closed position.

(a) Make sure the VALVE OPEN light comes on bright while the valve changes position and then goes off when the valve is fully closed.

(3) If VALVE OPEN light had these conditions, then you corrected the fault:

(a) The VALVE OPEN light came on bright while the valve went from closed to open.

(b) The VALVE OPEN light stayed on dim while the valve was open.

(c) The VALVE OPEN light came on bright while the valve went from open to closed.

(d) The VALVE OPEN light went off again when the valve was closed.

——————— END OF TASK ———————

808. VALVE OPEN Light for the Crossfeed Valve Does Not Come On During Valve Transit - Fault Isolation

A. Description

(1) You set the CROSSFEED switch on the P5 panel to the OPEN position and the VALVE OPEN light does not come on to show that the valve is changing its position. Or you set the CROSSFEED switch to on the P5 panel to the CLOSED position and the VALVE OPEN light does not come on to show that the valve is changing its position. When the valve operates correctly, the VALVE OPEN light comes on bright while the crossfeed valve changes position. The light stays on dim when the valve is open. The light is off when the valve is closed.

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Crossfeed valve switch, S3

(2) Crossfeed valve indication light, L3

(3) The wiring or logic in the P5-2 panel

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	7	C00361	FUEL CROSS FEED VALVE

D. Related Data

(1) (SSM 28-22-11)

(2) (WDM 28-22-11)

E. Initial Evaluation

(1) Push and hold the VALVE OPEN light for the crossfeed valve on the P5-2 module to make sure the VALVE OPEN light operates correctly.

(a) Make sure the VALVE OPEN light comes on bright.

(b) If the VALVE OPEN light does not come on bright, then replace the VALVE OPEN light.

(2) Turn the CROSSFEED switch on the P5 panel to the valve-open position.

(a) Do a check to see if the VALVE OPEN light comes on bright while the valve changes position and then stays on dim when the valve is fully open.

(b) If the VALVE OPEN light does not come on, then do the Fault Isolation Procedure below.

(c) If the VALVE OPEN light comes on bright and then stays on dim, then continue.

(3) Turn the CROSSFEED switch on the P5 panel to the valve-closed position.

(a) Do a check to see if the VALVE OPEN light comes on bright while the valve changes position and then goes off when the valve is fully closed.

(b) If the VALVE OPEN light does not come on, then do the Fault Isolation Procedure below.

(c) If the VALVE OPEN light comes on bright and then goes off, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Turn the CROSSFEED switch on the P5 panel to the valve-open position.

(a) Do a check to see if the manual override handle on the crossfeed valve actuator moves to the open position.

1) If the manual override handle moves to the open position, then replace the P5-2 module.

2) If the manual override handle does not move to the open position, then replace the CROSSFEED switch, S3 on the P5-2 module.

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

G. Repair Confirmation

(1) Set the CROSSFEED switch on the P5 panel to the valve-open position.

(a) The VALVE OPEN light must come on bright while the valve changes position and then stay on dim when the valve is fully open.

(2) Turn the CROSSFEED switch on the P5 panel to the valve-closed position.

(a) The VALVE OPEN light must come on bright while the valve changes position and then go off when the valve is fully closed.

(3) If VALVE OPEN light showed these conditions, then you corrected the fault:

(a) The VALVE OPEN light came on bright while the valve went from closed to open.

(b) The VALVE OPEN light stayed on dim while the valve was open.

(c) The VALVE OPEN light came on bright while the valve went from open to closed.

(d) The VALVE OPEN light went off again when the valve was closed.

———————— END OF TASK ————————

809. Engine No. 1 SPAR VALVE CLOSED Light Stays on Bright - Fault Isolation

A. Description

(1) You set the engine No. 1 start lever to IDLE or CUTOFF or you pull the engine No. 1 fire handle and the engine No. 1 SPAR VALVE CLOSED light stays on bright. When the valve operates correctly, the SPAR VALVE CLOSED light comes on bright while the spar valve changes position. The light stays on dim when the valve is closed. The light is off when the valve is open.

(2) The switches in the actuator send data about the valve position to the P5-2 module. Usually, when the valve is open, pin 2 and pin 3 on the actuator are connected. When the valve is closed, pin 3 is connected to pin 5 and to pin 6.

(3) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Engine No. 1 spar valve actuator, V37

(2) Engine No. 1 spar valve body

(3) Engine No. 1 start switch, M1824

(4) Engine No. 1 fire switch, S8

(5) Engine No. 1 SPAR VALVE OPEN indication light

(6) The wiring or logic in the P5-2 module

(7) The wiring from the actuator to the fire switch, the start switch, and the P5-2 module.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
C	4	C01471	FUEL SHUTOFF VALVES PWR PACK
C	6	C01472	FUEL SHUTOFF VALVES BUS

D. Related Data

(1) (SSM 28-21-11)

(2) (SSM 28-21-21)

(3) (WDM 28-21-11)

(4) (WDM 28-21-21)

E. Initial Evaluation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Set the No. 1 engine start lever on the control stand to IDLE.

(b) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light stays on bright and does not go off, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(c) On the P8 panel, pull the No. 1 engine fire switch to the FIRE position.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light stays on bright and does not become dim, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes dim, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, set the No. 1 engine fire switch back to the NORMAL position.

(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light stays on bright and does not go off, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

(g) Set the engine No. 1 start lever on the control stand to the CUTOFF position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light stays on bright and does not become dim, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then stays on dim, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the spar valve actuator operation:

(a) Open this access panel:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02

on the front spar.

(b) Set the engine start lever in the flight compartment to IDLE.

(c) Make sure the manual override handle on the spar valve actuator changes from the closed to the open position.

(d) Carefully try to move the override handle to the open position with your hand to make sure it is fully open.

(e) If the override handle did not move completely to the open position when you set the engine No. 1 start lever to the IDLE position, then do these steps:

1) Remove the actuator from the valve body. To remove it, do this task: Remove the Valve Body of the Spar Valve, AMM TASK 28-22-11-000-803

NOTE: Do not disconnect connector D788 from the actuator

2) With the actuator disconnected from the mounting plate, do these steps:
   a) Set the engine No. 1 start lever to CUTOFF.
   b) Wait while the actuator goes to the closed position.
   c) Set the engine No. 1 start lever to IDLE.
   d) If the override handle moves completely to the open position, then replace the valve body.

      These are the tasks:

      Remove the Valve Body of the Spar Valve, AMM TASK 28-22-11-000-803,

      Install the Valve Body of the Spar Valve, AMM TASK 28-22-11-400-803.
   e) If the override handle does not move completely to the open position, then replace the valve actuator, V37.

      These are the tasks:

      Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

      Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.
   f) Do the Repair Confirmation at the end of this task.

(f) If the override handle moved completely to the open position when you set the engine start lever in the flight compartment to IDLE, then continue.

(2) Do this check of the spar valve actuator operation:
   (a) Set the engine No. 1 start lever in the flight compartment to CUTOFF.
   (b) Make sure the manual override handle on the spar valve actuator changes from the open to the closed position.
   (c) Carefully try to move the override handle to the closed position with your hand to make sure it is fully closed.
   (d) If the override handle did not move completely to the closed position when you set the engine No. 1 start lever to the CUTOFF postion, then do these steps:
      1) Remove the actuator from the valve body. To remove it, (AMM TASK 28-22-11-000-803)

      NOTE: Do not disconnect D788 from the actuator.
      2) With the actuator disconnected from the mounting plate, then do these steps:
         a) Set the engine No. 1 start lever to IDLE.
         b) Wait for the manual override handle on the spar valve actuator to move to the open position.
         c) Set the engine No. 1 start lever to CUTOFF.
         d) If the override handle moves completely to the closed position, then replace the valve body.

            These are the tasks:

            Remove the Valve Body of the Spar Valve, AMM TASK 28-22-11-000-803,

            Install the Valve Body of the Spar Valve, AMM TASK 28-22-11-400-803.

e) If the override handle does not move completely to the closed position, then replace the valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

(e) If the override handle moved completely to the closed position when you set the engine start lever in the flight compartment to CUTOFF, then continue.

(3) Do these checks of the switches in the spar valve actuator (WDM 28-21-11):

(a) Make sure the engine No. 1 start lever on the control stand is at CUTOFF.

(b) Disconnect the connector D788 from the actuator.

(c) Do a continuity check between these pins on the receptacle of the actuator for connector D788:

D788		D788
pin 3	- - - - - - - - - - - - - - - - - -	pin 5
pin 3	- - - - - - - - - - - - - - - - - -	pin 6

1) If there is not continuity between the pairs of pins above, then do these steps:

a) Replace the spar valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

2) If there is continuity between the pairs of pins above, then continue.

(d) Reconnect connector D788.

(e) Move the engine No. 1 start Lever to IDLE.

(f) Disconnect connector D788 from the actuator.

(g) Do a continuity check between these pins on the receptacle of the actuator for connector D788:

D788		D788
pin 2	- - - - - - - - - - - - - - - - - -	pin 3

1) If there is not continuity between the pair of pins above, then do these steps:

a) Replace the spar valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

2) If there is continuity between the pair of pins above, then continue.

(4) Do this wiring check (WDM 28-21-11):

(a) Make sure the engine No. 1 start lever is in CUTOFF position.

(b) Disconnect connector D626 from the P5-2 module.

(c) With the positive voltage probe on pin 30 and the negative probe on pin 23, do a continuity check from pin 30 to pin 23 of connector D626.

NOTE: Do this check with the positive voltage probe on pin 30 and the negative probe on pin 23. Diode R692 will block current in the opposite direction, thus there will appear to be no continuity.

(d) If there is not continuity from pin 30 to pin 23 of connector D626, then do these steps:

1) Repair the wiring from connector D626, pin 30 to D788, pin 3 or from connector D626, pin 23 to D788, pin 5 and pin 6. Re-connect connector D626.

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

(e) If there is continuity from pin 23 to pin 30 of connector D626, then continue. Re-connect connector D626.

(5) Do this wiring check (WDM 28-22-11):

(a) Set the engine No. 1 start lever to the IDLE position.

(b) Disconnect connector D626 from the P5-2 module .

(c) With the positive voltage probe on pin 29 and the ground probe on pin 23, do a continuity check from pin 29 to pin 23 of connector D626.

NOTE: Do this check with the positive voltage probe on pin 29 and the ground probe on pin 23. Diode R692 will block current in the opposite direction, thus there will appear to be no continuity.

(d) If there is not continuity from pin 29 to pin 23 of connector D626, then do these steps:

1) Repair the wiring from connector D626, pin 29 to D790, pin 3 or from connector D626, pin 23 to D788, pin 2.

2) Re-connect connector D626.

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

(e) If there is continuity from pin 29 to pin 23 of connector D626, then do these steps:

1) Replace the P5-2 module of the P5 panel.

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

G. Repair Confirmation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Make sure the engine No. 1 start lever is in the CUTOFF position.

(b) Set the No. 1 engine start lever on the control stand to IDLE.

(c) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(d) On the P8 panel, pull the No. 1 engine fire switch to the FIRE position.

(e) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(f) On the P8 panel, set the No. 1 engine fire switch back to the NORMAL position.

(g) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

(h) Set the engine No. 1 start lever on the control stand to the CUTOFF position.

(i) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

(j) If the engine No. 1 SPAR VALVE CLOSED light showed these conditions while the valve was operated by the engine No. 1 start lever and by the engine No. 1 fire switch, then you corrected the fault:

1) The SPAR VALVE CLOSED light came on bright while the valve went from open to closed.
2) The SPAR VALVE CLOSED light stayed on dim while the valve was closed.
3) The SPAR VALVE CLOSED light came on bright while the valve went from closed to open.
4) The SPAR VALVE CLOSED light went off again when the valve was opened.

(k) Close this access panel:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02

——————— END OF TASK ———————

810. Engine No. 2 SPAR VALVE CLOSED Light Stays on Bright - Fault Isolation

A. Description

(1) You set the engine No. 2 start lever to IDLE or CUTOFF or you pull the engine No. 2 fire handle and the engine No. 2 SPAR VALVE CLOSED light stays on bright. When the valve operates correctly, the SPAR VALVE CLOSED light comes on bright while the spar valve changes position. The light stays on dim when the valve is closed. The light is off when the valve is open.

(2) The switches in the actuator send data about the valve position to the P5-2 module. Usually, when the valve is open, pin 2 and pin 3 on the actuator are connected. When the valve is closed, pin 3 is connected to pin 5 and to pin 6.

(3) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Engine No. 2 spar valve actuator, V38

(2) Engine No. 2 spar valve body

(3) Engine No. 2 start switch, M1825

(4) Engine No. 2 fire switch, S9

(5) Engine No. 2 SPAR VALVE OPEN indication light

(6) The wiring or logic in the P5-2 module

(7) The wiring from the actuator to the fire switch, the start switch, and the P5-2 module.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
C	4	C01471	FUEL SHUTOFF VALVES PWR PACK
C	6	C01472	FUEL SHUTOFF VALVES BUS

D. Related Data

(1) (SSM 28-21-11)

(2) (SSM 28-21-21)

(3) (WDM 28-21-11)

(4) (WDM 28-21-21)

E. Initial Evaluation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Set the No. 2 engine start lever on the control stand to IDLE.

(b) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light stays on bright and does not go off, then do the Fault Isolation procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(c) On the P8 panel, pull the No. 2 engine fire switch to the FIRE position.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light stays on bright and does not become dim, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes dim, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, set the No. 2 engine fire switch back to the NORMAL position.

(f) Do a check to see if the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light stays on bright and does not go off, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

(g) Set the Engine No. 2 Start Lever on the Control Stand to the CUTOFF position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light stays on bright and does not become dim, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then stays on dim, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the spar valve actuator operation:

(a) Open this access panel:

Number	Name/Location
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

on the front spar.

(b) Set the engine start lever in the flight compartment to IDLE.

(c) Make sure the manual override handle on the spar valve actuator changes from the closed to the open position.

(d) Carefully try to move the override handle to the open position with your hand to make sure it is fully open.

(e) If the override handle did not move completely to the open position when you set the engine No. 2 start lever to the IDLE position, then do these steps:

1) Remove the actuator from the valve body. To remove it, (AMM TASK 28-22-11-000-803)

NOTE: Do not disconnect connector D790 from the actuator.

2) With the actuator disconnected from the mounting plate, do these steps:

a) Set the engine No. 2 start lever to CUTOFF.

b) Wait while the actuator goes to the closed position.

c) Set the engine No. 2 start lever to IDLE.

d) If the override handle moves completely to the open position, then replace the valve body.

These are the tasks:

Remove the Valve Body of the Spar Valve, AMM TASK 28-22-11-000-803,

Install the Valve Body of the Spar Valve, AMM TASK 28-22-11-400-803.

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

f) If the override handle does not move completely to the open position, then replace the valve actuator, V38.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

(f) If the override handle moved completely to the open position when you set the engine start lever in the flight compartment to IDLE, then continue.

(2) Do this check of the spar valve actuator operation:

(a) Set the engine No. 2 start lever in the flight compartment to CUTOFF.

(b) Make sure the manual override handle on the spar valve actuator changes from the open to the closed position.

(c) Carefully try to move the override handle to the closed position with your hand to make sure it is fully closed.

(d) If the override handle did not move completely to the closed position when you set the engine No. 2 start lever to the CUTOFF postion, then do these steps:

1) Remove the actuator from the valve body. To remove it, (AMM TASK 28-22-11-000-803)

NOTE: Do not disconnect D790 from the actuator.

2) With the actuator disconnected from the mounting plate, do these steps:

a) Set the engine start lever to IDLE.

b) Wait for the manual override handle on the spar valve actuator to move to the open position.

c) Set the engine start lever to CUTOFF.

d) If the override handle moves completely to the closed position, then replace the valve body.

These are the tasks:

Remove the Valve Body of the Spar Valve, AMM TASK 28-22-11-000-803,

Install the Valve Body of the Spar Valve, AMM TASK 28-22-11-400-803.

e) If the override handle does not move completely to the closed position, then replace the valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

(e) If the override handle moved completely to the closed position when you set the engine start lever in the flight compartment to CUTOFF, then continue.

(3) Do these checks of the switches in the spar valve actuator (WDM 28-21-11):

(a) Make sure the engine No. 2 start lever on the control stand is at CUTOFF.

(b) Disconnect the connector D790 from the actuator.

1) Do a continuity check between these pins on the receptacle of the actuator for connector D790:

D790		D790
pin 3	- - - - - - - - - - - - - - - - - -	pin 5
pin 3	- - - - - - - - - - - - - - - - - -	pin 6

2) If there is not continuity between the pairs of pins above, then do these steps:

a) Replace the spar valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

3) If there is continuity between the pairs of pins above, then continue.

(c) Re-connect connector D790.

(d) Move the engine No. 2 start lever to IDLE.

(e) Disconnect connector D790 from the actuator.

(f) Do a continuity check between these pins on the receptacle of the actuator for connector D790:

D790		D790
pin 2	- - - - - - - - - - - - - - - - - -	pin 3

1) If there is not continuity between the pair of pins above, then do these steps:

a) Replace the spar valve actuator.

These are the tasks:

Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-801 or Remove the Actuator of the Spar Valve, AMM TASK 28-22-11-000-804,

Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-801 or Install the Actuator of the Spar Valve, AMM TASK 28-22-11-400-804.

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

(4) Do this wiring check:

(a) Make sure the engine No. 2 start lever is in CUTOFF position.

(b) Disconnect connector D628 from the P5-2 module (WDM 28-22-11).

(c) With the positive voltage probe on pin 30 and the ground probe on pin 23, do a continuity check from pin 23 to pin 30 of connector D628.

NOTE: Do this check with the positive voltage probe on pin 30 and the ground probe on pin 23. Diode R693 will block current in the opposite direction, thus there will appear to be no continuity.

(d) If there is not continuity from pin 23 to pin 30 of connector D628, then repair the wiring from connector D628, pin 23 to D790, pin 30 or from connector D628, pin 23 to D790, pin 5 and pin 6.

1) Re-connect connector D628.

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

(e) If there is continuity from pin 23 to pin 30 of connector D628, then continue. Re-connect connector D628.

(5) Do this wiring check (WDM 28-21-11):

(a) Set the engine No. 2 start lever to the IDLE position.

(b) Disconnect connector D628 from the P5-2 module.

(c) With the positive voltage probe on pin 29 and the ground probe on pin 23, do a continuity check from pin 23 to pin 29 of connector D628.

NOTE: Do this check with the positive voltage probe on pin 29 and the ground probe on pin 23. Diode R693 will block current in the opposite direction, thus there will appear to be no continuity.

(d) If there is not continuity from pin 23 to pin 29 of connector D628, then do these steps:

1) Repair the wiring from connector D628, pin 23 to D790, pin 3 or from connector D628, pin 29 to D790, pin 2.
2) Re-connect connector D628.
3) Do the Repair Confirmation at the end of this task.

(e) If there is continuity from pin 23 to pin 29 of connector D628, then do these steps:
1) Replace the P5-2 module of the P5 panel.
2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do this check of the SPAR VALVE CLOSED indication:
(a) Set the No. 2 engine start lever on the control stand to IDLE.
(b) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(c) On the P8 panel, pull the No. 2 engine fire switch to the FIRE position.
(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, set the No. 2 engine fire switch back to the NORMAL position.
(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.
(g) Set the engine No. 2 start lever on the control stand to the CUTOFF position.
(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.
(i) If the engine No. 2 SPAR VALVE CLOSED light showed these conditions while the valve was operated by the engine No. 2 start lever and by the engine No. 2 fire switch, then you corrected the fault:
1) The SPAR VALVE CLOSED light came on bright while the valve went from open to closed.
2) The SPAR VALVE CLOSED light stayed on dim while the valve was closed.
3) The SPAR VALVE CLOSED light came on bright while the valve went from closed to open.
4) The SPAR VALVE CLOSED light went off again when the valve was opened.
(j) Close this access panel:

Number	Name/Location
621BB	Engine Fuel Spar Valve Access Panel - Slat Station 36.02

END OF TASK

811. Engine No. 1 SPAR VALVE CLOSED Light Does Not Come On Bright During Valve Transit or Dim When the Valve is Closed - Fault Isolation

A. Description

(1) You set the engine No. 1 start lever to IDLE or CUTOFF or you pull the engine No. 1 fire handle and the engine No. 1 SPAR VALVE CLOSED light does not come on to show that the valve is changing its position. When the valve operates correctly, the SPAR VALVE CLOSED light comes on bright while the spar valve changes position. The light stays on dim when the valve is closed. The light is off when the valve is open.

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Engine No. 1 start switch module, M1824

(2) Engine No. 1 fire switch, S8 on the P8-1 fire protection panel

(3) The wiring or logic in the P5-2 module

(4) The wiring from the engine No. 1 start switch module or the engine No. 1 fire switch to the P5-2 module.

C. Circuit Breakers

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

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
C	4	C01471	FUEL SHUTOFF VALVES PWR PACK
C	6	C01472	FUEL SHUTOFF VALVES BUS

D. Related Data

(1) (SSM 28-21-11)

(2) (WDM 28-21-11)

E. Initial Evaluation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Push and hold the SPAR VALVE CLOSED light for the engine No. 1 spar valve on the P5-2 module.

(b) Make sure the SPAR VALVE CLOSED light comes on bright.

1) If the SPAR VALVE CLOSED light does not come on bright, then replace the SPAR VALVE CLOSED light.

(c) Set the No. 1 engine start lever on the control stand to IDLE.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, pull the No. 1 engine fire switch to the FIRE position.

(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes dim, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(g) On the P8 panel, set the No. 1 engine fire switch back to the NORMAL position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

(i) Set the engine No. 1 start lever on the control stand to the CUTOFF position.

(j) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then stays on dim, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the engine No. 1 start lever:

(a) Set the engine No. 1 start lever on the control stand to the IDLE position.

(b) Make sure the No. 1 ENG VALVE CLOSED light comes on bright and then goes off.

1) If the No. 1 ENG VALVE CLOSED light does not come on bright and then go off, then do these steps:

a) Replace the engine No. 1 start switch module, M1824.

These are the tasks:

Thrust Levers Removal, AMM TASK 76-11-01-010-801-F00,

Thrust levers Installation, AMM TASK 76-11-01-420-801-F00.

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

2) If the No. 1 ENG VALVE CLOSED light comes on bright and then goes off, then continue.

(2) Do this check of the engine No. 1 fire switch:

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(a) With the No. 1 engine start lever in the IDLE position, pull the engine No. 1 fire switch on the P8-1 panel to the FIRE position.

(b) Make sure the No. 1 ENG VALVE CLOSED light comes on bright and then goes dim.

1) If the No. 1 ENG VALVE CLOSED light does not come on bright and then go dim, then do these steps:
   a) Replace the engine No. 1 fire switch, S8, on the P8-1 panel.
   b) Do the Repair Confirmation at the end of this task.
2) If the No. 1 ENG VALVE CLOSED light comes on bright and then becomes dim, then continue. Move the engine No. 1 fire switch back to the NORMAL position.

(3) Do these checks of the wiring and the P5-2 module:
   (a) Set the engine No. 1 start lever to the CUTOFF position.
   (b) On the front spar, make sure the manual override handle on the engine No. 1 spar valve moves to the closed position.

   NOTE: Open the Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02, 521BB to get access to the engine No. 1 spar valve on the front spar.

   1) If the manual override handle moves to the closed position, then replace the P5-2 module.
      a) Replace the P5-2 module.
      b) Do the Repair Confirmation at the end of this task.
   2) If the manual override handle does not move to the closed position, then continue.
   (c) Do a continuity check of the wiring from these pins on connector D11288 on the engine No. 1 start switch module to connector D788 on the engine No. 1 spar valve actuator:

D788		D11288
pin 2	- - - - - - - - - - - - - - - - - -	pin 7
pin 5	- - - - - - - - - - - - - - - - - -	pin 8

   1) If there is no continuity between these pins, then do these steps:
      a) Repair the wiring.
      b) Re-connect connectors D788 and D11288.
      c) Do the Repair Confirmation at the end of this task.
   2) If there is continuity between these pins, then continue.
   (d) Set the No. 1 engine start lever to the IDLE position.
   (e) Set the engine No. 1 fire switch back to the FIRE position.
   (f) On the front spar, make sure the manual override handle on the engine No. 1 spar valve moves to the closed position.
   1) If the manual override handle moves to the closed position, then do these steps:
      a) Replace the P5-2 module.
      b) Do the Repair Confirmation at the end of this task.
   2) If the manual override handle does not move to the closed position, then continue.
   (g) Do a continuity check of the wiring from these pins on connector D576 on the engine No. 1 fire switch module to connector D788 on the engine No. 1 spar valve actuator:

D788		D576
pin 6	- - - - - - - - - - - - - - - - - -	pin 21
pin 2	- - - - - - - - - - - - - - - - - -	pin 23

   1) Repair the wiring.
   2) Re-connect connectors D788 and D576.

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

G. Repair Confirmation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Set the No. 1 engine start lever on the control stand to IDLE.

(b) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(c) On the P8 panel, pull the No. 1 engine fire switch to the FIRE position.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, set the No. 1 engine fire switch back to the NORMAL position.

(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

(g) Set the engine No. 1 start lever on the control stand to the CUTOFF position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

(i) If the engine No. 1 SPAR VALVE CLOSED light showed these conditions while the valve was operated by the engine No. 1 start lever and by the engine No. 1 fire switch, then you corrected the fault:

1) The SPAR VALVE CLOSED light came on bright while the valve went from open to closed.

2) The SPAR VALVE CLOSED light stayed on dim while the valve was closed.

3) The SPAR VALVE CLOSED light came on bright while the valve went from closed to open.

4) The SPAR VALVE CLOSED light went off again when the valve was opened.

(j) Close this access panel:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02

——————— END OF TASK ———————

812. Engine No. 2 SPAR VALVE CLOSED Light Does Not Come On Bright During Valve Transit or Dim When the Valve is Closed - Fault Isolation

A. Description

(1) You set the engine No. 2 start lever to IDLE or CUTOFF or you pull the engine No. 2 fire handle and the engine No. 2 SPAR VALVE CLOSED light does not come on to show that the valve is changing its position. When the valve operates correctly, the SPAR VALVE CLOSED light comes on bright while the spar valve changes position. The light stays on dim when the valve is closed. The light is off when the valve is open.

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) Engine No. 2 start switch module, M1825

(2) Engine No. 2 fire switch, S8 on the P8-1 fire protection panel

(3) The wiring or logic in the P5-2 module

(4) The wiring from the engine No. 2 start switch module or the engine No. 2 fire switch to the P5-2 module.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2
B	5	C00540	FUEL SPAR VALVE IND
C	4	C01471	FUEL SHUTOFF VALVES PWR PACK
C	6	C01472	FUEL SHUTOFF VALVES BUS

D. Related Data

(1) (SSM 28-21-11)

(2) (WDM 28-21-11)

E. Initial Evaluation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Push and hold the SPAR VALVE CLOSED light for the engine No. 2 spar valve on the P5-2 module.

(b) Make sure the SPAR VALVE CLOSED light comes on bright.

1) If the SPAR VALVE CLOSED light does not come on bright, then replace the SPAR VALVE CLOSED light (WDM 28-22-00).

(c) Set the No. 2 engine start lever on the control stand to IDLE.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes ofF, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, pull the No. 2 engine fire switch to the FIRE position.

(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes dim, then continue.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(g) On the P8 panel, set the No. 2 engine fire switch back to the NORMAL position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then goes off, then continue.

(i) Set the engine No. 2 start lever on the control stand to the CUTOFF position.

(j) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

1) If the SPAR VALVE CLOSED light does not come on, then do the Fault Isolation Procedure below.

2) If the SPAR VALVE CLOSED light comes on bright and then stays on dim, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the engine No. 2 start lever:

(a) Set the engine No. 2 start lever on the control stand to the IDLE position.

(b) Make sure the No. 2 ENG VALVE CLOSED light comes on bright and then goes off.

1) If the No. 2 ENG VALVE CLOSED light does not come on bright and then go off, then do these steps:

a) Replace the engine No. 2 start switch module, M1825.

These are the tasks:

Thrust Levers Removal, AMM TASK 76-11-01-010-801-F00,

Thrust levers Installation, AMM TASK 76-11-01-420-801-F00.

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

2) If the No. 2 ENG VALVE CLOSED light comes on bright and then goes off, then continue.

(2) Do this check of the engine No. 2 fire switch:

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(a) With the No. 2 engine start lever in the IDLE position, pull the engine No. 2 fire switch on the P8-1 panel to the FIRE position.

(b) Make sure the No. 2 ENG VALVE CLOSED light comes on bright and then goes dim.

1) If the No. 2 ENG VALVE CLOSED light does not come on bright and then go dim, then do these steps:

a) Replace the engine No. 2 fire switch, S8, on the P8-1 panel.

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

2) If the No. 2 ENG VALVE CLOSED light comes on bright and then becomes dim, then continue. Move the engine No. 2 fire switch back to the NORMAL position.

(3) Do these checks of the wiring and the P5-2 module:

(a) Set the engine No. 2 start lever to the CUTOFF position.

(b) On the front spar, make sure the manual override handle on the engine No. 2 spar valve moves to the closed position.

NOTE: Open the Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02, 521BB to get access to the engine No. 1 spar valve on the front spar.

1) If the manual override handle moves to the closed position, then do these steps:
   a) Replace the P5-2 module.
   b) Do the Repair Confirmation at the end of this task.
2) If the manual override handle does not move to the closed position, then continue.

(c) Do a continuity check of the wiring from these pins on connector D11292 on the engine No. 2 start switch module to connector D790 on the engine No. 2 spar valve actuator:

D790		D11292
pin 2	- - - - - - - - - - - - - - - - - - -	pin 7
pin 5	- - - - - - - - - - - - - - - - - - -	pin 8

1) If there is no continuity between these pins, then do these steps:
   a) Repair the wiring.
   b) Re-connect connectors D790 and D11292.
   c) Do the Repair Confirmation at the end of this task.
2) If there is continuity between these pins, then continue.

(d) Set the No. 2 engine start lever to the IDLE position.

(e) Set the engine No. 2 fire switch back to the FIRE position.

(f) On the front spar, make sure the manual override handle on the engine No. 2 spar valve moves to the closed position.

1) If the manual override handle moves to the closed position, then do these steps:
   a) Replace the P5-2 module.
   b) Do the Repair Confirmation at the end of this task.
2) If the manual override handle does not move to the closed position, then continue.

(g) Do a continuity check of the wiring from these pins on connector D578 on the engine No. 2 fire switch module to connector D790 on the engine No. 2 spar valve actuator (WDM 28-22-00):

D790		D578
pin 6	- - - - - - - - - - - - - - - - - - -	pin 21
pin 2	- - - - - - - - - - - - - - - - - - -	pin 23

1) Repair the wiring.
2) Re-connect connectors D790 and D578.
3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do this check of the SPAR VALVE CLOSED indication:

(a) Set the No. 2 engine start lever on the control stand to IDLE.

(b) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(c) On the P8 panel, pull the No. 2 engine fire switch to the FIRE position.

(d) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then becomes dim when the valve is fully closed.

CAUTION: DO NOT TURN THE FIRE HANDLE TO THE RIGHT OR LEFT. THE FIRE BOTTLES WILL DISCHARGE.

(e) On the P8 panel, set the No. 2 engine fire switch back to the NORMAL position.

(f) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then goes off when the valve is fully open.

(g) Set the engine No. 2 start lever on the control stand to the CUTOFF position.

(h) Make sure the SPAR VALVE CLOSED light comes on bright while the valve changes position and then stays on dim when the valve is fully closed.

(i) If the engine No. 2 SPAR VALVE CLOSED light showed these conditions while the valve was operated by the engine No. 2 start lever and by the engine No. 2 fire switch, then you corrected the fault:

1) The SPAR VALVE CLOSED light came on bright while the valve went from open to closed.

2) The SPAR VALVE CLOSED light stayed on dim while the valve was closed.

3) The SPAR VALVE CLOSED light came on bright while the valve went from closed to open.

4) The SPAR VALVE CLOSED light went off again when the valve was opened.

(j) Close this access panel:

Number	Name/Location
521BB	Engine Fuel Valve Shutoff Access Panel - Slat Station 36.02

——————— END OF TASK ———————

813. No. 1 Tank, Forward Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, FUEL BOOST PUMP TANK 1 FWD is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) No. 1 tank forward boost pump relay, R19

(3) No. 1 tank forward boost pump, M47

(4) Circuit breaker, C00827, FUEL BOOST PUMP TANK 1 FWD

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the forward boost pump for the No. 1 tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(2) If the circuit breaker is closed, do this task: No. 1 Tank FWD pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 804.

(3) If the circuit breaker is open, do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, one person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank and 1000 lb (454 kg) of fuel in the No. 1 tank.

NOTE: This will cover the boost pump and boost pump inlet with fuel.

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE FLAPS AND SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(3) Do this task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.

(4) Get access to the forward fuel boost pump for the No. 1 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it

(6) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the boost pump:

(a) Disconnect the electrical connector, D72, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D72, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D72, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(e) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - FWD to ON.

(f) After five minutes, set the switch FUEL PUMP - TANK 1 - FWD, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D72 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D72, do one of these steps:

a) For the No. 1 forward boost pump, M47, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance test is not OK, replace the forward boost pump, M47, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the forward boost pump, M47, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D72, do these steps:

a) Replace the BOOST PUMP TANK 1 FWD relay, R19 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(7) Do these steps to do a check of the BOOST PUMP TANK 1 FWD relay, R19:

(a) Replace the BOOST PUMP TANK 1 FWD relay, R19 (WDM 28-23-11).

(b) Make sure that the electrical connector, D72, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - FWD to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 1 - FWD, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(8) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(b) Make sure that the electrical connector, D72, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - FWD to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 1 - FWD, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(9) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D72, at the Tank No. 1 forward boost pump, M47, and the circuit breaker, FUEL BOOST PUMP TANK 1 FWD (SSM 28-23-11):

D72		**C00827**
pin 1	- - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D72, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

(e) Do not re-connect the electrical connector, D72, to the boost pump.

(f) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - FWD to ON.

(g) After five minutes, set the switch FUEL PUMP - TANK 1 - FWD, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D72, to the Tank No. 1 forward boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - FWD to ON.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light FUEL PUMP TANK 1 - FWD goes off.

(4) After five minutes, set the switch FUEL PUMP - TANK 1 - FWD, on the P5 Overhead Panel, to OFF.

(5) If these circuit breakers stay closed, then you corrected the fault.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP 001-013, 015-026, 028-036			
D	2	C00827	FUEL BOOST PUMP TANK 1 FWD
HAP ALL			

END OF TASK

814. No. 1 Tank, Aft Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, FUEL BOOST PUMP TANK 1 AFT is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) No. 1 tank aft boost pump relay, R18

(3) No. 1 tank aft boost pump, M46

(4) Circuit breaker, C00826, FUEL BOOST PUMP TANK 1 AFT

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the aft boost pump for the No. 1 tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(2) If the circuit breaker is closed, do this task: No. 1 Tank AFT pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 803.

(3) If the circuit breaker is open, do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, one person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank and 1000 lb (454 kg)) of fuel in the No. 1 tank.

NOTE: This will cover the boost pump and boost pump inlet with fuel.

(3) Get access to the aft fuel boost pump for the No. 1 tank (AMM TASK 28-22-41-000-801).

(4) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(5) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the fuel boost pump:

(a) Disconnect the electrical connector, D70, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D70, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D70, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(e) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - AFT to ON.

(f) After five minutes, set the switch FUEL PUMP - TANK 1 - AFT, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, then do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D70 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D70, do one of these steps:

a) For the No.1 aft boost pump, M46, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance check is not OK, then replace the aft boost pump, M46, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the aft boost pump, M46, for the No. 1 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D70, do these steps:

a) Replace the BOOST PUMP TANK 1 AFT relay, R18 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(6) Do these steps to do a check of the BOOST PUMP TANK 1 AFT relay, R18:

(a) Replace the BOOST PUMP TANK 1 AFT relay, R18 (WDM 28-23-11).

(b) Make sure that the electrical connector, D70, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - AFT to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 1 - AFT, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(7) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(b) Make sure that the electrical connector, D70, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - AFT to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 1 - AFT, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(8) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D70, at the Tank No. 1 aft boost pump M46, and the circuit breaker, FUEL BOOST PUMP TANK 1 AFT (SSM 28-23-11):

D70		**C00826**
pin 1	- - - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D70, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(e) Do not re-connect electrical connector, D70, to the boost pump.

(f) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - AFT to ON.

(g) After five minutes, set the switch FUEL PUMP - TANK 1 - AFT, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D70, to the Tank No. 1 aft boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 1 - AFT to ON.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light FUEL PUMP TANK 1 - AFT goes off.

(4) After five minutes, set the switch FUEL PUMP - TANK 1 - AFT, on the P5 Overhead Panel, to OFF.

(5) If these circuit breakers stay closed, then you corrected the fault.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

———————— END OF TASK ————————

815. No. 2 Tank, Forward Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, FUEL BOOST PUMP TANK 2 FWD is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) No. 2 tank forward boost pump relay, R21

(3) No. 2 tank forward boost pump, M49

(4) Circuit breaker, C00829, FUEL BOOST PUMP TANK 2 FWD

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the forward boost pump for the No. 2 tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(2) If the circuit breaker is closed, do this task: No. 2 Tank FWD pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 806.

(3) If the circuit breaker opened, do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, on person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank and 1000 lb (454 kg)) of fuel in the No. 2 tank.

NOTE: This will cover the boost pump and boost pump inlet with fuel.

WARNING: MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE FLAPS AND SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(3) Do this task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.

(4) Get access to the forward fuel boost pump for the No. 2 tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the fuel boost pump:

(a) Disconnect the electrical connector, D76, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D76, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D76, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(e) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - FWD to ON.

(f) After five minutes, set the switch FUEL PUMP - TANK 2 - FWD, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, then do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D76 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D76, do one of these steps:

a) For the No. 2 forward boost pump, M49, do this task, if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance test is not OK, replace the forward boost pump, M49, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the forward boost pump, M49, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D76, do these steps:

a) Replace the BOOST PUMP TANK 2 FWD relay, R21 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(7) Do these steps to do a check of the BOOST PUMP TANK 2 FWD relay, R21:

(a) Replace the BOOST PUMP TANK 2 FWD relay, R21 (SSM 28-23-11).

(b) Make sure that the electrical connector, D76, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD

HAP ALL

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - FWD to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 2 - FWD, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(8) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(b) Make sure that the electrical connector, D76, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - FWD to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 2 - FWD, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(9) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D76, at the Tank No. 2 aft boost pump, M49, and the circuit breaker, FUEL BOOST PUMP TANK 2 FWD (SSM 28-23-11):

D76		**C00829**
pin 1	- - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D76, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

(e) Do not re-connect electrical connector, D76, to the boost pump.

(f) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - FWD to ON.

(g) After five minutes, set the switch FUEL PUMP - TANK 2 - FWD, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D76, to the Tank No. 2 forward boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - FWD to ON.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light FUEL PUMP TANK 2 - FWD goes off.

(4) After five minutes, set the switch FUEL PUMP - TANK 2 - FWD, on the P5 Overhead Panel, to OFF.

(5) If this circuit breaker stay closed, then you corrected the fault.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP 001-013, 015-026, 028-036			
D	4	C00829	FUEL BOOST PUMP TANK 2 FWD
HAP ALL			

——————— END OF TASK ———————

816. No. 2 Tank, Aft Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, FUEL BOOST PUMP TANK 2 AFT is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) No. 2 tank aft boost pump relay, R20

(3) No. 2 tank aft boost pump, M48

(4) Circuit breaker, C00828, FUEL BOOST PUMP TANK 2 AFT

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the aft boost pump for the No. 2 tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT

HAP ALL

(2) If the circuit breaker is closed, do this task: No. 2 Tank AFT pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 805.

(3) If the circuit breaker is open, then do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, one person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank and 1000 lb (454 kg)) of fuel in the No. 2 tank.

NOTE: This will cover the boost pump and boost pump inlet with fuel.

(3) Get access to the aft fuel boost pump for the No. 2 tank (AMM TASK 28-22-41-000-801).

(4) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(5) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the boost pump:

(a) Disconnect the electrical connector, D74, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D74, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D74, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(e) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - AFT to ON.

(f) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, then do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D74 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D74, do one of these steps:

a) For the No. 2 aft boost pump, M48, do this task if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance test is not OK, replace the aft boost pump, M48, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the aft boost pump, M48, for the No. 2 tank.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D74, do these steps:

a) Replace the BOOST PUMP TANK 2 AFT relay, R20 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(6) Do these steps to do a check of the BOOST PUMP TANK 2 AFT relay, R20:

(a) Replace the BOOST PUMP TANK 2 AFT relay, R20 (SSM 28-23-11).

(b) Make sure that the electrical connector, D74, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - AFT to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(7) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(WDM 28-23-11).

(b) Make sure that the electrical connector, D74, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - AFT to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(8) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D74, at the Tank No. 2 aft boost pump, M48, and the circuit breaker, FUEL BOOST PUMP TANK 2 AFT (SSM 28-23-11):

D74		**C00828**
pin 1	- - - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D74, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(e) Do not re-connect electrical connector, D74, to the boost pump.

(f) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - AFT to ON.

(g) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D74, to the Tank No. 2 aft boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch FUEL PUMP - TANK 2 - AFT to ON.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light FUEL PUMP TANK 2 - AFT goes off.

(4) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(5) If these circuit breakers stay closed, then you corrected the fault.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

———————— END OF TASK ————————

817. Center Tank, Left Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, BOOST PUMP CTR TANK LEFT is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) Center tank left boost pump relay, R54

(3) Center tank left boost pump, M234

(4) Circuit breaker, C00845, BOOST PUMP CENTER TANK LEFT

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the left boost pump for the center tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

(a) These are the circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(2) If the circuit breaker is closed, do this task: No. 1 Tank FWD pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 804.

(3) If the circuit breaker is open, do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, one person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank.

NOTE: This will cover the boost pump with fuel.

WARNING: OBEY THE PROCEDURE FOR THE INSTALLATION OF THE DOWNLOCK PINS. IF YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO THE UP POSITION, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed, do this task: Landing Gear Downlock Pins Installation, AMM TASK 32-00-01-480-801.

(4) Get access to the left fuel boost pump for the center tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the boost pump:

(a) Disconnect the electrical connector, D802, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D802, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D802, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(e) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - L to ON.

(f) After five minutes, set the switch CTR FUEL PUMPS - L, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D802 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D802, do one of these steps:

a) For the left center boost pump, M234, do this task if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance test is not OK, replace the left center boost pump, M234.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the left center boost pump, M234.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D802, do these steps:

a) Replace the BOOST PUMP CTR TANK LEFT relay, R54 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(7) Do these steps to do a check of the BOOST PUMP CENTER TANK LEFT relay, R54:

(a) Replace the BOOST PUMP CENTER TANK LEFT relay, R54 (SSM 28-23-11).

(b) Make sure that the electrical connector, D802, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - L to ON.

(e) After five minutes, set the switch CTR FUEL PUMPS - L, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT

Row	Col	Number	Name
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(8) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(b) Make sure that the electrical connector, D802, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - L to ON.

(e) After five minutes, set the switch FUEL PUMP - TANK 2 - AFT, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

(9) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D802, at the center tank left boost pump, M234, and the circuit breaker, BOOST PUMP CTR TANK LEFT (SSM 28-23-11):

D802		**C00845**
pin 1	- - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D802, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	3	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP 001-013, 015-026, 028-036			
D	4	C00828	FUEL BOOST PUMP TANK 2 AFT
HAP ALL			

(e) Do not re-connect electrical connector, D802, to the boost pump.

(f) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - L to ON.

(g) After five minutes, set the switch CTR FUEL PUMPS - L, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D802, to the left center tank boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - L to ON.

(a) You must be in the flight compartment and continuously monitor for the amber PRESS light CTR FUEL PUMPS - L.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light CTR FUEL PUMPS - L goes off.

(a) If the amber PRESS light CTR FUEL PUMPS - L stays on, immediately set the switch CTR FUEL PUMPS - L, on the P5 Overhead Panel, to OFF.

(4) After five minutes, set the switch CTR FUEL PUMPS - L, on the P5 Overhead Panel, to OFF.

(5) If these circuit breakers stay closed, then you corrected the fault.

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 001-013, 015-026, 028-036			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP ALL			

——————— END OF TASK ———————

818. Center Tank, Right Boost Pump Circuit Breaker Open - Fault Isolation

A. Description

(1) The circuit breaker, BOOST PUMP CTR TANK RIGHT is found to be open during flight or on the ground. Do not reset this circuit breaker before you do the Initial Evaluation below. This problem can be caused by a short circuit in the wiring for the boost pump, a damaged boost pump, or a damaged circuit breaker or relay.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(2) (SDS SUBJECT 28-22-00)

B. Possible Causes

(1) 115 VAC Wiring

(2) Center tank right boost pump relay, R55

(3) Center tank right boost pump, M235

(4) Circuit breaker, C00846, BOOST PUMP CENTER TANK RIGHT

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

D. Related Data

(1) (SSM 28-23-11)

(2) (WDM 28-23-11)

E. Initial Evaluation

WARNING: DO NOT CLOSE A CIRCUIT BREAKER FOR A FUEL PUMP THAT OPENED (TRIPPED) UNTIL YOU CORRECT THE PROBLEM. THIS CONDITION CAN CAUSE A FIRE OR EXPLOSION.

NOTE: If you make a decision to dispatch the airplane with an open circuit breaker, do the steps in the MEL to deactivate the right boost pump for the center tank. Operate the airplane per MEL procedures.

NOTE: CDCCL - Refer to the task: Airworthiness Limitation Precautions, AMM TASK 28-00-00-910-801, for important information on Critical Design Configuration Control Limitations (CDCCLs).

(1) Do a check of this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(2) If the circuit breaker is closed, do this task: No. 1 Tank FWD pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 804.

(3) If the circuit breaker is open, do these steps:

(a) Install an approved for flight, open position circuit breaker lock, STD-1062, and safety tag on the circuit breaker.

(b) Do the troubleshooting steps in this procedure.

F. Fault Isolation Procedure

WARNING: DO NOT OPERATE ANY FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. FUEL VAPORS IN THE TANK MAY IGNITE AND CAUSE A FIRE OR EXPLOSION.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, one person must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch(es) to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure there is minimum of 20,000 lb (9072 kg) of fuel in the center tank.

NOTE: This will cover the boost pump with fuel.

WARNING: OBEY THE PROCEDURE FOR THE INSTALLATION OF THE DOWNLOCK PINS. IF YOU MOVE THE CONTROL LEVER FOR THE LANDING GEAR TO THE UP POSITION, THE LANDING GEAR CAN RETRACT. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(3) If the downlock pins are not installed, do this task: Landing Gear Downlock Pins Installation, AMM TASK 32-00-01-480-801.

(4) Get access to the right fuel boost pump for the center tank (AMM TASK 28-22-41-000-801).

(5) Examine the fuel boost pump and the area around it for fuel leakage.

(a) If there are signs of fuel leakage, find the source of the fuel leakage and repair it.

(6) Do these steps to do a check of the 115 VAC wiring, the circuit breaker, the relay, and the boost pump:

(a) Disconnect the electrical connector, D804, from the fuel boost pump (WDM 28-23-11).

(b) Examine the airplane and pump sides of the electrical connector, D804, for damage.

1) Repair all damage that you find.

(c) Make sure that the electrical connector, D804, is disconnected.

(d) Remove the circuit breaker locks and safety tags, and close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(e) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - R to ON.

(f) After five minutes, set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(g) If the circuit breaker stays closed, do the subsequent steps:

1) Do a check for 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D804 (WDM 28-23-11).

2) If there is 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D804, do one of these steps:

a) For the right center boost pump, M235, do this task if applicable: Fuel Pumps - Insulation Resistance Check, AMM TASK 28-22-00-200-801.

<1> If the insulation resistance test is not OK, replace the right center boost pump, M235.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

<2> Do the Repair Confirmation at the end of this task.

b) Replace the right center boost pump, M235.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

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

3) If there is not 3-phase 115 VAC power between pins 1, 2, and 3 of electrical connector, D804, do these steps:

a) Replace the BOOST PUMP CTR TANK RIGHT relay, R55 (WDM 28-23-11).

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

(h) If the circuit breaker opened, then continue.

(7) Do these steps to do a check of the BOOST PUMP CENTER TANK RIGHT relay, R55:

(a) Replace the BOOST PUMP CENTER TANK RIGHT relay, R55 (SSM 28-23-11).

(b) Make sure that the electrical connector, D804, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - R to ON.

(e) After five minutes, set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(8) Do these steps to do a check of the circuit breaker:

(a) Replace these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(b) Make sure that the electrical connector, D804, is disconnected.

(c) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(d) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - R to ON.

(e) After five minutes, set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(f) If these circuit breakers stay closed, then do the Repair Confirmation at the end of this task.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(g) If these circuit breakers opened, then continue.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(9) Do these steps to do a check of the 115 VAC wiring for the boost pump:

(a) Do a wiring check between these pins of connector, D804, at the center tank right boost pump, M235, and the circuit breaker, BOOST PUMP CTR TANK RIGHT (SSM 28-23-11):

D804		**C00846**
pin 1	- - - - - - - - - - - - - - - - - -	pin A2
pin 2	- - - - - - - - - - - - - - - - - -	pin B2
pin 3	- - - - - - - - - - - - - - - - - -	pin C2

(b) Find the problem and repair the wiring.

(c) Make sure that the electrical connector, D804, is disconnected.

(d) Close these circuit breakers:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

(e) Do not re-connect electrical connector, D804, to the boost pump.

(f) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - R to ON.

(g) After five minutes, set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(h) Make sure these circuit breakers stay closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

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

G. Repair Confirmation

(1) Connect the electrical connector, D804, to the right center tank boost pump (WDM 28-23-11).

(2) On the P5 Overhead Panel, set the switch CTR FUEL PUMPS - R to ON.

(a) You must be in the flight compartment and continuously monitor for the amber PRESS light CTR FUEL PUMPS - R.

(3) On the P5 Overhead Panel, make sure that the amber PRESS light CTR FUEL PUMPS - R goes off.

(a) If the amber PRESS light CTR FUEL PUMPS - R stays on, immediately set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(4) After five minutes, set the switch CTR FUEL PUMPS - R, on the P5 Overhead Panel, to OFF.

(5) If these circuit breakers stay closed, you corrected the fault.

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 001-013, 015-026, 028-036			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP ALL			

END OF TASK

819. Engine Fuel Suction Feed Operational Test Failed - Fault Isolation

A. Description

(1) If engine 1 or 2 fails the suction feed operational test, this procedure can help to isolate the problem.

NOTE: The procedure refers to the engine that failed the suction feed test as the applicable engine.

(2) This procedure opens circuit breakers to keep the high pressure shutoff valve (HPSOV) on the engine in the closed position. It then opens the engine fuel spar shutoff valve. The aft fuel boost pump from the opposite tank is then used to pressurize the fuel feed line. If a tank fuel level increases, this confirms a leak in the fuel feed tubing in that tank.

(3) It also does a visual check for leaks in the fuel line from the front spar to the engine-driven fuel pump.

B. Possible Causes

(1) Leak in the fuel feed line

(2) Main tank fuel boost pump bypass valve

(3) Center tank discharge check valve

(4) Engine-driven fuel pump

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT

D. Fault Isolation Procedure

(1) Do this check of the fuel feed manifold and the engine fuel supply line:

(a) Prepare the fuel tanks:

1) Make sure that there is a minimum of 1,870 lbs (850 kgs) of fuel in the main tank opposite the applicable engine (Pressure Refuel Procedure, AMM TASK 12-11-00-650-802).

2) Make sure that there is 30 lbs (20 kgs) or less of fuel in the center tank (Fuel Tank Defueling, AMM TASK 28-26-00-650-801), (Tank to Tank Fuel Transfer, AMM TASK 28-26-00-650-802).

3) If this access panel is open, make sure that the DEFUELING VALVE HANDLE is set to CLOSED:

Number	Name/Location
621EB	Defuel Access Panel - Slat Station 95.15

Close this access panel:

Number	Name/Location
621EB	Defuel Access Panel - Slat Station 95.15

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

(c) Do these tasks to get access to the fuel feed line from the front spar to the engine-driven fuel pump on the engine:

1) Forward Fairing Removal, AMM TASK 54-52-01-010-801
2) Wing Junction Fairing Removal, AMM TASK 54-52-03-010-801

(d) Put the fuel valves in the necessary positions:

1) Make sure that the engine start levers, on the P8 Aisle Stand, are in the CUTOFF position.
2) Make sure that the ENGINE START switches, on the P5 Overhead Panel, are in the OFF position.
3) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT

NOTE: This step makes sure that the two engine high pressure shutoff valves will not open.

4) For the applicable engine:
   a) Move the engine start lever, on the P8 Aisle Stand, to the IDLE position.

      NOTE: This opens the spar shutoff valve without opening the engine HPSOV.

   b) Make sure that the corresponding SPAR VALVE CLOSED light, on the P5 Overhead Panel, is off.
5) Set the CROSSFEED switch, on the P5 Overhead Panel, to the open position.
6) Make sure that the VALVE OPEN light, on the P5 Overhead Panel, is on dim to show that the crossfeed valve is open.

(e) Record the amount of fuel in the No. 1, Center, and No. 2 fuel tanks.

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(f) Operate the aft fuel pump of the main tank opposite the applicable engine.

1) For the right engine, set the FUEL PUMPS 1 AFT switch, on the P5 Overhead Panel, to the ON position.

2) For the left engine, set the FUEL PUMPS 2 AFT switch, on the P5 Overhead Panel, to the ON position.

(g) Check for leaks in the fuel feed line:

NOTE: The time necessary for the test can change with the size and number of possible leaks.

1) Monitor the center tank fuel level.

a) If it increases, there is a leak in the fuel feed manifold in the center tank. The Leak is between the crossfeed valve and the main tank of the applicable engine.

2) Monitor the fuel level of the main tank of the applicable engine.

a) If the main tank fuel level increases, there is a leak in the fuel feed manifold in the main tank.

3) Visually examine the fuel feed line from the front spar to the engine-driven fuel pump on the engine, for fuel leaks.

(h) Turn off the fuel pump by setting the applicable switch, on the P5 Overhead Panel, to the OFF position.

(i) Put the fuel valves in the necessary positions:

1) For the applicable engine, move the engine start lever, on the P8 Aisle Stand, to the CUTOFF position.

a) Make sure that the corresponding SPAR VALVE CLOSED light is on dim.

b) Make sure that the corresponding ENG VALVE CLOSED light is on dim.

2) Set the CROSSFEED switch, on the P5 Overhead Panel, to the closed position.

(j) If you found leaks, make the necessary repairs:

1) If you found leaks in the fuel feed line between the front spar and the engine-driven fuel pump, do these tasks where necessary:

a) Fuel Supply Hose Removal, AMM TASK 73-11-10-000-801-F00

Fuel Supply Hose Installation, AMM TASK 73-11-10-400-801-F00

b) Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801

Fuel Line, Fitting and Coupling - Installation, AMM TASK 28-22-15-400-801

2) If you found leaks in the fuel feed manifold in the center tank or main tank, make the necessary repairs:

a) To find the locations of leaks in these tanks, do this task or a different applicable task: Engine Fuel Feed Manifold - Leak Test, AMM TASK 28-22-15-710-801.

NOTE: It is not necessary to check for leaks in the fuel feed manifold in the main tank opposite the applicable engine.

b) To remove the necessary parts of the fuel feed manifold, do this task: Fuel Line, Fitting and Coupling - Removal, AMM TASK 28-22-15-000-801.

c) To install replacement components for parts of the fuel feed manifold that you removed, do this task: Fuel Line, Fitting and Coupling - Installation, AMM TASK 28-22-15-400-801.

3) Return the airplane to its usual condition:

a) Do these tasks:

<1> Forward Fairing Installation, AMM TASK 54-52-01-410-801

<2> Wing Junction Fairing Installation, AMM TASK 54-52-03-410-801

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT

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

a) If the Repair Confirmation is OK, then you corrected the fault.

b) If the Repair Confirmation is not OK, then continue.

(k) If you did not find leaks, then continue.

1) If you did not do it before this step, return the airplane to its usual condition:

a) Do these tasks:

<1> Forward Fairing Installation, AMM TASK 54-52-01-410-801

<2> Wing Junction Fairing Installation, AMM TASK 54-52-03-410-801

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT

(2) Do these steps to replace the applicable main tank fuel boost pump bypass valve:

(a) Do these tasks:

1) Remove the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-000-801

2) Install the Fuel Boost Pump Bypass Valve, AMM TASK 28-22-61-400-801

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

(c) If the Repair Confirmation is not OK, then continue.

(3) Do these steps to replace the discharge check valve on the applicable center tank fuel boost pump:

(a) Determine which discharge check valve to replace:

1) If engine 1 failed the suction feed test, replace the discharge check valve on the center tank left boost pump.

2) If engine 2 failed the suction feed test, replace the discharge check valve on the center tank right boost pump.

(b) Do these tasks:

1) Remove the Discharge Check Valve, AMM TASK 28-22-71-000-801

2) Install the Discharge Check Valve, AMM TASK 28-22-71-400-801

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

(d) If the Repair Confirmation is not OK, then continue.

(4) Do a check of the engine-driven fuel pump on the applicable engine:

(a) Do this task: The Visual Inspection of the Impeller Rotation, AMM TASK 73-11-01-200-801-F00.

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

E. Repair Confirmation

(1) Do this task: Engine Fuel Suction Feed - Operational Test, AMM TASK 28-22-00-710-802.

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

END OF TASK

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

820. Center Tank Empty, LOW PRESSURE Light is not On with L CTR FUEL PUMP Switch ON

A. Description

(1) The LOW PRESSURE light for the L CTR FUEL PUMP is not on when the center tank is empty and the L CTR FUEL PUMP switch is ON.

(2) The LOW PRESSURE light for the L CTR FUEL PUMP should come on when the pump fuel pressure is below the minimum allowable pressure.

B. Possible Causes

(1) 115 VAC Wiring

(2) Center tank left low pressure light, L14

(3) Center tank left boost pump pressure switch, S154

(4) Center tank left boost pump switch, S8

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00845	FUEL BOOST PUMP CTR TANK LEFT
HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206			
D	6	C00845	FUEL BOOST PUMP CTR TANK LEFT

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure the center tank has a minimum of 14,000 lb (6350 kg) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

(a) To refuel the fuel tanks (if it is necessary), do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(b) If it is not possible to add 14,000 lb (6350 kg) to the center tank, then do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801.

F. Fault Isolation Procedure

(1) Do this task: Master Dim and Test - Operational Test, AMM TASK 33-18-00-710-802.

NOTE: Make sure the center tank left low pressure light is operative.

(2) If the left center tank LOW PRESSURE light comes on, then do these steps:

(a) On the P5 overhead panel, set the L CTR FUEL PUMP switch to ON, listen to the left center tank boost pump and touch it to make sure it operates.

1) If the left center tank boost pump operates, replace the left center tank boost pump pressure switch, S154.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801

Install the Pressure Switch, AMM TASK 28-42-11-420-801

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

2) If the left center tank boost pump does not operate, then do these steps:

a) On the P5 overhead panel, set the L CTR FUEL PUMP switch to OFF.

b) Disconnect the connector, D802, from the left center tank boost pump (WDM 28-23-11).

c) Set the L CTR FUEL PUMP switch to ON.

d) Do a check for 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D802 (WDM 28-23-11).

e) If there is 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D802, then do these steps:

<1> Replace the motor impeller unit of the left center tank boost pump.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801

Install the Motor Impeller, AMM TASK 28-22-41-400-801

<2> Do the Repair Confirmation at the end of this task.

f) If there is not 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D802, then do these steps:

<1> Replace the left center tank boost pump switch, S8.

<2> Repair the wiring.

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

(3) If the left center tank LOW PRESSURE light does not come on, then replace the left center tank low pressure light, L14.

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

G. Repair Confirmation

(1) Set the L CTR FUEL PUMP switch to ON.

(a) If the left center tank LOW PRESSURE light comes on and goes off, then you corrected the fault.

(b) Set the L CTR FUEL PUMP switch to OFF.

——————— END OF TASK ———————

821. Center Tank Empty, LOW PRESSURE Light is not On with R CTR FUEL PUMP Switch ON

A. Description

(1) The LOW PRESSURE light for the R CTR FUEL PUMP is not on when the center tank is empty and the R CTR FUEL PUMP switch is ON.

(2) The LOW PRESSURE light for the R CTR FUEL PUMP is should come on when the pump fuel pressure is below the minimum allowable pressure.

B. Possible Causes

(1) 115 VAC Wiring

(2) Center tank right low pressure light, L15

(3) Center tank right boost pump pressure switch, S155

(4) Center tank right boost pump switch, S9

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	5	C00846	FUEL BOOST PUMP CTR TANK RIGHT
HAP 031-036; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206			
D	6	C00846	FUEL BOOST PUMP CTR TANK RIGHT

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-28A1206

D. Related Data

(1) (SSM 28-23-11)

(2) (SSM 28-43-11)

(3) (WDM 28-23-11)

(4) (WDM 28-43-11)

E. Initial Evaluation

WARNING: DO NOT OPERATE A FUEL PUMP IF THE LOW PRESSURE LIGHT COMES ON AND STAYS ON. THIS CONDITION CAN CAUSE THE IGNITION OF THE FUEL FUMES IN THE FUEL TANK. A FIRE OR AN EXPLOSION CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(1) Obey these precautions at all times during this task:

(a) To operate any of the fuel pumps, you must be in the flight compartment to continuously monitor the fuel quantity and the low pressure indication in the applicable tank.

(b) Immediately set the applicable fuel pump switch to OFF if the LOW PRESSURE light comes on and stays on.

(2) Make sure the center tank has a minimum of 14,000 lb (6350 kg) of fuel.

NOTE: This step makes sure that the boost pump is correctly primed.

(a) To refuel the fuel tanks (if it is necessary), do this task: Pressure Refuel Procedure, AMM TASK 12-11-00-650-802.

(b) If it is not possible to add 14,000 lb (6350 kg) to the center tank, then do this task: Fuel Boost Pump and Override Pump Priming, AMM TASK 28-22-41-420-801.

F. Fault Isolation Procedure

(1) Do this task: Master Dim and Test - Operational Test, AMM TASK 33-18-00-710-802.

NOTE: Make sure the center tank left low pressure light is operative.

(2) If the right center tank LOW PRESSURE light comes on, then do these steps:

(a) On the P5 overhead panel, set the R CTR FUEL PUMP switch to ON, listen to the right center tank boost pump and touch it to make sure it operates.

1) If the right center tank boost pump operates, replace the right center tank boost pump pressure switch, S155.

These are the tasks:

Remove the Pressure Switch, AMM TASK 28-42-11-000-801

Install the Pressure Switch, AMM TASK 28-42-11-420-801

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

2) If the right center tank boost pump does not operate, then do these steps:

a) On the P5 overhead panel, set the R CTR FUEL PUMP switch to OFF.

b) Disconnect the connector, D804, from the right center tank boost pump (WDM 28-23-11).

c) Set the R CTR FUEL PUMP switch to ON.

d) Do a check for 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D804 (WDM 28-23-11).

e) If there is 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D804, then do these steps:

<1> Replace the motor impeller unit of the right center tank boost pump.

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801

Install the Motor Impeller, AMM TASK 28-22-41-400-801

<2> Do the Repair Confirmation at the end of this task.

f) If there is not 3-phase 208 VAC power between pins 1, 2, and 3 of connector, D804, then do these steps:

<1> Replace the right center tank boost pump switch, S9.

<2> Repair the wiring.

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

(3) If the right center tank LOW PRESSURE light does not come on, then replace the right center tank low pressure light, L15.

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

G. Repair Confirmation

(1) Set the R CTR FUEL PUMP switch to ON.

(a) If the right center tank LOW PRESSURE light comes on and goes off, then you corrected the fault.

(b) Set the R CTR FUEL PUMP switch to OFF.

END OF TASK

801. Fuel Flow to the APU is not Sufficient - Fault Isolation

A. Description

(1) The APU fuel-feed system does not supply sufficient fuel flow to the APU, as shown by (AMM TASK 49-31-00-700-802) or by other problems with the APU.

B. Possible Causes

(1) Blockage in the APU fuel line

(2) APU fuel valve does not open sufficiently

(3) Check valve near the bypass inlet does not open sufficiently

(4) Check valve is stuck in the open position

(5) Leakage in the APU fuel line

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

D. Initial Evaluation

(1) Make sure the No. 1 tank contains a minimum of 350 pounds (159 kilograms) of fuel.

(2) Do this task: APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802.

(a) If there is not sufficient fuel flow, then do the Fault Isolation procedure below.

(b) If there is sufficient fuel flow, then continue.

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

(a) If the BITE test shows a fault message, then do the Fault Isolation for the fault message shown.

(b) If the BITE test shows no fault messages, then continue.

(4) Do this test of the APU:

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

(b) Operate the APU for a minimum of five minutes.

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

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

(e) Look at the CURRENT STATUS page on the CDU display to see if a maintenance message shows.

(f) If a maintenance message shows, then go to the fault isolation task for the message that shows.

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

E. Fault Isolation

(1) Do this check of the APU fuel valve:

(a) On the P5 panel, set the APU master switch to ON.

(b) On the rear spar in the left main wheel well, make sure the override handle on the APU fuel valve goes to the open position.

(c) Carefully try to move the override handle to the open position to make sure it is fully open.

(d) If the override handle did not completely move to the open position when you set the APU master switch to ON, then do these steps:

1) Remove the APU shutoff valve actuator, V43, from the mounting plate (AMM TASK 28-25-02-000-801), but do not remove the electrical connector, D920 from the actuator.

2) With the actuator disconnected from the mounting plate, set the APU master switch to OFF, and then back to ON.

3) If the override handle now moves completely to the open position when the APU master switch is set to ON, then replace the valve body.

These are the tasks:

APU Shutoff Valve Body Assembly Removal, AMM TASK 28-25-02-000-802,

APU Shutoff Valve Body Assembly Installation, AMM TASK 28-25-02-400-802.

4) If the override handle does not move completely to the open position when the APU master switch is set to ON, then replace the valve actuator.

These are the tasks:

APU Shutoff Valve Actuator Assembly Removal, AMM TASK 28-25-02-000-801,

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

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

(e) If the override handle moved completely to the open position when you set the APU master switch to ON, then continue.

(2) Do these steps to do a test for leakage in the APU fuel line from the top of the center tank to the APU inlet:

(a) Do these steps to open the APU shutoff valve:

1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

2) Set the BATTERY SWITCH to ON.

3) Set the APU master switch to ON.

(b) Set the switch for the forward boost pump for the No. 1 tank to ON.

NOTE: This will pressurize the APU fuel line from the No. 1 tank to the APU.

(c) On the P5 Panel, make sure the FWD 1 LOW PRESSURE indicator light goes off.

1) If the FWD 1 LOW PRESSURE indicator light does not go off (after 90 seconds), then, do this task: No. 1 Tank FWD pump LOW PRESSURE light is on - Fault Isolation, 28-22 TASK 804.

(d) Monitor the APU drain mast for 10 minutes to look for fuel leakage in the APU fuel line.

(e) Monitor the flexible APU fuel line in the APU compartment for 10 minutes to look for fuel leakage.

(f) Set the switch for the forward boost pump for the No. 1 tank to OFF.

(g) Set the APU master switch to OFF.

(h) If there was indication of fuel leakage, then do these steps:

1) Replace the section of the APU fuel line that has the leak (AMM TASK 28-25-04-400-802).

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

(i) If there is no indication of fuel leakage, then continue.

(3) Do these steps to do a check for blockage from the forward boost pump to the APU fuel line:

(a) Do the APU fuel supply check again with the aft No. 1 boost pump used to pressurize the APU Fuel Line (AMM TASK 49-31-00-700-802).

(b) If the APU fuel supply check is satisfactory, then do these steps:

1) For the center tank and the No. 1 tank, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802

2) Look for a blockage problem with the inlet for the forward No. 1 tank boost pump, the discharge check valve for the forward No. 1 tank boost pump or with the fuel-feed line from the discharge check valve to the APU fuel line.

3) Repair the problems that you find.

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

(c) If the APU fuel supply check is not satisfactory, then continue. Do not reconnect the APU fuel line at the APU firewall.

(4) With the APU fuel line disconnected at the APU firewall, do these steps to do a check for APU fuel line blockage:

(a) For the center tank and the No. 1 tank, do this task: Purging and Fuel Tank Entry, AMM TASK 28-11-00-910-802

(b) Disconnect the connection between the APU fuel line and the engine fuel-feed manifold.

(c) Permit the fuel to drain from the APU fuel line into a 5 gallon (19 liters) fuel resistant container, STD-1054.

(d) Apply air pressure to the APU fuel line from the end that you disconnected from the engine fuel-feed manifold.

(e) Use the air flow at the open end of the APU fuel line in the APU compartment to look for indications of blockage in the APU fuel line. Note the air flow from the APU fuel line in the APU compartment.

(f) Stop the air pressure to the APU fuel line.

(g) Disconnect the APU fuel line from the center tank adapter fitting on the top of the center tank (AMM TASK 28-25-04-400-802).

(h) Apply air pressure again to the APU fuel line from the end that you disconnected in the center tank.

1) Use the air flow at the open end of the APU fuel line on the top of the tank to look for indications of blockage in the APU fuel line.

2) If there is significantly more air flow from the center tank adapter fitting than there was from the open connection at the APU firewall, then do these steps:

a) Replace the APU fuel line from the center tank adapter fitting to the APU firewall.

These are the tasks:

APU Fuel Line Removal (Center Wing Section to APU Firewall), AMM TASK 28-25-04-400-802,

APU Fuel Line Installation (Center Wing Section to APU Firewall), AMM TASK 28-25-04-400-803.

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

3) If the air flow from the center tank adapter fitting is approximately the same as the air flow noted at the APU firewall, then do these steps:

a) Replace the part of the APU fuel line in the center tank from the connection to the engine fuel-feed manifold to the top of the center tank.

These are the tasks:

APU Fuel Line Removal (No. 1 Tank and Center Tank), AMM TASK 28-25-04-000-801,

APU Fuel Feed Line Installation (No. 1 Tank and Center Tank), AMM TASK 28-25-04-400-801.

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

F. Repair Confirmation

(1) Do this task: APU Fuel Supply Flow Check, AMM TASK 49-31-00-700-802.

(a) Make sure there is sufficient fuel flow.

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

(a) Make sure the BITE test shows no maintenance messages.

(3) Do this test of the APU:

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

(b) Operate the APU for a minimum of five minutes.

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

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

(e) Make sure the CURRENT STATUS page on the CDU display shows no maintenance messages.

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

——————— END OF TASK ———————

802. Indication of Fuel Leakage at APU Shroud Drain Mast - Fault Isolation

A. Initial Evaluation

(1) Examine the APU shroud drain mast for five minutes.

(2) If there is no fuel leakage or if the fuel leakage rate is less than one drop per minute, then the APU fuel line is OK.

(3) If the fuel leakage rate is more than one drop per minute, then continue.

(4) Do these steps to do a leak check of the APU fuel line while it is pressurized:

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

Battery Shield, J9

Row	Col	Number	Name
A	5	C01340	BATTERY BUS

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
HAP 037-054, 101-999			
D	1	C00826	FUEL BOOST PUMP TANK 1 AFT
HAP 001-013, 015-026, 028-036			
D	2	C00826	FUEL BOOST PUMP TANK 1 AFT

Standby Power Control Unit, M01720

Row	Col	Number	Name
HAP ALL			
B	4	C00169	SW HOT BAT BUS

(b) Make sure the No. 1 tank has a minimum of 500 pounds (250 kilograms) of fuel (AMM TASK 12-11-00-650-802).

(c) Set the APU start switch, on the Overhead Panel P5, to the ON position.

(d) Set the FUEL PUMP TANK 1 - AFT switch, on the P5 Overhead Panel, to the ON position.

NOTE: This step pressurizes the APU fuel line.

(e) With the APU fuel line pressurized, examine the APU shroud drain mast for 30 minutes to do a check for leakage.

(f) If the fuel leakage rate is less than 60 drops (3 milliliters or 0.1 fluid ounce) in 30 minutes, then do these steps:

1) Set the FUEL PUMP TANK 1 - AFT switch, on the P5 Overhead Panel, back to OFF.

2) Set the APU start switch, on the P5 Overhead Panel, back to OFF.

3) Continue with normal operation of the APU in service.

4) Do this pressure check of the APU fuel line every day until you repair the APU fuel line or replace it.

5) When it is possible, do the Fault Isolation procedure below.

(g) If the fuel leakage rate is more than 60 drops (3 milliliters or 0.1 fluid ounce) in 30 minutes, then deactivate the APU until the fuel line is repaired. To do this, do this task: APU Preservation (Less Than 45 Days), AMM TASK 49-11-00-600-801.

1) When it is possible, do the Fault Isolation procedure below.

B. Fault Isolation

(1) Make sure the landing gear downlock pins for the nose and main landing gear are installed, do this task: Landing Gear Downlock Pins Installation, AMM TASK 32-00-01-480-801.

(2) For fuel leakage at the APU shroud drain mast, fuel must be leaking from the APU fuel supply line somewhere between the APU firewall bulkhead fitting and the forward wall of the aft cargo compartment.

(3) To get access to the APU fuel supply line and connection fittings open the applicable access panels.

(4) Make sure there is more than 800 LB (400 KG) of fuel in the left main fuel tank (AMM TASK 12-11-00-650-802).

(5) Make sure the APU start switch on the overhead panel P5, is in the off position.

(6) Attach a DO-NOT-OPERATE tag to the APU start switch.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	19	C01344	APU FIRE SW POWER

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
A	14	C00033	AUX POWER UNIT CONT

(8) Move the manual override handle on the APU fuel shutoff valve to the OPEN position.

(9) Set the FUEL PUMP TANK 1 - AFT switch, on the P5 Overhead Panel, to the ON position.

NOTE: This step pressurizes the APU fuel supply line.

(10) Make sure the PRESS light for the left aft boost pump goes off.

(11) Look for leakage at the supply line and/or connection fittings.

(12) Do this check at each APU fuel supply line connection until you find the leak.

(13) When you find the leak, do these steps:

(a) Set the FUEL PUMP TANK 1 - AFT switch, on the overhead panel P5, to the OFF position.

(b) Move the manual override handle on the APU fuel shutoff valve to the CLOSED position.

(c) Replace the supply line and/or repair the connection as follows:

1) Replace the APU Fuel line (Wing Center Section to the APU fire wall) if it is necessary.

These are the tasks:

APU Fuel Line Removal (Center Wing Section to APU Firewall), AMM TASK 28-25-04-400-802,

APU Fuel Line Installation (Center Wing Section to APU Firewall), AMM TASK 28-25-04-400-803.

(14) Close all of the access panels.

(15) Do the Repair Confirmation procedure below.

C. Repair Confirmation

(1) Examine the APU shroud drain mast for five minutes.

(a) If there is no fuel leakage or if the fuel leakage rate is less than one drop per minute, then you corrected the fault.

——————— END OF TASK ———————

801. FQIS BITE Procedure

A. General

(1) You do the FQIS BITE Test from the control display unit (CDU) in the flight compartment. There are two CDUs on the forward electronics panel in the flight compartment.

(2) The FQIS BITE procedure uses these functions from the FQIS BITE TEST Main Menu:

(a) CURRENT STATUS

(b) GROUND TEST

(3) CURRENT STATUS

(a) The CURRENT STATUS display shows faults which are currently present in the FQIS system.

(4) GROUND TEST

(a) The GROUND TEST function does a complete system test of the FQIS.

B. Fuel Quantity BITE Test Procedure

(1) Do the BITE procedure for the FQIS (Figure 201):

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

1) Push the INIT REF function key.

2) If the POS INIT display shows, then push the line select key next to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX show.

3) Push the line select key next to the MAINT prompt.

(b) From the MAINT BITE INDEX, push the line select key next to the FQIS prompt.

(c) Do these steps to look for maintenance messages in CURRENT STATUS:

1) Push the line select key next to the CURRENT STATUS prompt.

2) Make a written record of the maintenance message numbers for all of the faults shown on the CURRENT STATUS display.

a) If there is more than one page of faults in CURRENT STATUS, then use the NEXT PAGE key and the PREV PAGE key to see all of the maintenance messages.

NOTE: The number of pages of faults in CURRENT STATUS are shown in the upper right corner of the display.

If a fault shows the message FAULT NO LONGER PRESENT, then the fault was corrected while the CURRENT STATUS display was on.

b) Refer to the table at the end of this task to find the fault isolation tasks for the maintenance messages that you find.

3) If NO PRESENT FAULTS shows on the CURRENT STATUS display, then continue. No current faults are found in the system.

4) Push the line select key next to the INDEX prompt.

NOTE: This will bring you back to the FQIS BITE TEST main menu.

(d) Do these steps to do the FQIS ground test:

1) Push the line select key next to the GROUND TEST prompt.

a) Push the line select key next the YES prompt to verify that you want to do the ground test.

2) When the ground test is complete, the display will show GROUND TEST COMPLETE PASS or FAIL.

3) If the display shows GROUND TEST COMPLETE PASS, then there are no faults found in the FQIS.

NOTE: If faults show in CURRENT STATUS, then keep a record of the faults for later fault isolation of intermittent faults. The corrective action given for each fault found in CURRENT FAULTS can also be used to correct intermittent faults that occur frequently.

4) If the display shows GROUND TEST COMPLETE FAIL, then push the line select key next to the DISPLAY FAULTS prompt.

5) Make a written record of the message numbers for all of the faults shown on the GROUND TEST FAULTS display.

a) If there is more than one page of faults in GROUND TEST FAULTS, then use the NEXT PAGE key and the PREV PAGE key to see all of the maintenance messages.

NOTE: The number of pages of faults in GROUND TEST FAULTS are shown in the upper right corner of the display.

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

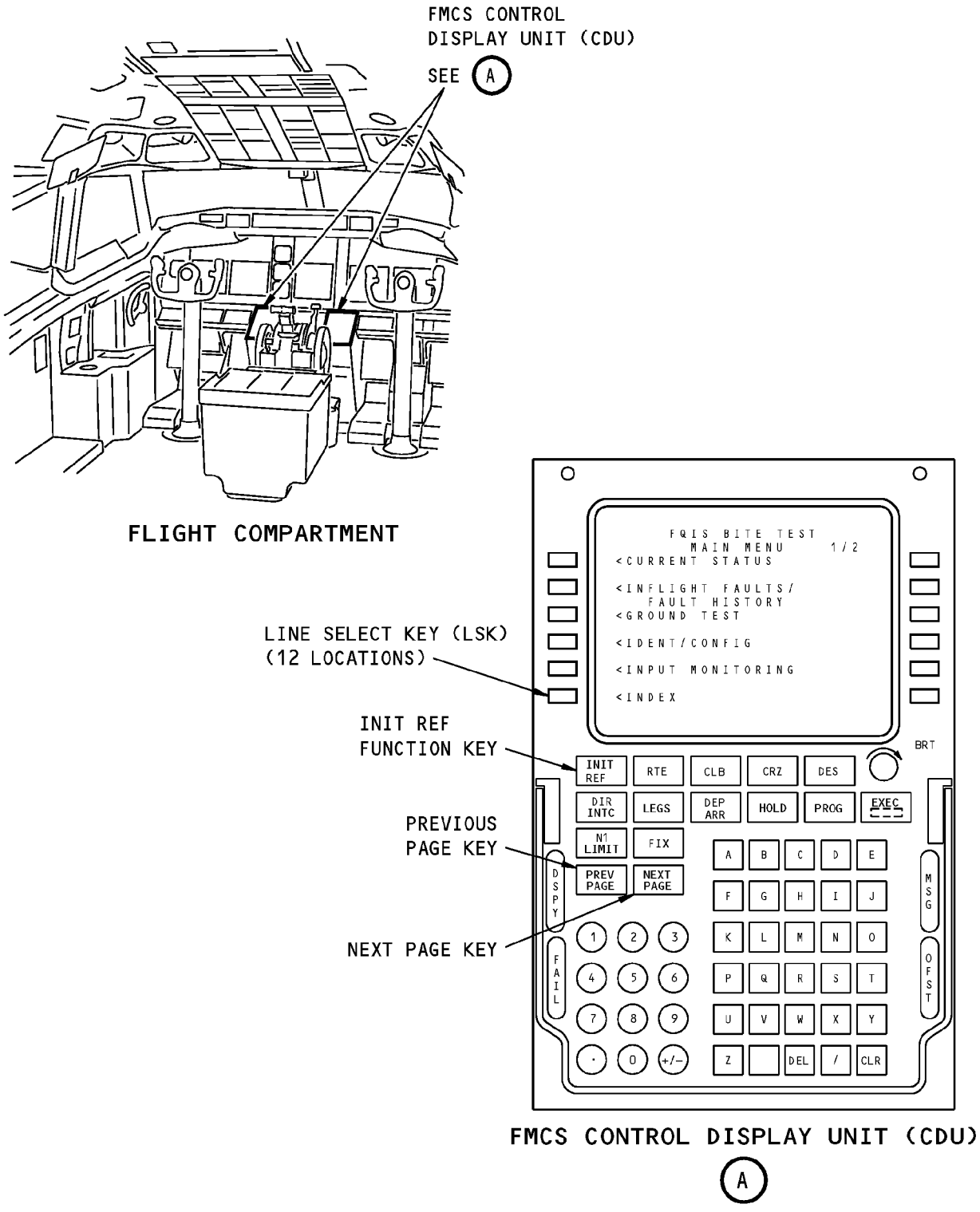
NOTE: If faults show in CURRENT STATUS that do not show in GROUND TEST FAULTS, then keep a record of the faults for later fault isolation of intermittent faults. The corrective action given for each fault found in CURRENT FAULTS can also be used to correct intermittent faults that occur frequently.

———————— END OF TASK ————————

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FQIS	28-41001 NO FMC DATA ON FQIS 6	28-41 TASK 812
FQIS	28-41002 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41101 1 OR MORE TANK UNIT OPEN	28-41 TASK 818
FQIS	28-41102 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41103 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41104 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41105 HI-Z OP/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41106 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41107 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41108 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41109 PROCESSOR FAILED	28-41 TASK 808
FQIS	28-41110 PROCESSOR FAULT	28-41 TASK 809

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FQIS	28-41111 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41113 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41114 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41115 ARINC OUTPUT BUS FAILED	28-41 TASK 810
FQIS	28-41201 TANK UNIT LO-Z OPEN/GND	28-41 TASK 818
FQIS	28-41202 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41203 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41204 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41205 HI-Z OP/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41206 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41207 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41208 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41209 PROCESSOR FAILED	28-41 TASK 808
FQIS	28-41210 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41211 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41213 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41214 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41215 ARINC OUTPUT BUS FAILED	28-41 TASK 810
FQIS	28-41301 1 OR MORE TANK UNIT OPEN	28-41 TASK 818
FQIS	28-41302 TANK UNIT LO-Z OPEN/GND	28-41 TASK 802
FQIS	28-41303 TANK UNIT SHORT/ > FULL	28-41 TASK 803
FQIS	28-41304 TANK UNIT LO RESISTANCE	28-41 TASK 804
FQIS	28-41305 HIZ OPEN/SHORT TO SHIELD	28-41 TASK 816
FQIS	28-41306 COMPENSATOR LO-Z OP/GND	28-41 TASK 805
FQIS	28-41307 COMPENSATOR SHORTED	28-41 TASK 806
FQIS	28-41308 COMPENSATOR DATA BAD	28-41 TASK 807
FQIS	28-41309 PROCESSOR FAILED	28-41 TASK 808

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FQIS	28-41310 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41311 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41313 PROGRAM PINS INVALID	28-41 TASK 811
FQIS	28-41314 PROCESSOR FAULT	28-41 TASK 809
FQIS	28-41315 ARINC OUTPUT BUS FAILED	28-41 TASK 810



FQIS BITE Main Menu
Figure 201 / 28-41-00-990-804

802. FQIS Fault Message - TANK UNIT LO-Z OPEN/GND - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41102 TANK UNIT LO-Z OPEN/GND

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41202 TANK UNIT LO-Z OPEN/GND

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41302 TANK UNIT LO-Z OPEN/GND

1) This fault code shows a problem with the center tank.

(2) One or more of the tank unit Lo-Z wires is shorted to ground, or the common tank unit Lo-Z wire is open.

(3) This message is shown if the measured (total) tank unit capacitance is less than 13 percent of the tank unit empty capacitance.

(4) This message can also be shown if the compensator Lo-Z wire is shorted to ground through less than 100 ohms (28-41 TASK 805).

(5) This fault causes the FQIS display and the refuel panel indicator for the tank that has the fault to become blank.

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) FQIS tank unit or compensator

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows TANK UNIT LO-Z OPEN/GND for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Disconnect the applicable bussing plug and examine the pins for corrosion or damage. To do this, do this task: Bussing Plug Removal, AMM TASK 28-41-41-000-801.

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Reconnect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows TANK UNIT LO-Z OPEN/GND for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(2) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(3) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to structure ground is more than 1 megohm.

5) Make sure the resistance from D11312, pin 3 to structure ground is more than 1 megohm.

6) Re-connect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to structure ground is more than 1 megohm.

5) Make sure the resistance from D11314, pin 3 to structure ground is more than 1 megohm.

6) Re-connect connectors D11306 and D11314.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to structure ground is more than 1 megohm.

5) Make sure the resistance from D11316, pin 3 to structure ground is more than 1 megohm.

6) Re-connect connectors D11308 and D11316.

(d) If you find a problem with the wiring, then repair the wiring.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT LO-Z OPEN/GND, then continue.

(4) If a single tank unit or compensator shows problems, then do these steps:

(a) Replace the tank unit or compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the tank unit and the adjacent wiring for these problems:

1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the tank unit or compensator.

4) Make sure there are no loose terminal connections at the tank unit.

5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).

(c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT LO-Z OPEN/GND, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(5) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

——————— END OF TASK ———————

803. FQIS Fault Message - TANK UNIT SHORT/>FULL - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41103 TANK UNIT SHORT/>FULL

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41203 TANK UNIT SHORT/>FULL

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41303 TANK UNIT SHORT/>FULL

1) This fault code shows a problem with the center tank.

(2) This fault can be caused by one of these three conditions:

(a) This fault shows if the measured volume is more than the volume of the tank. For example, this fault shows if the FQIS indicates more than 1400 U.S. gallons (5300 liters) in the No. 1 or the No. 2 tank. The fault also shows if the FQIS indicates more than 4750 U.S. gallons (18000 liters) in the center tank.

(b) This fault shows if there is a resistance in parallel with the tank units that can cause an error of more than 4.5% of full tank in the indicated fuel mass.

(c) This fault also shows if an open Hi-Z shield causes an FQIS indication that is more than the full tank capacity. Beyond the open point, the shield acts as an antenna for the Lo-Z signal. Ths signal then appears on the Hi-Z center conductor. The Lo-Z and Hi-Z wires are in the same harness so if the open point in the shield is close to the processor (which would allow an antenna of maximum length) it is possible for the added signal to increase the measured fuel quantity by more than 2000 pounds (1000 kilograms).

(3) This fault causes the FQIS display and the refuel panel indicator for the tank that has the fault to become blank.

(4) When the fault is present, the compensator capacitance can be normal or abnormal. If the fault is caused by contamination in the fuel (water, for example), then the tank unit capacitance will be too large for the quantity of fuel in the tank.

(5) If the fault is caused by a low resistance in parallel with the tank units, you can measure the resistance from the tank unit Lo-Z to the tank unit Hi-Z center conductor to confirm the cause of the fault. In the No. 1 or No. 2 tank, the fault is caused by a resistance of less than 65 kilohms. In the center tank, the fault is caused by a resistance of less than 45 kilohms.

(6) If the fault is caused by an open in the Hi-Z shield, do a close inspection of the shield continuity from the processor to the most distant tank unit.

(7) This fault can also occur if the compensator has a short between 0 and 100 ohms.

B. Possible Causes

(1) FQIS wire harness (including an open Hi-Z shield)

(2) Water contamination in the fuel tank

(3) Microbial growth in the fuel tank

(4) FQIS tank unit or compensator

(5) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug or an open Hi-Z shield)

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows TANK UNIT SHORT/ > FULL for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do these steps to do a check for water in the fuel:

(a) Get a sample of fuel at the sump of the applicable fuel tank. To get a sample, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

(b) Add one or two drops of water-soluble food coloring to the fuel sample.

NOTE: If there is water contamination of the fuel sample, the water in the fuel sample will be identified by the food coloring.

(c) If there is water contamination of the fuel sample, continue to get samples of fuel until no water is identified by the food coloring. To get samples, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST shows TANK UNIT SHORT/ > FULL for the applicable tank, then continue.

(d) If there is no water contamination of the fuel sample, then continue.

(2) Do these steps to do a check for microbial growth in the fuel:

(a) Go into the NO.1 TANK (NO. 2, CENTER TANK) (AMM PAGEBLOCK 28-11-00/201).

(b) Check for Microbial growth.

(c) Correct any problem that you find (AMM PAGEBLOCK 28-11-00/201).

(d) Do this Task: (FQIS BITE Procedure, 28-41 TASK 801).

(e) If the GROUND TESTshow PASS, then you corrected the fault.

(f) If the GROUND TEST shows TANK UNIT SHORT/ > FULL for the applicable tank, then continue.

(3) If there is no microbial growth in the fuel tank, then continue.

(4) Disconnect the applicable bussing plug and examine the pins for a bent pin or other damage. To do this, do this task: Bussing Plug Removal, AMM TASK 28-41-41-000-801

(a) If there is damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Re-connect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows TANK UNIT SHORT/>FULL for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(5) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(6) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Disconnect connector D11312 at the front spar if it is not already disconnected.

3) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

4) Do a continuity check from pin 9 on connector D11304 to the Hi-Z shield around pin 2 on connector D11312.

NOTE: This step does a check of the out-of-tank wiring for an open shield condition.

5) Make sure connector D11304 is disconnected.

6) Make sure the resistance from D11312, pin 2 to D11312, pin 1 is more than 1 megohm.

7) Make sure the resistance from D11312, pin 3 to D11312, pin 1 is more than 1 megohm.

8) Re-connect connectors D11304 and D11312. To re-connect connector D11312, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Disconnect connector D11314 at the front spar if it is not already disconnected.

3) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

4) Do a continuity check from pin 9 on connector D11306 to the Hi-Z shield around pin 2 on connector D11314.

NOTE: This step does a check of the out-of-tank wiring for an open shield condition.

5) Make sure connector D11306 is disconnected.

6) Make sure the resistance from D11314, pin 1 to D11314, pin 2 is more than 1 megohm.

7) Make sure the resistance from D11314, pin 1 to D11314, pin 3 is more than 1 megohm.

8) Re-connect connectors D11306 and D11314. To re-connect connector D11314, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Disconnect connector D11316 at the front spar if it is not already disconnected.

3) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

4) Do a continuity check from pin 9 on connector D11308 to the Hi-Z shield around pin 2 on connector D11316.

NOTE: This step does a check of the out-of-tank wiring for an open shield condition.

5) Make sure connector D11308 is disconnected.

6) Make sure the resistance from D11316, pin 1 to D11316, pin 2 is more than 1 megohm.

7) Make sure the resistance from D11316, pin 1 to D11316, pin 3 is more than 1 megohm.

8) Reconnect connectors D11308 and D11316. To re-connect connector D11316, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(d) If you find a problem with the wiring, then repair the problems that you find.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT SHORT/ > FULL, then continue.

(7) If the tank and compensator unit shows a single tank unit or compensator with problems, then do these steps:

(a) Replace the tank unit or compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the tank unit and the adjacent wiring for these problems:

1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the tank unit or compensator.

4) Make sure there are no loose terminal connections at the tank unit.

5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).

(c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT SHORT/>FULL, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(8) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

——————— END OF TASK ———————

804. FQIS Fault Message - TANK UNIT LO RESISTANCE - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41104 TANK UNIT LO RESISTANCE

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41204 TANK UNIT LO RESISTANCE

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41304 TANK UNIT LO RESISTANCE

1) This fault code shows a problem with the center tank.

(2) This fault message alone does not cause the FQIS display or the refuel panel indicator to become blank. It shows that the measured fuel mass has an error additional to the baseline error which is less than +/- 5 percent of full scale fuel mass.

(3) This fault message shows if the measured resistance from the tank unit Lo-Z wire to the Hi-Z center conductor is less than approximately 253 kilohm and more than 64.8 kilohm for the No. 1 or No. 2 tank, less than approximately 177 kilohm and more than 45.1 kilohm for the center tank.

(4) This fault message is intended to show a condition that can develop into a fault indicated by the message TANK UNIT SHORT/>FULL. This fault message can indicate some contamination in one or more of the tank units or the compensator or a decrease in the resistance from the Lo-Z to the Hi-Z part of the tank unit circuit. This decrease in resistance could be caused by the start of a breakdown in the tank harness insulation or by conductivity across the tank units.

B. Possible Causes

(1) FQIS wire harness

(2) Water contamination in the fuel tank

(3) Microbial growth in the fuel tank

(4) FQIS tank unit or compensator

(5) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(6) M1827 FQPU Fuel Quantity Processor Unit

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows TANK UNIT LO RESISTANCE for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do these steps to do a check for water in the fuel:

(a) Get a sample of fuel at the sump of the applicable fuel tank. To get a sample, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

(b) Add one or two drops of water-soluble food coloring to the fuel sample.

NOTE: If there is water contamination of the fuel sample, the water in the fuel sample will be identified by the food coloring.

(c) If there is water contamination of the fuel sample, continue to get samples of fuel until no water is identified by the food coloring. To get samples, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST shows TANK UNIT LO RESISTANCE for the applicable tank, then continue.

(d) If there is no water contamination of the fuel sample, then continue.

(2) Do these steps to do a check for microbial growth in the fuel:

(a) Go into the NO.1 TANK (NO. 2, CENTER TANK) (AMM PAGEBLOCK 28-11-00/201).

(b) Check for Microbial growth.

(c) Correct any problem that you find (AMM PAGEBLOCK 28-11-00/201 AMM PAGEBLOCK 28-11-00/701).

(d) Do this Task: (FQIS BITE Procedure, 28-41 TASK 801 FQIS BITE Procedure, 28-41 TASK 801).

(e) If the GROUND TESTshow PASS, then you corrected the fault.

(f) If the GROUND TEST shows TANK UNIT LO RESISTANCE for the applicable tank, then continue.

(3) If there is no microbial growth in the fuel tank, then continue.

(4) Disconnect the applicable bussing plug and examine the pins for a bent pin or other damage (AMM TASK 28-41-41-000-801).

(a) If there is damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Reconnect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows TANK UNIT LO RESISTANCE for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(5) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(6) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 2 to D11312, pin 1 is more than 1 megohm.

5) Make sure the resistance from D11312, pin 3 to D11312, pin 1 is more than 1 megohm.

6) Reconnect connectors D11304 and D11312. To re-connect connector D11312, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to D11314, pin 2 is more than 1 megohm.

5) Make sure the resistance from D11314, pin 1 to D11314, pin 3 is more than 1 megohm.

6) Reconnect connectors D11306 and D11314. To re-connect connector D11314, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 2 to D11316, pin 1 is more than 1 megohm.

5) Make sure the resistance from D11316, pin 3 to D11316, pin 1 is more than 1 megohm.

6) Reconnect connectors D11308 and D11316. To re-connect connector D11316, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801.

(d) If you find a problem with the wiring, then repair the wiring.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT LO RESISTANCE, then continue.

(7) If a single tank unit or compensator shows problems, then do these steps:

(a) Replace the tank unit or compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the tank unit and the adjacent wiring for these problems:

1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the tank unit or compensator.

4) Make sure there are no loose terminal connections at the tank unit.

5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).

(c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show TANK UNIT LO RESISTANCE, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS Fault Message - 1 OR MORE TANK UNIT OPEN - Fault Isolation, 28-41 TASK 818.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(8) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(9) If the problem continues, do these steps:

(a) Replace the FQPU. These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801.

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801

(b) Do this task: Operational Test - Fuel Quantity Indicating System, AMM TASK 28-41-00-710-801.

END OF TASK

805. FQIS Fault Message - COMPENSATOR LO-Z OP/GND - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41106 COMPENSATOR LO-Z OP/GND

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41206 COMPENSATOR LO-Z OP/GND

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41306 COMPENSATOR LO-Z OP/GND

1) This fault code shows a problem with the center tank.

(2) The compensator Lo-Z wire is open or shorted to ground.

(3) This message is shown if the measured value of [K-1] is less than or equal to -0.85. If this fault condition causes an error in the fuel mass of less than 5 percent, then [K-1] is set to a nominal value of 1.1365.

NOTE: K is the "dielectric constant". Air, by definition has a K factor of 1. Fuel, depending on density and source, can have a K factor between approximately 2.0 and 2.2.

(4) If the fault condition is a short to ground and the magnitude of the short is sufficient to cause an error of 5 percent or more in the fuel mass calculation, the FQIS display and the refuel panel indicator for the tank that has the fault becomes blank.

(5) If the fault condition is a Lo-Z open wire or the short to ground is not sufficient to cause more than a 5 percent error in mass calculation, the fuel quantity continues to show with [K-1] set to the nominal value of 1.1365.

(6) This fault can also be shown if the tank unit Lo-Z wire is shorted to ground through less than 100 ohms (28-41 TASK 802).

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) Compensator

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows COMPENSATOR LO-Z OP/GND for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Disconnect the applicable bussing plug and examine the pins for corrosion or damage (AMM TASK 28-41-41-000-801).

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Reconnect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows COMPENSATOR LO-Z OPEN/GND for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(2) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(3) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		**D11304**
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to the shield on D11312 is more than 1 megohm.

5) Reconnect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to the shield on D11314 is more than 1 megohm.

5) Reconnect connectors D11306 and D11314.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to the shield on D11316 is more than 1 megohm.

5) Reconnect connectors D11308 and D11316.

(d) If you find a problem with the wiring, then repair the problems that you find.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSAT0R LO-Z OP/GND, then continue.

(4) If a single tank unit or compensator shows problems, then do these steps:

(a) Replace the tank unit or compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the tank unit and the adjacent wiring for these problems:

1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the tank unit or compensator.

4) Make sure there are no loose terminal connections at the tank unit.

5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).

(c) If there are problems with the tank unit or the adjacent wiring, repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSATOR LO-Z OP/GND, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(5) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

——————— END OF TASK ———————

806. FQIS Fault Message - COMPENSATOR SHORTED - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41107 COMPENSATOR SHORTED

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41207 COMPENSATOR SHORTED

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41307 COMPENSATOR SHORTED

1) This fault code shows a problem with the center tank.

(2) This fault shows a short from the compensator Lo-Z wire to the Hi-Z center conductor.

(3) This fault is shown if the resistance from compensator Lo-Z to the Hi-Z center conductor is less than 220 Kohms (+/- 25 Kohms). If the error in fuel mass calculation caused by the fault is less than 5 percent, then [K-1] is set to the nominal value of 1.1365.

NOTE: K is the "dielectric constant". Air, by definition has a K factor of 1. Fuel, depending on density and source, can have a K factor between approximately 2.0 and 2.2.

(4) If error in fuel mass calculation caused by the fault is more than 5 percent, then the FQIS display in the flight compartment and the refuel indicator become blank. This usually occurs when the resistance from the compensator Lo-Z wire to the Hi-Z center conductor is between 0 and 10 Kohms.

(5) If the error in the fuel mass calculation is less than 5 percent, then the fuel quantity in the flight compartment and at the refueling station continues to display with [K-1] set to the nominal value of 1.1365.

(6) This fault can also be shown if the tank unit Lo-Z wire is shorted to ground through less than 100 ohms (28-41 TASK 802).

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) Compensator

(4) Microbial growth in the fuel tank

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows COMPENSATOR SHORTED for the applicable tank, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Do these steps to do a check for water in the fuel:

(a) Get a sample of fuel at the sump of the applicable fuel tank. To do this, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801

(b) Add one or two drops of water-soluble food coloring to the fuel sample.

NOTE: If there is water contamination of the fuel sample, the water in the fuel sample will be identified by the food coloring.

(c) If there is water contamination of the fuel sample, continue to get samples of fuel until no water is identified by the food coloring.

1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST shows COMPENSATOR SHORTED for the applicable tank, then continue.

(d) If there is no water contamination of the fuel sample, then continue.

(2) Do these steps to do a check for microbial growth in the fuel:

(a) Go into the NO.1 TANK (NO. 2, CENTER TANK) (AMM PAGEBLOCK 28-11-00/201).

(b) Check for Microbial growth.

(c) Correct any problem that you find (AMM PAGEBLOCK 28-11-00/201 AMM PAGEBLOCK 28-11-00/701).

(d) Do this Task: (FQIS BITE Procedure, 28-41 TASK 801 FQIS BITE Procedure, 28-41 TASK 801).

(e) If the GROUND TESTshow PASS, then you corrected the fault.

(f) If the GROUND TEST shows COMPENSATOR SHORTED for the applicable tank, then continue.

(3) If there is no microbial growth in the fuel tank, then continue.

(4) Disconnect the applicable bussing plug and examine the pins for corrosion or damage (AMM TASK 28-41-41-000-801).

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Re-connect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows COMPENSATOR SHORTED for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(5) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(6) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to the shield on D11312 is more than 1 megohm.

5) Re-connect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11314 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to the shield on D11314 is more than 1 megohm.

5) Re-connect connectors D11306 and D11314.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to the shield on D11316 is more than 1 megohm.

5) Re-connect connectors D11308 and D11316.

(d) If you find a problem with the wiring, then repair the wiring.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSATOR SHORTED, then continue.

(7) If only the compensator shows problems, then do these steps:

(a) Replace the compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the compensator and the adjacent wiring for these problems:

1) Make sure no parts of the compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the compensator.

4) Make sure there are no loose terminal connections at the compensator.

5) Make sure there are not other problems with the wiring near the compensator (for example, a wire pinched under a compensator).

(c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSATOR SHORTED, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(8) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

———————— END OF TASK ————————

807. FQIS Fault Message - COMPENSATOR DATA BAD - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41108 COMPENSATOR DATA BAD

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41208 COMPENSATOR DATA BAD

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41308 COMPENSATOR DATA BAD

1) This fault code shows a problem with the center tank.

(2) This fault message is intended to show a condition that can develop into a fault indicated by the message COMPENSATOR SHORTED. This fault message can indicate some contamination in the compensator or a decrease in the resistance from the Lo-Z to the Hi-Z part of the compensator circuit. This decrease in resistance could be caused by the start of a breakdown in the tank harness insulation or by conductivity across the compensator.

(3) This fault message is shown for any one of these conditions:

(a) If the volume is above the compensator covered volume and the measured [K-1] is less than 1.000 and more than -0.85

(b) If the volume is above the compensator covered volume and the measured [K-1] is more than 1.270

(c) If the measured resistance from compensator Lo-Z to the Hi-Z Center conductor is less than 800 Kohms but more than 220 Kohms.

(4) If this fault is shown, the error in the fuel mass calculation is less than +/- 5 percent. The fuel quantity for the applicable tank continues to show in the flight compartment and on the refuel panel. [K-1] is set to a nominal value of 1.1365.

NOTE: K is the "dielectric constant". Air, by definition has a K factor of 1. Fuel, depending on density and source, can have a K factor between approximately 2.0 and 2.2.

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) Compensator

(4) Microbial growth in the fuel tank

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows COMPENSATOR DATA BAD for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Do these steps to do a check for water in the fuel:

(a) Get a sample of fuel at the sump of the applicable fuel tank. To do this, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801

(b) Add one or two drops of water-soluble food coloring to the fuel sample.

NOTE: If there is water contamination of the fuel sample, the water in the fuel sample will be identified by the food coloring.

(c) If there is water contamination of the fuel sample, continue to get samples of fuel until no water is identified by the food coloring.

1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST shows COMPENSATOR DATA BAD for the applicable tank, then continue.

(d) If there is no water contamination of the fuel sample, then continue.

(2) Do these steps to do a check for microbial growth in the fuel:

(a) Go into the NO.1 TANK (NO. 2, CENTER TANK) (AMM PAGEBLOCK 28-11-00/201).

(b) Check for Microbial growth.

(c) Correct any problem that you find (AMM PAGEBLOCK 28-11-00/201 AMM PAGEBLOCK 28-11-00/701).

(d) Do this Task: (FQIS BITE Procedure, 28-41 TASK 801 FQIS BITE Procedure, 28-41 TASK 801).

(e) If the GROUND TESTshow PASS, then you corrected the fault.

(f) If the GROUND TEST shows COMPENSATOR DATA BAD for the applicable tank, then continue.

(3) If there is no microbial growth in the fuel tank, then continue.

(4) Disconnect the applicable bussing plug and examine the pins for corrosion or damage. To do this, do this task: Bussing Plug Removal, AMM TASK 28-41-41-000-801

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Re-connect the bussing plug. To do this, do this task: Bussing Plug Installation, AMM TASK 28-41-41-400-801

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows COMPENSATOR DATA BAD for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(5) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(6) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to the shield on D11312 is more than 1 megohm.

5) Reconnect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to the shield on D11314 is more than 1 megohm.

5) Re-connect connectors D11306 and D11314.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to the shield on D11316 is more than 1 megohm.

5) Re-connect connectors D11308 and D11316.

(d) If you find a problem with the wiring, then repair the wiring.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSATOR DATA BAD, then continue.

(7) If only the compensator shows problems, then do these steps:

(a) Replace the compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the compensator and the adjacent wiring for these problems:

1) Make sure no parts of the compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the compensator.

4) Make sure there are no loose terminal connections at the compensator.

5) Make sure there are not other problems with the wiring near the compensator (for example, a wire pinched under the compensator).

(c) If there are problems with the compensator or the adjacent wiring, repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show COMPENSATOR DATA BAD, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(8) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

END OF TASK

808. FQIS Fault Message - PROCESSOR FAILED - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41109 PROCESSOR FAILED

(b) 28-41209 PROCESSOR FAILED

(c) 28-41309 PROCESSOR FAILED

(2) This message is shown if the circuitry in the Fuel Quantity Processor Unit (FQPU) has failed and will cause a fuel mass calculation error of more than +/- 5 percent.

(3) The FQIS display in the flight compartment and the refuel indicator become blank when this fault message is shown.

B. Possible Causes

(1) Fuel quantity processor unit (FQPU), M1827

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows PROCESSOR FAILED for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do these steps to replace the processor and confirm that you corrected the fault:

(a) Replace the fuel quantity processor unit (FQPU), M1827.

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

(b) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(c) If the GROUND TEST shows PASS, then you corrected the fault.

——————— END OF TASK ———————

809. FQIS Fault Message - PROCESSOR FAULT - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41002 PROCESSOR FAILED

(b) 28-41110 PROCESSOR FAILED

(c) 28-41210 PROCESSOR FAILED

(d) 28-41310 PROCESSOR FAILED

(e) 28-41114 PROCESSOR FAILED

(f) 28-41214 PROCESSOR FAILED

(g) 28-41314 PROCESSOR FAILED

(2) This message is shown if the circuitry in the Fuel Quantity Processor Unit (FQPU) has a problem that will cause a fuel mass calculation error of less than +/- 5 percent.

(3) The FQIS display in the flight compartment and the refuel indicator continue to show with an accuracy of +/- 5 percent when this fault message is shown.

B. Possible Causes

(1) Fuel quantity processor unit (FQPU), M1827

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows PROCESSOR FAULT for the applicable tank, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Do these steps to replace the processor and confirm that you corrected the fault:

(a) Replace the fuel quantity processor unit, M1827.

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

(b) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(c) If the GROUND TEST shows PASS, then you corrected the fault.

—————— END OF TASK ——————

810. FQIS Fault Message - ARINC OUTPUT BUS FAILED - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41115 ARINC OUTPUT BUS FAILED

(b) 28-41215 ARINC OUTPUT BUS FAILED

(c) 28-41315 ARINC OUTPUT BUS FAILED

(2) This fault message is shown if the ARINC display hardware or wiring has a problem.

B. Possible Causes

(1) Wiring

(2) Fuel quantity processor unit (FQPU), M1827

(3) Display electronics unit (DEU) No. 1 or No. 2, M1808 or M1809

(4) Flight management computer (FMC)

(5) Refuel quantity indicator, N193, N194, or N195

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows ARINC OUTPUT BUS FAILED, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Do these steps to do a check of the refuel quantity indicators on the P15 panel:

(a) Open this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(b) Make sure the display on each load select indicator shows the quantity of fuel in each fuel tank.

(c) Push the FUELING INDICATION TEST SWITCH on the refuel control panel.

1) Make sure all of the fueling quantity indicators operate correctly.

NOTE: The test blanks the fueling indicators display for two seconds, then all LED segments go on for two seconds. This sequence continues as long as you hold the TEST SWITCH. If you hold the TEST SWITCH for more than 20 seconds, the test mode will time out and the indicator will go back to its usual operating mode. If an internal fault is found during the test, the indicator will show Ind FAIL.

(d) Make sure the display on each load select indicator shows the quantity of fuel in each fuel tank.

(e) If the load select indicators are not OK, then, do this task: Refuel Quantity Indicator Displays Incorrectly When Test Switch is Pressed - Fault Isolation, 28-21 TASK 802

(f) If the load select indicators are OK, then continue. Close this access panel:

Number	Name/Location
621GB	Refuel Access Panel - Slat Station 143.27

(2) Do these steps to do a check of the Display Electronics Units (DEUs):

(a) For each of the two DEUs, do this task: DEU Self-Test Procedure, 31-62 TASK 802

(b) If one of the two DEUs fails the self-test, then do these steps:

1) Replace the bad DEU.

These are the tasks:

Display Electronic Unit Removal, AMM TASK 31-62-21-000-801,

Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

(c) If the two DEUs pass the self-test, then continue.

(3) Do these steps to do a check of the Flight Management Computer (FMC):

(a) Do this task: Flight Management Computer System - Operational Test, AMM TASK 34-61-00-710-801.

(b) If the FMC Operational test shows problems, do these steps:

1) Do the fault correction shown. To do this, do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.

2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

3) If the GROUND TEST shows PASS, then you corrected the fault.

(c) If the FMC Operational Test does not show problems, then continue.

(4) Replace the fuel quantity processor unit (FQPU).

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

2) If the GROUND TEST continues to show, ARINC OUTPUT BUS FAILED, then continue.

(5) Do these steps to do a check of the ARINC wiring from the FQPU:

(a) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

(b) Disconnect connector D3973B on DEU No. 1 on the E3-1 shelf in the Electronic Equipment Bay.

(c) Do a continuity check between these pins of connector D11308 and connector D3973B:

D11308	D3973B
pin 24	pin K5
pin 25	pin J5

(d) Disconnect connector D3975B on DEU No. 2 on the E3-1 shelf in the Electronic Equipment Bay. Do a continuity check between these pins of connector D11308 and connector D3975B:

D11308	D3975B
pin 24	pin K5
pin 25	pin J5

(e) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

(f) Disconnect connector D3973D on DEU No. 1 on the E3-1 shelf in the Electronic Equipment Bay.

(g) Do a continuity check between these pins of connector D11306 and connector D3973D:

D11306	D3973D
pin 24	pin K5
pin 25	pin J5

(h) Disconnect connector D3975D on DEU No. 2 on the E3-1 shelf in the Electronic Equipment Bay.

(i) Do a continuity check between these pins of connector D11306 and connector D3975D:

D11306	D3975D
pin 24	pin K5
pin 25	pin J5

(j) Disconnect connector D4578J on the P15 panel on the wing.

(k) Do a continuity check between these pins of connector D11306 and connector D4578J:

D11306	D4578J
pin 24	pin 5
pin 25	pin 4

(l) Disconnect connector D2179A on the E5-2 shelf in the Electronic Equipment Bay.

(m) Do a continuity check between these pins of connector D11306 and connector D2179A:

D11306	D2179A
pin 1	pin D5
pin 3	pin E5

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(n) If applicable, disconnect connector D3261A on the E5-2 shelf in the Electronic Equipment Bay.

1) Do a continuity check between these pins of connector D11306 and connector D3261A:

D11306	D3261A
pin 1	pin D5
pin 3	pin E5

HAP ALL

(o) Repair the wiring.

(p) Reconnect connectors D11306, D11308, D2179A, D3261A (if applicable), D4578J, D3973B, D3973D, DD3975B, D3975D.

(q) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

END OF TASK

811. FQIS Fault Message - PROGRAM PINS INVALID - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41113 PROGRAM PINS INVALID

(b) 28-41213 PROGRAM PINS INVALID

(c) 28-41313 PROGRAM PINS INVALID

(2) The Fuel Quantity Processor Unit (FQPU) cannot find the status of LB/KG discrete or of the densitometer present/absent discrete.

B. Possible Causes

(1) Connectors D11306, D11308 and the related wiring

(2) Fuel quantity processor unit (FQPU), M1827

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows PROGRAM PINS INVALID, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do these steps to do a check of the connectors D11306 and D11308:

(a) Disconnect connectors D11306 and D11308 from the FQPU in the radar bay.

(b) Do a check of the continuity from connector D11308, pin 11 to connector D11308, pin 12.

(c) Do a check of the continuity from connector D11306, pin 11 to D11306, pin 12.

(d) If there is no continuity, then do these steps:

1) Repair the wiring.

2) Reconnect connectors D11306 and D11308.

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST continues to show PROGRAM PINS INVALID, then continue.

(e) If there is continuity, then continue.

(2) Install a new FQPU. To do this, do this task: Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

——————— END OF TASK ———————

812. FQIS Fault Message - NO FMC DATA ON FQIS 6 - Fault Isolation

A. Description

(1) This task is for this maintenance message:

(a) 28-41001 NO FMC DATA ON FQIS 6

(2) This fault message is shown if the Fuel Quantity Processor Unit (FQPU) cannot receive data or cannot control messages from the Flight Management Computer (FMC).

(3) AIRPLANES WITH FQPU S345A001-010; This condition can occur if the FMC is off (unpowered) while the Fuel Quantity Indicating System is on (powered). The FMC is off and the FQIS is on if the airplane operates on standby or battery power only.

B. Possible Causes

(1) Wiring

(2) FMCS transfer relays, R475 (No. 1) and R476 (No. 2)

(3) Fuel quantity processor unit (FQPU), M1827

(4) Flight management computer, M1175

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

(3) (SSM 34-61-14)

(4) (WDM 34-61-14)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows NO FMC DATA ON FQIS 6, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.

(a) If the FMCS BITE test shows problems, then do these steps:

1) Do the fault correction shown (34-61 TASK 801).

2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

3) If the GROUND TEST shows PASS, then you corrected the fault.

(b) If the FMCS does not show problems, then continue.

(2) Replace the fuel quantity processor unit (FQPU).

These are the tasks:

Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801,

Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

2) If the GROUND TEST continues to show NO FMC DATA ON FQIS 6, then continue.

(3) Replace FMCS Transfer Relays No. 1 and No. 2.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

2) If the GROUND TEST continues to show NO FMC DATA ON FQIS 6, then continue.

(4) Do these steps to do a check of the ARINC 6 wiring from the FQPU:

(a) Remove the FMC. To remove it, do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801

(b) Remove the FQPU. To remove it, do this task: Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801

(c) Do a continuity check between these pins of connector D11306 for the FQPU and connector D2179A on the FMC:

D11306	**D2179A**
pin 18	pin G9
pin 31	pin H9

(d) Repair the wiring problems that you find.

(e) Re-install the FQPU. To do this, do this task: Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801

(f) Re-install the FMC. To do this, do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801

(g) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST shows PASS, then you corrected the fault.

——————— END OF TASK ———————

813. Fuel Quantity Indication Blank - Fault Isolation

A. Description

(1) The fuel quantity indication in the flight compartment for one or more of the tanks is blank.

(2) If the fuel quantity indicator is blank because of a problem with the fuel quantity processor unit (FQPU), it is possible that the blank indicator will show pounds (LBS) as the fuel measurement unit. This is possible even if fuel is measured in kilograms (KGS) when the FQIS operates correctly.

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) FQIS tank unit or compensator

(4) Fuel quantity processor unit (FQPU), M1827

(5) Undertorqued or disconnected tank unit terminal.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows a fault message for the applicable tank, then do the Fault Isolation Procedure for the fault shown.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

——————— END OF TASK ———————

814. Fuel Quantity Indication Does Not Show the Correct Fuel Quantity - Fault Isolation

A. Description

(1) The fuel quantity indication in the flight compartment or on the refueling panel does not show the correct fuel quantity for one or more of the tanks. This condition could be found through the fuel measuring sticks or through a disagreement between the fuel added during the refueling operation and the fuel quantity shown in the flight compartment.

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) FQIS tank unit or compensator

(4) Fuel quantity processor unit (FQPU), M1827

(5) Undertorqued or disconnected tank unit terminal

(6) Water contamination in the fuel tank

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (WDM 28-41-11)

(2) (SSM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the GROUND TEST shows a fault message for the applicable tank, then do the Fault Isolation Procedure below.

(b) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do these steps to do a check for water in the fuel:

(a) Get a sample of fuel at the sump of the applicable fuel tank. To get a sample, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

(b) Add one or two drops of water-soluble food coloring to the fuel sample.

NOTE: If there is water contamination of the fuel sample, the water in the fuel sample will be identified by the food coloring.

(c) If there is water contamination of the fuel sample, continue to get samples of fuel until no water is identified by the food coloring. To get samples, do this task: Fuel System Sumping, AMM TASK 12-11-00-680-801.

1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST shows PASS, then you corrected the fault.

b) If the GROUND TEST shows a fault message for the applicable tank, then do the Fault Isolation Procedure for the fault shown.

———————— END OF TASK ————————

816. FQIS Fault Message - HI/Z OP/SHORT TO SHIELD - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41105 HI-Z OP/SHORT TO SHIELD

1) This fault code shows a problem with the No. 1 tank.

(b) 28-41205 HI-Z OP/SHORT TO SHIELD

1) This fault code shows a problem with the No. 2 tank.

(c) 28-41305 HI-Z OP/SHORT TO SHIELD

1) This fault code shows a problem with the center tank.

(2) This fault can be caused by an open in the HI-Z center conductor or if the HI-Z center conductor is shorted to the shield. This condition can occur either in the FQIS wire harness in the fuel tank or in the wiring outside the fuel tank from the bussing plug on the wing spar to the Fuel Quantity Processor Unit (FQPU).

(3) This fault message is shown if the measured capacitance of the tank units and the compensator are both less than 50 percent of their empty tank capacitance value.

(4) This fault causes the FQIS display and the refuel panel indicator for the tank that has the fault to become blank.

(5) (SDS SUBJECT 28-41-00)

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) FQIS tank unit or compensator

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows HI-Z OPEN/SHORT TO SHIELD for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Disconnect the applicable bussing plug and examine the pins for corrosion or damage (AMM TASK 28-41-41-000-801).

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Re-connect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows HI-Z OPEN/SHORT TO SHIELD for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(2) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801.

(3) If the Tank and Compensator Unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the Fuel Quantity Processor Unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to the shield on D11312 is more than 1 megohm.

5) Re-connect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11314 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to the shield on D11314 is more than 1 megohm.

5) Re-connect connectors D11306 and D11314.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to the shield on D11316 is more than 1 megohm.

5) Re-connect connectors D11308 and D11316.

(d) If you find a problem with the wiring, then repair the problems that you find.

(e) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show HI/Z OPEN/SHORT TO SHIELD, then continue.

(4) If a single tank unit or compensator shows problems, then do these steps:

(a) Replace the tank unit or compensator.

These are the tasks:

Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

(b) Do an inspection of the tank unit and the adjacent wiring for these problems:

1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.

2) Make sure there are no brackets that are bent or have other problems.

3) Make sure there is no unwanted material in the tank unit or compensator.

4) Make sure there are no loose terminal connections at the tank unit.

5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).

(c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.

(d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

2) If the GROUND TEST procedure continues to show HI/Z OPEN/SHORT TO SHIELD, then repair or replace the in-tank wiring harness in the applicable tank (AMM TASK 28-41-44-400-801).

3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(5) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

——————— END OF TASK ———————

818. FQIS Fault Message - 1 OR MORE TANK UNIT OPEN - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 28-41101 - 1 OR MORE TANK UNIT OPEN

1) This fault message shows a problem in the No. 1 tank.

(b) 28-41201 - 1 OR MORE TANK UNIT OPEN

1) This fault message shows a problem in the No. 2 tank.

(c) 28-41301 - 1 OR MORE TANK UNIT OPEN

1) This fault message shows a problem in the center tank.

(2) The capacitance from one or more of the tank units is missing from the total capacitance received at the processor.

(3) This message will show if the measured (total) tank unit capacitance is less the 97.5 percent of the (total) tank unit empty capacitance and more than 13 percent of the (total) empty tank capacitance.

(4) This fault causes the FQIS display and the refuel panel indicator for the tank that has the fault to become blank.

B. Possible Causes

(1) FQIS wire harness

(2) Out-of-tank wiring from the wing spar to the FQPU (including the bussing plug)

(3) FQIS tank unit or compensator

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 28-41-11)

(2) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(2) If the GROUND TEST shows 1 OR MORE TANK UNITS OPEN for the applicable tank, then do the Fault Isolation Procedure below.

(3) If the GROUND TEST shows PASS, then there was an intermittent fault.

F. Fault Isolation

(1) Disconnect the applicable bussing plug and examine the pins for corrosion or damage (AMM TASK 28-41-41-000-801).

(a) If there is corrosion or damage, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

3) Reconnect the bussing plug.

4) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

5) If the GROUND TEST shows PASS, then you corrected the fault.

6) If the GROUND TEST shows 1 OR MORE TANK UNITS OPEN for the applicable tank, then continue.

(b) If there is no corrosion or damage, then continue.

(2) For the applicable tank, do this task: Tank and Compensator Units Test, AMM TASK 28-41-21-710-801

(3) If the tank and compensator unit test does not show problems, then do this test of the out-of-tank wiring from the bussing plug to the fuel quantity processor unit (FQPU) in the radar bay:

(a) FOR A FAULT IN THE NO. 1 TANK, do these steps:

1) Disconnect connector D11304 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11312 on the front spar and connector D11304 on the FQPU, M1827 in the radar bay:

D11312		D11304
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11304 is disconnected.

4) Make sure the resistance from D11312, pin 1 to the shield on D11312 is more than 1 megohm.

5) Re-connect connectors D11304 and D11312.

(b) FOR A FAULT IN THE NO. 2 TANK, do these steps:

1) Disconnect connector D11306 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11314 on the front spar and connector D11306 on the FQPU, M1827 in the radar bay:

D11314		D11306
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11306 is disconnected.

4) Make sure the resistance from D11314, pin 1 to the shield on D11314 is more than 1 megohm.

5) Re-connect connectors D11314 and D11306.

(c) FOR A FAULT IN THE CENTER TANK, do these steps:

1) Disconnect connector D11308 on the FQPU, M1827 in the radar bay.

2) Do a continuity check between these pins of connector D11316 on the rear spar and connector D11308 on the FQPU, M1827 in the radar bay:

D11316		D11308
pin 1	- - - - - - - - - - - - - - - - - -	pin 8
pin 2	- - - - - - - - - - - - - - - - - -	pin 22
pin 3	- - - - - - - - - - - - - - - - - -	pin 23

3) Make sure connector D11308 is disconnected.

4) Make sure the resistance from D11316, pin 1 to the shield on D11316 is more than 1 megohm.

5) Re-connect connectors D11308 and D11316.

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

1) Repair the wiring.

2) Do this task: FQIS BITE Procedure, 28-41 TASK 801.
   a) If the GROUND TEST procedure shows PASS, then you corrected the fault.
   b) If the GROUND TEST procedure continues to show 1 OR MORE TANK UNITS OPEN, then continue.

(4) If a single tank unit or compensator shows problems, then do these steps:
   (a) Replace the tank unit or compensator.

   These are the tasks:

   Remove the Tank Unit or the Compensator Unit, AMM TASK 28-41-21-000-801,

   Install the Tank Unit or Compensator Unit, AMM TASK 28-41-21-400-801.

   (b) Do an inspection of the tank unit and the adjacent wiring for these problems:
      1) Make sure no parts of the tank unit or compensator are in electrical contact with the airplane structure.
      2) Make sure there are no brackets that are bent or have other problems.
      3) Make sure there is no unwanted material in the tank unit or compensator.
      4) Make sure there are no loose terminal connections at the tank unit.
      5) Make sure there are not other problems with the wiring near the tank unit (for example, a wire pinched under a tank unit).
   (c) If there are problems with the tank unit or the adjacent wiring, then repair the problems.
   (d) Do this task: FQIS BITE Procedure, 28-41 TASK 801.
      1) If the GROUND TEST procedure shows PASS, then you corrected the fault.
      2) If the GROUND TEST procedure continues to show 1 OR MORE TANK UNITS OPEN, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.
      3) Do this task: FQIS BITE Procedure, 28-41 TASK 801.
         a) If the GROUND TEST procedure shows PASS, then you corrected the fault.

(5) If two or more tank units show problems, then repair or replace the in-tank wiring harness in the applicable tank. To repair or replace the wiring harness, do this task: FQIS Wire Harness Replacement, AMM TASK 28-41-44-400-801.
   (a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.
      1) If the GROUND TEST procedure shows PASS, then you corrected the fault.

——————— END OF TASK ———————

819. FQIS BITE INOP Message Shown on the CDU - Fault Isolation

A. Description

(1) If the Flight Management Computer (FMC) does not receive a valid signal from the Fuel Quantity Processor Unit (FQPU) at any time during the FQIS BITE test, the CDU shows this message:

FQIS BITE TEST

FQIS BITE INOP

CHECK FQIS OR INTERFACE

(a) You do the FQIS BITE Test from the control display unit (CDU) in the flight compartment (28-41 TASK 801). There are two CDUs on the forward electronics panel in the flight compartment.

B. Possible Causes

(1) Fuel Quantity Processor Unit (FQPU), M1827

(2) FMCS Transfer Relay 1, R475

(3) Wiring

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

D. Related Data

(1) (SSM 34-61-14)

(2) (SSM 28-41-11)

(3) (WDM 34-61-14)

(4) (WDM 28-41-11)

E. Initial Evaluation

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the CDU display shows the FQIS BITE INOP message, then do the Fault Isolation Procedure below.

(b) If the CDU display does not show the FQIS BITE INOP message, then there was an intermittent fault.

F. Fault Isolation

(1) Do these steps to do a check of the FQPU, M1827:

(a) Do this task: Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801.

(b) Do a check of the pins for connectors D11304, D11306, D11352, D11354 for corrosion or damage.

(c) If there is corrosion or damage to the pins, then do these steps:

1) Repair the pins if any of the pins have damage.

2) Clean the connector if there is any corrosion (SWPM 20-60-01).

(d) If there is no corrosion or damage to the pins, then continue.

(e) Install a new FQPU. To do this, do this task: Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

(f) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the CDU display does not show the FQIS BITE INOP message, then you corrected the fault.

2) If the CDU display shows the FQIS BITE INOP message, then continue.

(2) Replace the FMCS Transfer Relay 1, R475 (WDM 34-61-14).

(a) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

1) If the CDU display does not show the FQIS BITE INOP message, then you corrected the fault.

2) If the CDU display shows the FQIS BITE INOP message, then continue.

(3) Do these steps to do a check of the wiring:

HAP 001-013, 015-026, 028-036

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

HAP 037-054, 101-999

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

HAP 001-013, 015-026, 028-036

(c) Remove the FMC, M1175. To remove it, do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.

HAP 037-054, 101-999

(d) Remove the two FMCs, M1175 and M1632. To remove them, do this task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.

HAP ALL

(e) Remove the fuel quantity processor unit (FQPU), M1827. To remove it, do this task: Remove the Fuel Quantity Processor Unit, AMM TASK 28-41-81-000-801.

HAP 001-013, 015-026, 028-036

(f) Do a continuity check between these pins of connector D2179A for the left FMC and connector D11306 for the FQPU:

D2179A		D11306
pin D5	- - - - - - - - - - - - - - - - - -	pin 1
pin E5	- - - - - - - - - - - - - - - - - -	pin 3

HAP 037-054, 101-999

(g) Do a continuity check between these pins of connector D2179A for the left FMC or connector D3261A for the right FMC and connector D11306 for the FQPU:

D2179A OR D3261A		D11306
pin D5	- - - - - - - - - - - - - - - - - -	pin 1
pin E5	- - - - - - - - - - - - - - - - - -	pin 3

HAP ALL

(h) If there is not continuity between these pins, then do these steps:

1) Repair the wiring.

HAP 001-013, 015-026, 028-036

2) Re-install the FMC. To install it, do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.

HAP 037-054, 101-999

3) Re-install the two FMCs. To install them, do this task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.

HAP ALL

4) Re-install the FQPU. To install it, do this task: Install the Fuel Quantity Processor Unit, AMM TASK 28-41-81-400-801.

HAP 001-013, 015-026, 028-036

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

HAP 037-054, 101-999

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	6	C01017	FMCS CMPTR 1

HAP 037-054, 101-999 (Continued)

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	16	C01262	FMCS CMPTR 2

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	4	C01441	FUEL FUELING IND
A	5	C00398	FUEL QTY 2
A	6	C00397	FUEL QTY 1

HAP ALL

7) Do this task: FQIS BITE Procedure, 28-41 TASK 801.
   a) If the CDU display does not show the FQIS BITE INOP message, then you corrected the fault.

——————— END OF TASK ———————

820. Unexpected Fuel Configuration Messages - Fault Isolation

A. Description

(1) Three fuel configuration messages can show on the fuel quantity indication page of the Common Display System (CDS) during flight. It is possible that the flight crew will report these messages if they show unexpectedly:
   (a) CONFIG
   (b) IMBAL
   (c) LOW

(2) The CONFIG message comes on if all these conditions are true:
   (a) At least one of the two engines is operating.
   (b) The two center tank boost pumps both show low pressure.
   (c) There is a minimum of 1600 pounds (725 kilograms) in the center tank.

(3) If the CONFIG message comes on, it continues to show until one or more of these conditions are true:
   (a) The center tank quantity decreases to less than 800 pounds (363 kilograms).
   (b) A miminum of one center tank pump is producing high pressure.
   (c) The two engines are not in operation.

(4) The IMBAL message comes on if there is a difference of 1000 pounds (453 kilograms) between the No. 1 tank and No. 2 tank. The message IMBAL goes off again when the difference between the two tanks decreases to less than 200 pounds (90 kilograms). The imbalance condition must exist for 60 seconds before the IMBAL message shows.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 PRE SB 737-31-1246 AND PRE SB 737-31-1295

(5) The LOW message comes on when the No. 1 tank or the No. 2 tank has less than 2000 pounds (907 kilograms) of fuel. This message goes off when the quantity in that tank increases to more than 2500 pounds (1133 kilograms). The low fuel condition must exist for 30 seconds before the LOW message shows.

HAP 001-013, 015-026, 028-030 POST SB 737-31-1246 OR POST SB 737-31-1295

(6) The LOW message comes on when the No. 1 tank or the No. 2 tank has less than 1000 pounds (454 kilograms) of fuel. This message goes off when the quantity in that tank increases to more than 2500 pounds (1133 kilograms). The low fuel condition must exist for 30 seconds before the LOW message shows.

HAP ALL

B. Possible Causes

(1) Unusual fuel configuration (for example, trapped fuel in the center tank, actual fuel imbalance, leaking crossfeed valve)

(2) Fuel Quantity Indicating System (FQIS)

(3) Common Display Unit (CDS)

C. Initial Evaluation

(1) Do these steps to find if the fuel configuration message (CONFIG, IMBAL or LOW) showed because of the actual fuel configuration:

(a) Examine the fuel quantities in the No. 1 tank, the No. 2 tank, and the center tank.

(b) Look at all available data related to the fuel quantities in the No. 1 tank, the No. 2 tank, and the center tank for the flight leg where the reported fault occurred.

(c) If the available fuel data explains why the fuel configuration message showed, then do the procedure below: Fault Isolation - Unexpected Fuel Configuration.

(d) If the available fuel data does not explain why the fuel configuration messsage showed, then do the procedure below: Fault Isolation - Configuration Indication Problem

D. Fault Isolation Procedure - Unexpected Fuel Configuration

(1) Do these steps to look for boost pumps with low pressure:

(a) Look for more fault reports related to the fuel feed system (ATA 28-22) (for example, low pressure lights, boost pump circuit breakers).

(b) If there are fault reports for ATA 28-22 that show no corrective action taken, do the fault isolation for these faults.

(c) If there are no fault reports for ATA 28-22, then do these steps:

1) Do this task: Fuel Boost Pump Output Pressure Test, AMM TASK 28-22-00-720-803.

a) If there are problems with one or more boost pumps, replace the applicable pump(s).

These are the tasks:

Remove the Motor Impeller, AMM TASK 28-22-41-000-801,

Install the Motor Impeller, AMM TASK 28-22-41-400-801.

2) If there are no problems with the boost pump pressure, then do the applicable procedure to look for unwanted fuel transfer related to the fuel data that you found:

a) Do this task: Unwanted Fuel Transfer into the Center Tank - Source Unknown - Fault Isolation, 28-21 TASK 812.

b) Do this task: Unwanted Fuel Transfer from the No. 1 Tank to the Center Tank - Fault Isolation, 28-21 TASK 803.

c) Do this task: Unwanted Fuel Transfer from the No. 2 Tank to the Center Tank - Fault Isolation, 28-21 TASK 813.

d) Do this task: Unwanted Fuel Transfer from the Center Tank to the No. 1 Tank - Fault Isolation, 28-21 TASK 814.

e) Do this task: Unwanted Fuel Transfer from the Center Tank to the No. 2 Tank - Fault Isolation, 28-21 TASK 815.

3) If no problems are found, do this task: Crossfeed Valve - Functional Test, AMM TASK 28-22-00-730-802.

a) Correct any problems that you find.

E. Fault Isolation Procedure - Configuration Indication Problem

(1) Do this task: FQIS BITE Procedure, 28-41 TASK 801.

(a) If the FQIS BITE test does not show any problems, then continue.

(2) Do this task: CDS BITE Procedure, 31-62 TASK 801.

(a) If the CDS BITE test does not show any problems, then the system is OK.

END OF TASK

801. Fuel Temperature Indicator Does Not Operate Correctly - Fault Isolation

A. Description

(1) The FUEL TEMPERATURE indicator on the P5-2 panel does not show the correct fuel temperature.

B. Possible Causes

(1) Fuel temperature sensor, T434

(2) Fuel temperature indicator, N42

(3) Wiring

(4) Ground connection GD476-DC

C. Circuit Breakers

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	7	C00355	FUEL TEMP IND

D. Related Data

(1) (SSM 28-42-11)

(2) (WDM 28-42-11)

E. Initial Evaluation

(1) Do this task: Fuel Temperature Indicating System Test, AMM TASK 28-43-00-710-801.

(a) If the fuel temperature indicating system test shows a problem, then do the Fault Isolation Procedure below.

(b) If the fuel temperature indicating system test is OK, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Do this check of the fuel temperature indicator, N42:

(a) Open this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	7	C00355	FUEL TEMP IND

(b) Remove the fuel temperature indicator, N42 from the P5-2 panel.

(c) Close this circuit breaker:

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
A	7	C00355	FUEL TEMP IND

(d) Do a check for 28 VAC from pin 2 to pin 5 (ground) on connector D616.

1) If there is not 28 VAC from pin 2 to pin 5 (ground) on connector D616, then do these steps:

a) Repair the wiring from pin 2, connector D616 to pin 16 D40536P.

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

2) If there is 28 VAC from pin 2 to pin 5 (ground) on connector D616, then continue.

(2) Do this check of the fuel temperature sensor, T434 and the related wiring:

(a) Do this task: Fuel Temperature Bulb Resistance Test, AMM TASK 28-43-00-760-801.

(b) If the resistance test is not satisfactory, then do these steps:

1) Remove the fuel temperature sensor, T434. To remove it, do this task: Fuel Temperature Bulb Removal, AMM TASK 28-43-11-000-801.

2) Disconnect connector D616 from the fuel temperature indicator.

3) Put a jumper between the two loose wires that go to the fuel temperature sensor.

4) On connector D616, do a continuity check from pin 3 to pin 4.

5) If there is no continuity between pin 3 and pin 4 on connector D616, then do these steps:

a) Repair the wiring from pin 3 to pin 4 on connector D616.

b) Remove the jumper between the loose wires that go to the temperature sensor.

c) Re-install the fuel temperature sensor, T434. To install it, do this task: Fuel Temperature Bulb Installation, AMM TASK 28-43-11-400-801.

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

6) If there is continuity between pin 3 and pin 4 on connector D616, then do these steps:

a) Remove the jumper between the loose wires that go to the temperature sensor.

b) Install a new fuel temperature sensor. To install it, do this task: Fuel Temperature Bulb Installation, AMM TASK 28-43-11-400-801.

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

(c) If the resistance test is satisfactory, then continue.

(3) Do this check of the ground at GD476-DC:

(a) Disconnect the connector D616 from the fuel temperature indicator.

(b) Do a continuity check from pin 4 on connector D616 to structure ground.

(c) If there is not continuity from pin 4 on connector D616 to structure ground, then repair the wiring from splice SP172 to the ground connection GD476-DC.

(d) If there is continuity from pin 4 on connector D616 to structure ground, then do these steps:

1) Install a new fuel temperature indicator, N42.

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

G. Repair Confirmation

(1) Do this task: Fuel Temperature Indicating System Test, AMM TASK 28-43-00-710-801.

(a) If the fuel temperature indicating system test is OK, then you corrected the fault.

——————— END OF TASK ———————