

CHAPTER 29

HYDRAULIC POWER



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

CHAPTER 29
HYDRAULIC POWER

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

29-EFFECTIVE PAGES

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YOU FIND A FAULT WITH
AN AIRPLANE SYSTEM

These are the possible types
of faults:

1. Observed Fault
2. Cabin Fault



USE BITE TO GET
MORE INFORMATION

If you did a BITE test already,
then you can go directly to the
fault isolation procedure for
the maintenance message.

For details, see Figure 2 →



GO TO THE
FAULT ISOLATION
TASK IN THE FIM

Use the fault code or description
to find the task in the FIM. There
is a numerical list of fault codes
in each chapter. There are lists
of fault descriptions at the front
of the FIM.

For details, see Figure 3 →



FOLLOW THE STEPS OF THE
FAULT ISOLATION TASK

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

For details, see Figure 4 →

Basic Fault Isolation Process
Figure 1

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29-HOW TO USE THE FIM

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

A maintenance message can be any of these:

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

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

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

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

Getting Fault Information from BITE
Figure 2

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29-HOW TO USE THE FIM

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

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ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

INITIAL EVALUATION PARAGRAPH

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

FAULT ISOLATION STEPS

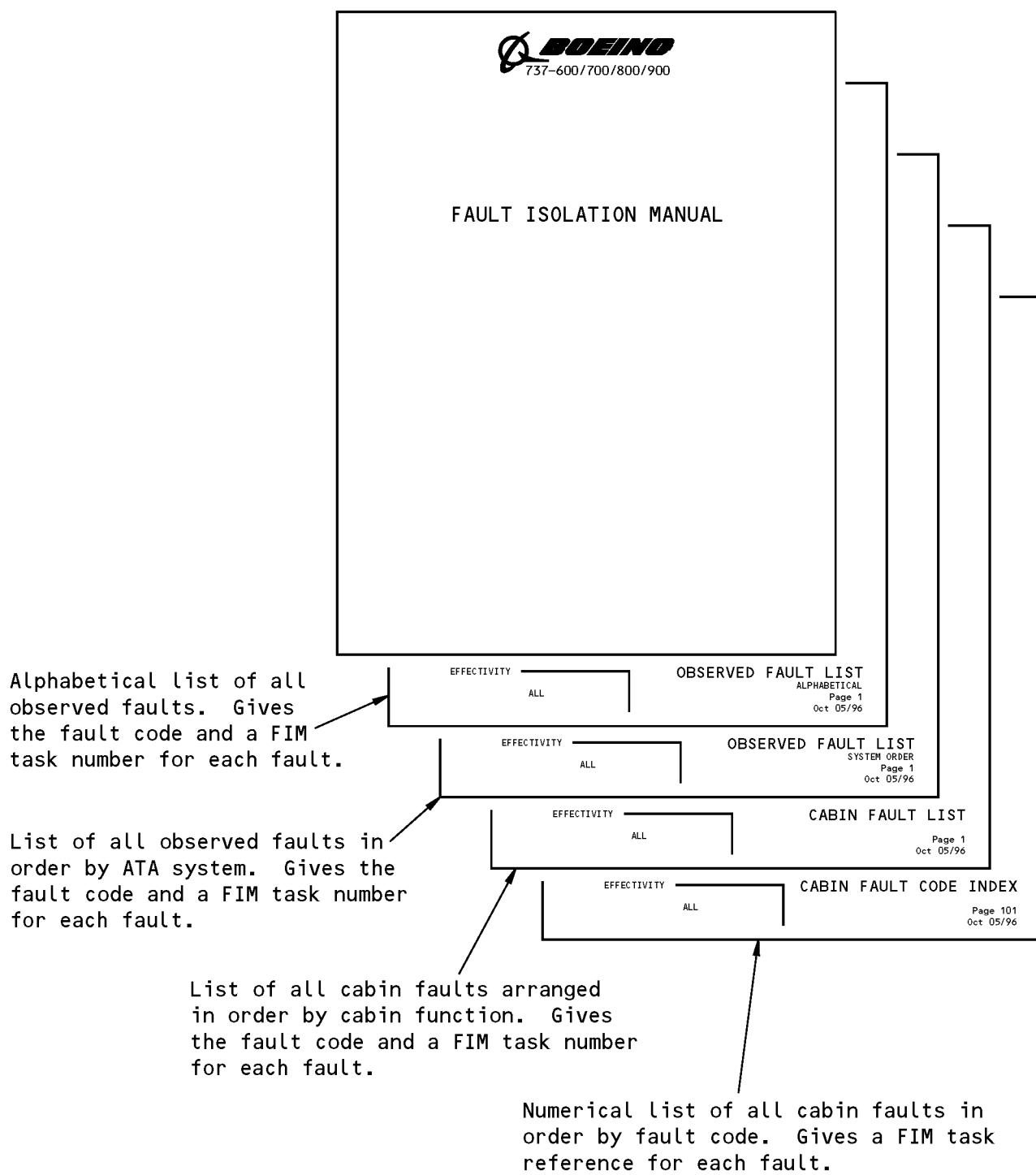
- Do the steps of the task in the specified order. The "If ... then" statements that you see will guide you along the correct path.
- When you are at the endpoint of the path, the step says "...you corrected the fault." Complete the step and exit the procedure.

Doing the Fault Isolation Task
Figure 4

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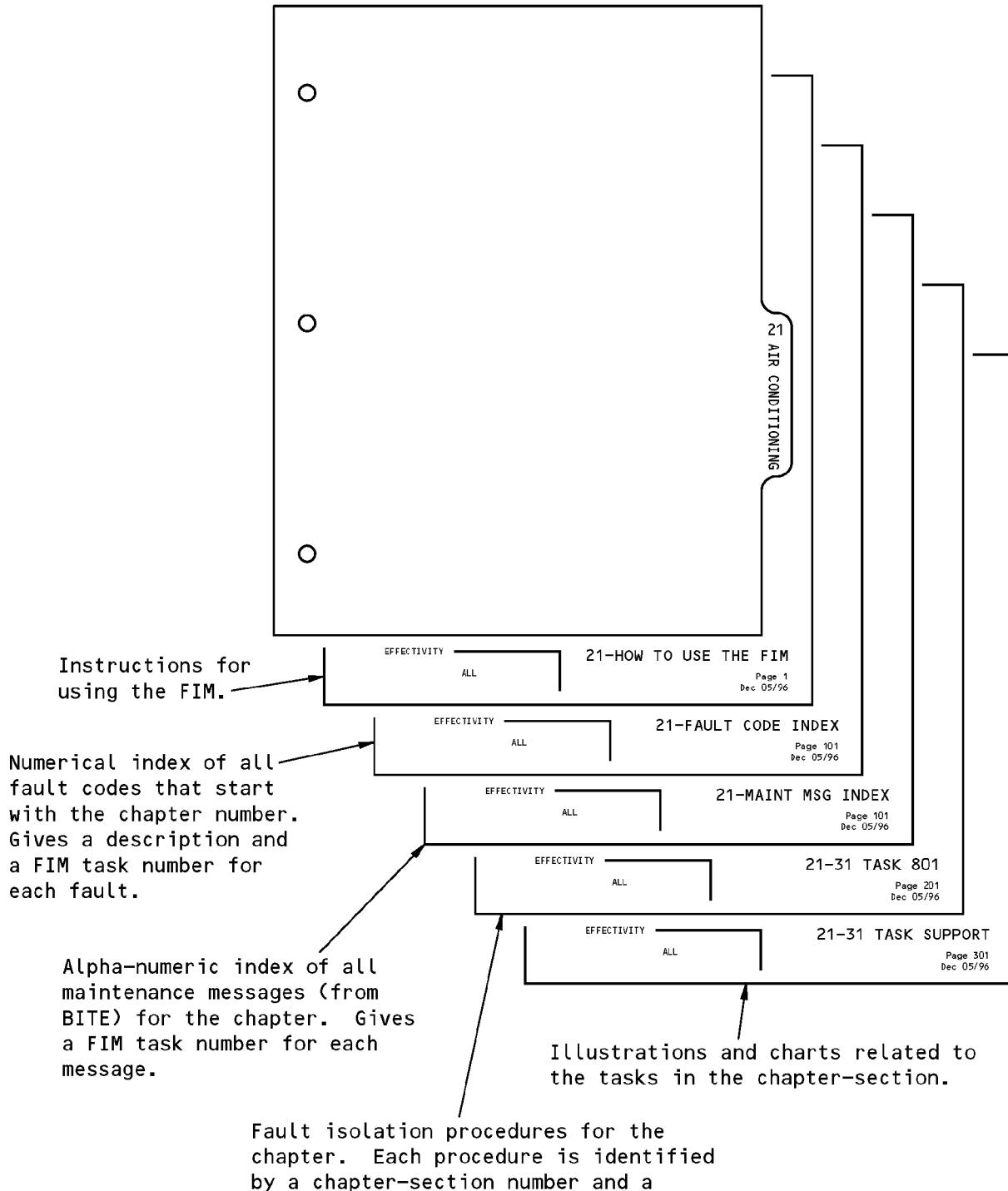
Subjects at Front of FIM
Figure 5



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Subjects in Each FIM Chapter
 Figure 6



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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
291 010 51	ENG 1 LOW PRESSURE light: light off when the electric motor-driven pump is operated.	29-10 TASK 801
291 010 52	ENG 2 LOW PRESSURE light: light off when the electric motor-driven pump is operated.	29-10 TASK 802
291 020 00	Electrical power: power to the electric motor-driven pump is interrupted during normal operation - system A.	29-10 TASK 803
291 025 00	Electrical power: power to the electric motor-driven pump is interrupted during normal operation - system B.	29-10 TASK 804
291 040 00	Hydraulic fluid: fluid leakage.	29-10 TASK 812
291 050 00	Hydraulic fluid: comes out of the reservoir vent line.	29-10 TASK 805
291 060 00	Hydraulic fluid: comes out of the reservoir vent line drain mast.	29-10 TASK 805
291 070 00	Hydraulic fluid: transfers from system A to system B.	29-10 TASK 806
291 080 00	Hydraulic fluid: transfers from system B to system A.	29-10 TASK 807
291 090 00	Hydraulic pressure indication: above 3200 psi - system A.	29-10 TASK 808
291 100 00	Hydraulic pressure indication: above 3200 psi - system B.	29-10 TASK 809
291 110 00	Hydraulic pressure indication: below 2800 psi - system A.	29-10 TASK 810
291 120 00	Hydraulic pressure indication: below 2800 psi - system B.	29-10 TASK 811
291 131 00	Hydraulic pressure indication: momentarily below 2900 psi - system A.	29-10 TASK 813
291 132 00	Hydraulic pressure indication: momentarily below 2900 psi - system B.	29-10 TASK 813
291 133 00	Hydraulic pressure indication: momentarily below 2900 psi - systems A and B.	29-10 TASK 813
291 201 51	Fire handle in the pulled position while engine turns - engine 1.	29-11 TASK 801
291 201 52	Fire handle in the pulled position while engine turns - engine 2.	29-11 TASK 801
292 010 00	Standby hydraulic pump: does not operate.	29-20 TASK 801
292 040 00	PTU: does not operate.	29-20 TASK 804
293 020 00	Hydraulic pressure indication: zero - system A.	29-30 TASK 803
293 025 00	Hydraulic pressure indication: zero - system B.	29-30 TASK 804
293 030 00	ELEC 1 OVERHEAT light: light on.	29-30 TASK 805
293 040 00	ELEC 2 OVERHEAT light: light on.	29-30 TASK 806
293 050 00	Hydraulic fluid quantity indication: error or blank - system A.	31-62 TASK 801
293 060 00	Hydraulic fluid quantity indication: error or blank - system B.	31-62 TASK 801
293 070 00	Hydraulic fluid quantity indication: flight compartment display and hydraulic reservoir gauge do not read the same - system A.	31-62 TASK 801



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FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
293 080 00	Hydraulic fluid quantity indication: flight compartment display and hydraulic reservoir gauge do not read the same - system B.	31-62 TASK 801
293 090 00	Hydraulic fluid quantity indication: flight compartment display shows zero, reservoir has hydraulic fluid - system A.	31-62 TASK 801
293 100 00	Hydraulic fluid quantity indication: flight compartment display shows zero, reservoir has hydraulic fluid - system B.	31-62 TASK 801
293 110 00	Hydraulic fluid quantity indication: flight compartment display moves erratically or jumps between readings - system A.	31-62 TASK 801
293 120 00	Hydraulic fluid quantity indication: flight compartment display moves erratically or jumps between readings - system B.	31-62 TASK 801
293 130 00	Hydraulic fluid quantity indication: shows RF (76%) - system A.	29-30 TASK 815
293 140 00	Hydraulic fluid quantity indication: shows RF (76%) - system B.	29-30 TASK 815
293 150 00	Hydraulic fluid quantity indication: does not return to the same level after operation of a "heavy use" system.	29-30 TASK 808
293 160 00	Hydraulic reservoir gauge: shows zero or below, reservoir has hydraulic fluid - system A.	29-30 TASK 808
293 170 00	Hydraulic reservoir gauge: shows zero or below, reservoir has hydraulic fluid - system B.	29-30 TASK 808
293 180 00	STANDBY HYD LOW QUANTITY light: light on.	29-30 TASK 809
293 190 00	ELEC 1 LOW PRESSURE light: light on.	29-30 TASK 810
293 200 00	ELEC 2 LOW PRESSURE light: light on.	29-30 TASK 811
293 210 51	ENG 1 LOW PRESSURE light: light on.	29-30 TASK 812
293 210 52	ENG 2 LOW PRESSURE light: light on.	29-30 TASK 813
293 220 00	STANDBY HYD LOW PRESSURE light: light on.	29-30 TASK 814



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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Air Data Inertial Reference System	ADIRS	34
Air Traffic Controller Transponder - 1 (Left)	ATC XPDR - 1 (L)	34
Air Traffic Controller Transponder - 2 (Right)	ATC XPDR - 2 (R)	34
Airborne Vibration Monitor System Signal Conditioner	AVM SIG COND	77
Antiskid Control Unit	ANTISKID	32
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

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<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
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

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LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
PSEU	29-20001 NO LGTV PRI PWR	29-20 TASK 807
PSEU	29-20002 NO LGTV SEC PWR	29-20 TASK 808
PSEU	29-22001 ENG RUN L FAULT	29-20 TASK 809
PSEU	29-22002 HYD QTY B FAULT	29-20 TASK 810
PSEU	29-22003 HYD QTY BITE FLT	29-20 TASK 811
PSEU	29-22004 ALT NOSE STRG FLT	29-20 TASK 812
PSEU	29-22005 LGTV SET FAULT	29-20 TASK 813
PSEU	29-22105 LGTV SET FAULT	29-20 TASK 813
PSEU	29-23001 ENG NOT RUNNING	29-20 TASK 809
PSEU	29-23002 ALT NOSE STRG SEL	29-20 TASK 812
PSEU	29-24001 PRI LGTV FAIL	29-20 TASK 805
PSEU	29-24002 SEC LGTV FAIL	29-20 TASK 806
PSEU	29-24003 LGTV RESET	29-20 TASK 813



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801. ENG 1 LOW PRESSURE Light Off When EMDP is Operating - Fault Isolation**A. Description**

- (1) The ENG 1 LOW PRESSURE light comes on when the engine-driven pump (EDP) for the hydraulic system A is below normal.
- (2) This is normal operation of the ENG 1 LOW PRESSURE light:
 - (a) When the system A EDP operates, the ENG 1 LOW PRESSURE light is off.
 - (b) When the pressure of the system A EDP is below normal, the ENG 1 LOW PRESSURE light will come on.
 - (c) When the system A EDP does not operate, the ENG 1 LOW PRESSURE light will come on.
- (3) The EDP low pressure switch connects to ground when the EDP pressure decreases to less than 1200 psi.
- (4) The EDP check valve prevents hydraulic backflow through the pressure filter. It also isolates the EDP low pressure switch from the system pressure.

B. Possible Causes

- (1) Hydraulic system A pressure module EDP check valve

C. Circuit Breaker

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ENG 1 LOW PRESSURE light, L5:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (b) Make sure the ELEC 2 LOW PRESSURE light is off.
- (c) Make sure the ENG 1 LOW PRESSURE light is on.
- (d) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If the ENG 1 LOW PRESSURE light is not on, then do the Fault Isolation Procedure below.

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(f) If the ENG 1 LOW PRESSURE light comes on and stays on, then there was an intermittent fault.

F. Fault Isolation Procedure

(1) Replace the EDP check valve on the system A pressure module. These are the tasks:

- Hydraulic Systems A and B Pressure Module Check Valve Removal, AMM
TASK 29-11-71-000-803
- Hydraulic Systems A and B Pressure Module Check Valve Installation, AMM
TASK 29-11-71-400-803

(a) Do this check of the ENG 1 LOW PRESSURE light, L5:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- 2) Make sure the ENG 1 LOW PRESSURE light is on.
- 3) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 4) If the ENG 1 LOW PRESSURE light stays on, then you corrected the fault.

————— END OF TASK —————

802. ENG 2 LOW PRESSURE Light Off When EMDP is Operating - Fault Isolation

A. Description

- (1) The ENG 2 LOW PRESSURE light comes on when the engine-driven pump (EDP) for the hydraulic system B is below normal.
- (2) This is normal operation of the ENG 2 LOW PRESSURE light:
 - (a) When the system B EDP operates, the ENG 2 LOW PRESSURE light is off.
 - (b) When the pressure of the system B EDP is below normal, the ENG 2 LOW PRESSURE light will come on.
 - (c) When the system B EDP not operates, the ENG 2 LOW PRESSURE light will come on.
- (3) The EDP low pressure switch connects to ground when the EDP pressure decreases to less than 1200 psi.
- (4) The EDP check valve prevents hydraulic backflow through the pressure filter. Then also isolate the EDP low pressure switch from the system pressure.

B. Possible Causes

- (1) Hydraulic system B pressure module EDP check valve



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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
F	11	C00317	INDICATOR MASTER DIM SECT 5

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ENG 2 LOW PRESSURE light, L6:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (b) Make sure the ELEC 1 LOW PRESSURE light is off and ENG 2 LOW PRESSURE light is on.
- (c) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the ENG 2 LOW PRESSURE light is not on, then do the Fault Isolation Procedure below.
- (e) If the ENG 2 LOW PRESSURE light comes on and stays on, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Replace the EDP check valve on the system B pressure module. These are the tasks:

- Hydraulic Systems A and B Pressure Module Check Valve Removal, AMM TASK 29-11-71-000-803
- Hydraulic Systems A and B Pressure Module Check Valve Installation, AMM TASK 29-11-71-400-803

- (a) Do this check of the ENG 2 LOW PRESSURE light, L6:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- 2) Make sure the ENG 2 LOW PRESSURE light is on.



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- 3) If the ENG 2 LOW PRESSURE light stays on, then you corrected the fault.
- 4) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

803. Electrical Power to the System A EMDP Problem - Fault Isolation

A. Description

- (1) When the system A ELEC 2 switch is ON, 28v DC energizes the system A EMDP relay which closes three contacts. These contacts send 115v AC power to the system A EMDP. When the system A EMDP switch is in the OFF position, the system A EMDP relay has no power and the contacts open to stop the EMDP.
- (2) The system A EMDP relay is connected to ground through an internal temperature switch in the EMDP. When the temperature of the EMDP is normal, the temperature switch is closed. This enables control of the EMDP from the hydraulic control panel. When the EMDP temperature is more than 255 degrees F (124 degrees C), the temperature switch opens and removes the ground from the EMDP relay. This stops the EMDP and causes the ELEC 2 LOW PRESSURE light to come on.
- (3) The ground fault detector for the system A EMDP is in the P92 power distribution panel in the electrical/electronic (EE) compartment. The trip coil of the ground fault detector is energized for these two conditions:
 - (a) Ground fault
 - (b) Overcurrent.
- (4) When the trip coil energizes, the system A EMDP relay has no power and the relay contacts open to stop the 115v AC power to the system A EMDP.
- (5) Push the reset switch on the ground fault detector to move the contacts to their normal position.

B. Possible Causes

- (1) Wiring
- (2) System A EMDP overheat
- (3) System A EMDP relay, R317
- (4) System A EMDP ground fault detector, M1105
- (5) System A electric motor-driven pump (EMDP), M1103

C. Circuit Breakers

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
C	8	C00767	ELEC HYD PUMP CONTROL SYS A
F	3	C00881	ELEC HYD PUMP SYS A

D. Related Data

- (1) (SSM 29-11-12)
- (2) (WDM 29-11-12)



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E. Initial Evaluation

(1) Do this check of the system A EMDP, M1103:

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

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
C	8	C00767	ELEC HYD PUMP CONTROL SYS A
F	3	C00881	ELEC HYD PUMP SYS A

(b) Push the reset switch on the system A ground fault detector.

NOTE: The system A ground fault detector is in the power distribution panel, P92, in the EE compartment.

(c) Make sure that the temperature of the system A EMDP is less than 140 degrees F (60 degrees C).

NOTE: If an overheat condition has occurred, then the EMDP temperature must decrease to less than 140 degrees F (60 degrees C) for the temperature switch to reset to the closed position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.

(e) If the electrical power to the system A EMDP is interrupted, then do the Fault Isolation Procedure below.

(f) If the electrical power to the system A EMDP is not interrupted, then there is an intermittent fault. Do this step to complete the task:

1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

(1) Do this check of the system A ground fault detector, M1105:

(a) Disconnect connector D2664 from the system A EMDP, M1103.

CAUTION: DO NOT PUSH THE RESET SWITCH ON THE GROUND FAULT DETECTOR BEFORE YOU DISCONNECT ELECTRICAL CONNECTOR FROM THE EMDP.

(b) Push the reset switch on the system A ground fault detector, M1105.

NOTE: The system A ground fault detector is in the power distribution panel, P92, in the EE compartment.

(c) Install a jumper wire between pin 4 and pin 5 of connector D2664.

(d) Do a check for 200 VAC between pins 1, 3, and 6 of connector D2664.

(e) If there is not 200 VAC between pins 1, 3, and 6 of connector D2664, then do these steps:



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- 1) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	3	C00881	ELEC HYD PUMP SYS A

- 2) Remove the jumper wire.

- 3) Do a check for an open circuit between these pins of connector D2664 for the EMDP and the relay for the system A EMDP, R317:

NOTE: The R317 relay for the system A EMDP is in the power distribution panel, P92, in the EE compartment.

D2664	R317
pin 1	term L1
pin 3	term L2
pin 6	term L3
pin 4	term X2

- 4) Make sure there is continuity from pin 5 of connector D2664 to ground.
- 5) If you find a problem with the wiring, then repair the wiring.
- 6) Make sure there is continuity between pin 4 and pin 5 at the system A EMDP connector.
- 7) If you do not find continuity between pin 4 and pin 5 at the EMDP connector, then replace the system A EMDP, M1103. These are the tasks:
 - Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
 - Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001
- 8) If you do not find a problem with the wiring, do these steps:
 - a) Check for 28V DC from terminal X1 of the SYS A EMDP Relay, R317, to ground.
 - b) If there is 28V DC from terminal X1 to ground, replace the relay.
 - c) If there is not 28V DC from terminal X1 to ground, replace the system A ground fault detector, M1105 (WDM 29-11-12).
- 9) Re-connect connector D2664.
- 10) Do the Repair Confirmation at the end of this task.

(f) If there is 200 VAC at pins 1, 3, and 6 of connector D2664, then remove the jumper wire and continue.

(2) Replace the system A EMDP, M1103. These are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

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

G. Repair Confirmation

- (1) Put the HYD PUMPS A ELEC 2 switch, on the forward overhead panel P5, in the OFF position.
- (2) Do this check of the system A EMDP, M1103:
 - (a) Make sure that these circuit breakers are closed:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
C	8	C00767	ELEC HYD PUMP CONTROL SYS A



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Row	Col	Number	Name
F	3	C00881	ELEC HYD PUMP SYS A

(b) Push the reset switch on the system A ground fault detector.

NOTE: The system A ground fault detector is in the power distribution panel, P92, in the EE compartment.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(c) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.

(d) If the electrical power to the system A EMDP is not interrupted, then you corrected the fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

804. Electrical Power to the System B EMDP Problem - Fault Isolation

A. Description

- (1) When the system B ELEC 1 switch is ON, 28v DC energizes the system B EMDP relay which closes three contacts. These contacts send 115v AC power to the system B EMDP. When the system B EMDP switch is in the OFF position, the system B EMDP relay has no power and the contacts open to stop the EMDP.
- (2) The system B EMDP relay is connected to ground through an internal temperature switch in the EMDP. When the temperature of the EMDP is normal, the temperature switch is closed. This enables control of the EMDP from the hydraulic control panel. When the EMDP temperature is more than 255 degrees F (124 degrees C), the temperature switch opens and removes the ground from the EMDP relay. This stops the EMDP and causes the ELEC 1 LOW PRESSURE light to come on.
- (3) The ground fault detector for the system B EMDP is in the P91 power distribution panel in the electrical/electronic (EE) compartment. The trip coil of the ground fault detector is energized for these two conditions:
 - (a) Ground fault
 - (b) Overcurrent.
- (4) When the trip coil energizes, the system B EMDP relay has no power and the relay contacts open to stop the 115v AC power to the system B EMDP.
- (5) Push the reset switch on the ground fault detector to move the contacts to their normal position.

B. Possible Causes

- (1) Wiring
- (2) System B EMDP overheat
- (3) System B EMDP relay, R318
- (4) System B EMDP ground fault detector, M1106



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(5) System B electric motor-driven pump (EMDP), M1104

C. Circuit Breakers

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
C	8	C00768	ELEC HYD PUMP CONTROL SYS B
F	3	C00882	ELEC HYD PUMP SYS B

D. Related Data

(1) (SSM 29-11-12)

(2) (WDM 29-11-12)

E. Initial Evaluation

(1) Do this check of the system B EMDP, M1104:

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

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
C	8	C00768	ELEC HYD PUMP CONTROL SYS B
F	3	C00882	ELEC HYD PUMP SYS B

(b) Push the reset switch on the system B ground fault detector.

NOTE: The system B ground fault detector is in the power distribution panel, P91, in the EE compartment.

(c) Make sure that the temperature of the system B EMDP is less than 140 degrees F (60 degrees C).

NOTE: If an overheat condition has occurred, then the EMDP temperature must decrease to less than 140 degrees F (60 degrees C) for the temperature switch to reset to the closed position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(d) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.

(e) If the electrical power to the system B EMDP is interrupted, then do the Fault Isolation Procedure below.

(f) If the electrical power to the system B EMDP is not interrupted, then there is an intermittent fault. Do this step to complete the task:

1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

(1) Do this check of the system B ground fault detector, M1106:

(a) Disconnect connector D2666 from the system B EMDP, M1104.





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CAUTION: DO NOT PUSH THE RESET SWITCH ON THE GROUND FAULT DETECTOR BEFORE YOU DISCONNECT ELECTRICAL CONNECTOR FROM THE EMDP.

(b) Push the reset switch on the system B ground fault detector, M1106.

NOTE: The system B ground fault detector is in the power distribution panel, P91, in the EE compartment.

(c) Install a jumper wire between pin 4 and pin 5 of connector D2666.
(d) Do a check for 200 VAC between pins 1, 3, and 6 of connector D2666.
(e) If there is not 200 VAC between pins 1, 3, and 6 of connector D2666, then do these steps:

1) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
F	3	C00882	ELEC HYD PUMP SYS B

2) Remove the jumper wire.
3) Do a check for an open circuit between these pins of connector D2666 for the EMDP and the relay for the system B EMDP, R318:

NOTE: The R318 relay for the system B EMDP is in the power distribution panel, P91, in the EE compartment.

D2666	R318
pin 1	term L1
pin 3	term L2
pin 6	term L3
pin 4	term X2

4) Make sure there is continuity from pin 5 of connector D2666 to ground.
5) If you find a problem with the wiring, then repair the wiring.
6) Make sure there is continuity between pin 4 and pin 5 at the system B EMDP connector.
7) If you do not find continuity between pin 4 and pin 5 at the EMDP connector, then replace the system B EMDP, M1104. These are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

8) If you do not find a problem with the wiring, do these steps:

- Check for 28V DC from terminal X1 of the SYS B EMDP Relay, R318, to ground.
- If there is 28V DC from terminal X1 to ground, replace the relay.
- If there is not 28V DC from terminal X1 to ground, replace the system B ground fault detector, M1106 (WDM 29-11-12).

9) Re-connect connector D2666.
10) Do the Repair Confirmation at the end of this task.
(f) If there is 200 VAC between pins 1, 3, and 6 of connector D2666, then remove the jumper wire and continue.

(2) Replace the system B EMDP, M1104. These are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

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





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G. Repair Confirmation

- (1) Put the HYD PUMPS B ELEC 1 switch, on the forward overhead panel P5, in the OFF position.
- (2) Do this check of the system B EMDP, M1104:
 - (a) Make sure that these circuit breakers are closed:

Power Distribution Panel Number 1, P91

Row	Col	Number	Name
C	8	C00768	ELEC HYD PUMP CONTROL SYS B
F	3	C00882	ELEC HYD PUMP SYS B

- (b) Push the reset switch on the system B ground fault detector.

NOTE: The system B ground fault detector is in the power distribution panel, P91, in the EE compartment.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (c) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (d) If the electrical power to the system B EMDP is not interrupted, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

805. Hydraulic Fluid Comes Out of the Reservoir Vent Line/Drain Mast - Fault Isolation

A. Description

- (1) Hydraulic fluid overflow and excessive servicing can occur under this condition:
 - (a) Large ambient temperature changes between departure and arrival gates. If the hydraulic reservoirs are filled at the cold location before dispatch back to the warm location, at the warm location the reservoirs would have been overfilled. This can cause fluid to be overflow.
 - 1) If the ground ambient is 20 degrees F or lower upon arrival at the gate, it is recommended to fill the reservoir to just above "REFILL" - the minimum amount to satisfy dispatch requirements (AMM TASK 12-12-00-610-801).

B. Possible Causes

- (1) Over-service of Reservoir
- (2) Relief valve
- (3) Hydraulic fluid quantity transmitter/indicator, T436 or T184

HAP 001-013, 015-026, 028-030 PRE SB 737-29-1106

- (4) Reservoir pressurization system

HAP ALL



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(5) Hydraulic fluid transfer

C. Fault Isolation Procedure

(1) Do a check of the fluid level in the system A and system B reservoir.

(a) If the reservoir fluid level is more than full, then do these steps:

- 1) Lower the fluid level. To lower it, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.
- 2) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801
- 3) If hydraulic fluid does not come out of the reservoir vent line/drain mast, then you corrected the fault. Do this step to complete this task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(b) If the reservoir level is not more than full, then continue.

(2) Do a check for the relief valve:

(a) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.

(b) Listen to the applicable relief valve.

(c) If the applicable relief valve does not open between 60-65 psi, then do these steps:

- 1) Replace the relief valve.
- 2) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801
- 3) If hydraulic fluid does not come out of the reservoir vent line/drain mast, then you corrected the fault. Do this step to complete this task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(d) If the relief valve opens between 60-65 psi, then continue.

(3) Do a check of the fluid quantity transmitter/indicator on the reservoir. To do the check, do this task: Hydraulic Fluid Quantity Transmitter/Indicator Inspection, AMM TASK 29-33-12-200-801.

(a) If the fluid quantity transmitter/indicator is not satisfactory, then do these steps:

- 1) Replace the fluid quantity transmitter/indicator, T436 or T184. These are the tasks:
 - Hydraulic Fluid Quantity Transmitter/Indicator Removal, AMM TASK 29-33-12-000-801
 - Hydraulic Fluid Quantity Transmitter/Indicator Installation, AMM TASK 29-33-12-400-801

2) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801

3) If hydraulic fluid does not come out of the reservoir vent line/drain mast, then you corrected the fault. Do this step to complete this task:

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- a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (b) If the fluid quantity transmitter/indicator is satisfactory, then continue.

HAP 001-013, 015-026, 028-030 PRE SB 737-29-1106

- (4) Do this check of the hydraulic reservoir pressurization module:
 - (a) Do a check to make sure that the vent caps are not clogged. To check the vent caps, do this task: Vent Cap Check, AMM TASK 29-11-03-220-801.
 - (b) If the vent cap was clogged, then do these steps:
 - 1) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801
 - 2) If hydraulic fluid does not come out of the reservoir vent line/drain mast, then you corrected the fault. Do this step to complete this task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (c) If the vent cap was not clogged, then continue.

HAP ALL

- (5) Do a check for hydraulic fluid transfer:
 - (a) If there is hydraulic fluid transfer from A to B, then, do this task: Hydraulic Fluid Transfers from System A to System B - Fault Isolation, 29-10 TASK 806.
 - (b) If there is hydraulic fluid transfer from B to A, then, do this task: Hydraulic Fluid Transfers from System B to System A - Fault Isolation, 29-10 TASK 807.
 - (c) Pressurize the applicable hydraulic reservoir. To pressurize it, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801
 - (d) If hydraulic fluid does not come out of the reservoir vent line/drain mast, then you corrected the fault. Do this step to complete this task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

806. Hydraulic Fluid Transfers from System A to System B - Fault Isolation**A. Description**

- (1) Hydraulic system design allows fluid transfer to occur from system A to system B under this condition:
 - (a) When parking brakes are set with system A pump(s) only pressurized and then released with system A depressurized. In this case, fluid is taken from system A when the brakes are set and returned to system B when the brakes are released. Approximately 5 fluid ounces can be transferred per cycle.
 - 1) To prevent hydraulic fluid transfer under the above condition, follow the normal procedures in the pre-flight and post-flight Flight Operations Manual.

B. Possible Causes

- (1) Brake shuttle valve internal leakage
- (2) Left thrust reverser shuttle valve internal leakage
- (3) Landing gear transfer valve transfer valve internal leakage

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C. Fault Isolation Procedure

(1) Do this check for leakage through the brake shuttle valves:

(a) Make sure that hydraulic power is removed from system A. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(b) Pressurize hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

(c) Apply brakes fully one time and release.

(d) Remove hydraulic power from hydraulic system B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(e) Remove pressure from the hydraulic system B reservoir only. To remove it, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-11-01-860-802 or Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.

HAP 001-013, 015-026, 028-030 PRE SB 737-29-1106

(f) Install the lockout pin in the depressurization valve for hydraulic system B reservoir.

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(g) Disconnect system B pressure lines from the four brake shuttle valves.

WARNING: KEEP ALL PERSONNEL AWAY FROM DISCONNECTED HYDRAULIC LINES. PRESSURIZED HYDRAULIC FLUID CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

(h) Pressurize the hydraulic system A. To pressurize it, do this task: AMM TASK 29-11-00-860-801.

(i) Look at the disconnected system B ports of the four brake shuttle valves.

(j) If there is leakage at the brake shuttle valve(s), then do these steps:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 2) Replace the applicable brake shuttle valve(s) that leak. These are the tasks:
 - Brake Shuttle Valve Removal, AMM TASK 32-41-95-000-801
 - Brake Shuttle Valve Installation, AMM TASK 32-41-95-400-801
- 3) If there is no hydraulic fluid transfer from system A to system B after two or three airplane flights, then you corrected the fault.

(k) If there is no leakage at the four brake shuttle valves, then continue.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(l) Pressurize hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.



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(m) Apply brakes and hold. Do not set the parking brake.

NOTE: A small amount of hydraulic fluid may come out of port B while you apply the brake. This is normal and should not be confused with leakage.

(n) Look at the disconnected system B ports of the four brake shuttle valves.

(o) If there is leakage at the brake shuttle valve(s), then do these steps:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 2) Replace the applicable leakage brake shuttle valve(s). These are the tasks:
 - Brake Shuttle Valve Removal, AMM TASK 32-41-95-000-801
 - Brake Shuttle Valve Installation, AMM TASK 32-41-95-400-801
- 3) If there is no hydraulic fluid transfer from system A to system B after two or three airplane flights, then you corrected the fault.

(p) If there is no leakage at the four brake shuttle valves, reconnect the system B ports then continue.

(2) Do this check for high pressure fluid transfer through the left thrust reverser shuttle valve:

- (a) Make sure that hydraulic power is removed from systems A and B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (b) Remove pressure from the hydraulic reservoirs. To remove it, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-11-01-860-802 or Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
- (c) Disconnect the standby system line from the left thrust reverser shuttle valve.
- (d) Pressurize the hydraulic reservoirs. To pressurize them, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(e) Pressurize hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

(f) Look at the disconnected standby port of the left thrust reverser shuttle valve.

(g) If there is leakage at the left thrust reverser shuttle valve, then do these steps:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 2) Replace the left thrust reverser shuttle valve. These are the tasks:
 - Thrust Reverser Shuttle Valve Removal, AMM TASK 78-34-08-000-801-F00
 - Thrust Reverser Shuttle Valve Installation, AMM TASK 78-34-08-400-801-F00
- 3) If there is no hydraulic fluid transfer from system A to system B after two or three airplane flights, then you corrected the fault.

(h) If there is no leakage at the left thrust reverser shuttle valve, then do this step and continue:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(3) Replace the landing gear transfer valve, V123. These are the tasks:

- Landing Gear Transfer Valve Removal, AMM TASK 32-31-71-020-801
- Landing Gear Transfer Valve Installation, AMM TASK 32-31-71-400-801



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- (a) If there is no hydraulic fluid transfer from system A to system B after two or three airplane flights, then you corrected the fault.

————— END OF TASK —————

807. Hydraulic Fluid Transfers from System B to System A - Fault Isolation

A. Description

- (1) Hydraulic system design allows fluid transfer to occur from system B to system A under these abnormal or infrequent operating conditions:
 - (a) When parking brakes are set with system B pump(s) pressurized and then released with system B depressurized and system A pump(s) pressurized. In this case, fluid is taken from system B when the brakes are set and returned to system A when the brakes are released. Approximately 5 fluid ounces can be transferred per cycle.
 - 1) To prevent hydraulic fluid transfer under these conditions, follow the normal procedures in the pre-flight and post-flight Flight Operations Manual.
 - (b) When the left thrust reverser is operated by the standby hydraulic system. During thrust reverser deployment, fluid is taken from the standby system reservoir (and the B system reservoir through the fluid balance line), to fill the left thrust reverser actuators, and then is returned to the A system reservoir during reverser stowing. Approximately 0.50 gallons of fluid can be transferred per thrust reverser cycle.
 - 1) This transfer occurs infrequently and only during abnormal conditions.
 - (c) When landing gears are cycled, the airplane is in AIR mode and N2 on engine 1 is less than 55%. In this condition, the landing gear transfer valve shuttles during gear retraction when the system B fluid is used to fill the actuators. After gear retraction, the landing gear transfer valve shuttles back to its normal position, so that subsequent extension of the landing gear returns the fluid to system A. Approximately 0.50 gallon of fluid will be transferred per cycle. Landing gear transfer valve operation is controlled through the Proximity Sensor Electronic Unit (PSEU).
 - 1) Fluid transfer will occur under specific flight conditions and during cycling of the landing gear during maintenance (airplane on jacks). To prevent this, you must open the landing gear transfer valve primary and secondary circuit breakers before you cycle the landing gear.

B. Possible Causes

- (1) Brake shuttle valve internal leakage
- (2) Proximity switch electronics unit logic
- (3) Landing gear transfer valve internal leakage

C. Fault Isolation Procedure

- (1) Do this check for high pressure leakage through the brake shuttle valves:
 - (a) Make sure that hydraulic power is removed from system B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (c) Apply brakes fully one time and release.
- (d) Remove hydraulic power from the hydraulic system A. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) Remove pressure from the hydraulic system A reservoir only. To remove it, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-11-01-860-802 or Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.

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- (f) Install the lockout pin in the depressurization valve for the hydraulic system A reservoir.

HAP ALL

- (g) Disconnect system A pressure lines from the four brake shuttle valves.

WARNING: KEEP ALL PERSONNEL AWAY FROM DISCONNECTED HYDRAULIC LINES. PRESSURIZED HYDRAULIC FLUID CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (h) Pressurize the hydraulic system B. To pressurize it, do this task: AMM TASK 29-11-00-860-801.
- (i) Look at the disconnected system A ports of the four brake shuttle valves.
- (j) If there is leakage at the brake shuttle valve(s), then do these steps:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - 2) Replace the applicable leakage brake shuttle valve(s). These are the tasks:
 - Brake Shuttle Valve Removal, AMM TASK 32-41-95-000-801
 - Brake Shuttle Valve Installation, AMM TASK 32-41-95-400-801
 - 3) If there is no hydraulic fluid transfer from system B to system A after two or three airplane flights, then you corrected the fault.
- (k) If there is no leakage at the four brake shuttle valves, then continue.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (l) Pressurize hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (m) Set the parking brake.

NOTE: A small amount of the hydraulic fluid may come out of port A while you set the brake. This is normal and should not be confused with leakage.

- (n) Look at the disconnected system A ports of the four brake shuttle valves.
- (o) If there is leakage at the brake shuttle valve(s), then do these steps:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



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- 2) Replace the applicable leakage brake shuttle valve(s). These are the tasks:
 - Brake Shuttle Valve Removal, AMM TASK 32-41-95-000-801
 - Brake Shuttle Valve Installation, AMM TASK 32-41-95-400-801
- 3) If there is no hydraulic fluid transfer from system B to system A after two or three airplane flights, then you corrected the fault.

(p) If there is no leakage at the four brake shuttle valves, reconnect system B ports then do this step and continue:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

- (2) Do this check of the landing gear transfer valve, V123:
 - (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (b) Look for maintenance message 29-23001 ENG NOT RUNNING.
 - (c) If maintenance message 29-23001 ENG NOT RUNNING shows on the PSEU display, then, do this task: Left Engine Running Signal to PSEU Problem - Fault Isolation, 29-20 TASK 809.
 - (d) If maintenance message 29-23001 ENG NOT RUNNING does not show on the PSEU display, then continue.
- (3) Replace the landing gear transfer valve, V123. These are the tasks:
 - Landing Gear Transfer Valve Removal, AMM TASK 32-31-71-020-801
 - Landing Gear Transfer Valve Installation, AMM TASK 32-31-71-400-801
 - (a) If there is no hydraulic fluid transfer from system B to system A after two or three airplane flights, then you corrected the fault.

END OF TASK

808. System A Hydraulic Pressure Above 3200 psi Problem - Fault Isolation

A. Description

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system A pressure transmitter is on the hydraulic system A pressure module.

B. Possible Causes

- (1) Hydraulic system A EDP or EMDP
- (2) System A pressure transmitter, T424

C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system A pressure:



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is more than 3200 psi, then do the Fault Isolation Procedure - EMDP.
- (c) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then do these steps:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

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- 2) Pressurize the hydraulic system A with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- 3) If the system A hydraulic pressure indication on the center instrument panel, P2, is greater than 3200 psi, then do the Fault Isolation Procedure - EDP.
- 4) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - EMDP

- (1) Remove power from hydraulic system A. To remove power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805
- (2) Do this check of the hydraulic system A pressure.
 - (a) Pressurize the hydraulic system A with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804
 - (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is more than 3200 psi, then do these steps:
 - 1) Replace the system A pressure transmitter, T424. These are the tasks:
 - System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
 - System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 2) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 3) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 4) If the system A hydraulic pressure indication on the center instrument panel, P2, is greater than 3200 psi, then do these steps:
 - a) Do this task: CDS BITE Procedure, 31-62 TASK 801.
 - b) If the CDS BITE test shows a hydraulic oil pressure fault or a DEU fault, then go to the fault isolation task for the applicable maintenance message to correct the fault.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- c) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- d) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault.
- e) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (c) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.

(3) Replace the hydraulic system A EMDP. These are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with an EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the system A hydraulic pressure indication on the pilots center panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



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F. Fault Isolation Procedure - EDP

(1) Replace the hydraulic system A EDP. These are the tasks:

- Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM
TASK 29-11-11-000-801-001
- Hydraulic Systems A and B Engine-Driven Pump (EDP) Installation, AMM
TASK 29-11-11-400-801-001

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- (a) Pressurize the hydraulic system A with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM
TASK 29-11-00-860-804.
- (b) If the system A hydraulic pressure indication on the pilots center panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM
TASK 29-11-00-860-805.

————— END OF TASK —————

809. System B Hydraulic Pressure Above 3200 psi Problem - Fault Isolation

A. Description

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system B pressure transmitter is on the hydraulic system B pressure module.

B. Possible Causes

- (1) Hydraulic system B EDP or EMDP
- (2) System B pressure transmitter, T423

C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system B pressure:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM
TASK 29-11-00-860-803.
- (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is greater than 3200 psi, then do the Fault Isolation Procedure - EMDP.



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(c) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then do these steps:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

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- 2) Pressurize the hydraulic system B with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- 3) If the system B hydraulic pressure indication on the instrument center panel, P2, is greater than 3200 psi, then do the Fault Isolation Procedure - EDP.
- 4) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - EMDP

- (1) Remove power from hydraulic system B. To remove power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805
- (2) Do this check of the hydraulic system B pressure.
 - (a) Pressurize the hydraulic system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804
 - (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is greater than 3200 psi, then do these steps:
 - 1) Replace the system B pressure transmitter, T423. These are the tasks:
 - System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
 - System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801

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- 2) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 3) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 4) If the system B hydraulic pressure indication on the center instrument panel, P2, is greater than 3200 psi, then do these steps:

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- a) Do this task: CDS BITE Procedure, 31-62 TASK 801.
- b) If the CDS BITE test shows a hydraulic oil pressure fault or a DEU fault, then go to the fault isolation task for the applicable maintenance message to correct the fault.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- c) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- d) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault.
- e) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(c) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.

(3) Replace the hydraulic system B EMDP. These are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

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- a) Pressurize the hydraulic system B with an EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- b) If the system B hydraulic pressure indication on the pilots center panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure - EDP

(1) Replace the hydraulic system B EDP. These are the tasks:

- Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM TASK 29-11-11-000-801-001
- Hydraulic Systems A and B Engine-Driven Pump (EDP) Installation, AMM TASK 29-11-11-400-801-001

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- a) Pressurize the hydraulic system B with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.



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(b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

810. System A Hydraulic Pressure Below 2850 psi Problem - Fault Isolation

A. Description

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system A pressure transmitter is on the hydraulic system A pressure module.
- (3) The low pressure light comes on if system pressure is below 1200 psi.

B. Possible Causes

- (1) Hydraulic system A EDP or EMDP
- (2) Internal leakage
- (3) System A pressure transmitter, T424

C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system A pressure:

- (a) Make sure that the FLT CONTROL and SPOILER switches, on the P5 panel, are in the OFF position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - 1) If the system A hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - EMDP.
 - 2) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.
 - (c) Put the FLT CONTROL and SPOILER switches, on the P5 panel, in the ON position.
 - 1) If the system A hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - Internal Leakage.
 - 2) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.
 - (d) Put the FLT CONTROL and the SPOILER switches, on the P5 panel, in the OFF position.



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(e) Remove hydraulic power from hydraulic system A. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

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(f) Pressurize the hydraulic system A with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.

- 1) If the system A hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - EDP.
- 2) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - EMDP

- (1) Remove hydraulic power from hydraulic system A. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (2) Do this check of hydraulic system A pressure.
 - (a) Pressurize the hydraulic system A with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
 - (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do these steps:
 - 1) Replace the hydraulic system A pressure transmitter, T424. To replace it, these are the tasks:
 - System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
 - System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 2) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 3) Make sure the FLT CONTROL A switch on the flight controls panel is in the ON position.
- 4) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 5) If the system A hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then continue.



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- 6) Do this task: CDS BITE Procedure, 31-62 TASK 801.
- 7) If the CDS BITE test shows a hydraulic oil pressure fault or a DEU fault, then go to the fault isolation task for the applicable maintenance message to correct the fault.

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- a) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- b) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault.
- c) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

- 8) If the CDS BITE test does not show a hydraulic oil pressure fault or a DEU fault, then do the Fault Isolation Procedure - Internal Leakage below.

- (c) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.

- (3) Replace the hydraulic system A EMDP. To replace it, these are the tasks:
 - Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
 - Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system A hydraulic pressure indication on the pilots center panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure - Internal Leakage

- (1) Do a check for internal leakage of the ailerons, elevator, elevator feel, rudder, autopilot, and flight spoilers (AMM 29-00-00-6).
 - (a) Replace any component that has an internal leakage more than the maximum allowable limit.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.



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(c) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

G. Fault Isolation Procedure - EDP

- (1) Replace the hydraulic system A EDP. These are the tasks:
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM TASK 29-11-11-000-801-001
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Installation, AMM TASK 29-11-11-400-801-001

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

811. System B Hydraulic Pressure Below 2850 psi Problem - Fault Isolation

A. Description

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system B pressure transmitter is on the hydraulic system B pressure module.
- (3) The low pressure light comes on if system pressure is below 1200 psi.

B. Possible Causes

- (1) Hydraulic system B EDP or EMDP
- (2) Internal leakage
- (3) System B pressure transmitter, T423

C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system B pressure:
 - (a) Make sure that the FLT CONTROL B and SPOILER B switches, on the P5 panel, are in the OFF position.



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - 1) If the system B hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - EMDP.
 - 2) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.
- (c) Put the FLT CONTROL B and SPOILER B switches, on the P5 panel, in the ON position.
 - 1) If the system B hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - Internal leakage.
 - 2) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.
- (d) Put the FLT CONTROL B and the SPOILER B switches, on the P5 panel, in the OFF position.
- (e) Remove hydraulic power from hydraulic system B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

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- (f) Pressurize the hydraulic system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
 - 1) If the system B hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then do the Fault Isolation Procedure - EDP.
 - 2) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - EMDP

- (1) Remove hydraulic power from hydraulic system B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (2) Do this check of hydraulic system B pressure.
 - (a) Pressurize the hydraulic system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
 - (b) If the system B hydraulic pressure indication on the pilot's center panel, P2, is less than 2850 psi, then do these steps:
 - 1) Replace the hydraulic system B pressure transmitter, T423. To replace it, these are the tasks:



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- System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
- System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801

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- 2) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 3) Make sure the FLT CONTROL B switch on the flight controls panel is in the ON position.
- 4) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 5) If the system B hydraulic pressure indication on the center instrument panel, P2, is less than 2850 psi, then continue.
- 6) Do this task: CDS BITE Procedure, 31-62 TASK 801.
- 7) If the CDS BITE test shows a hydraulic oil pressure fault or a DEU fault, then go to the fault isolation task for the applicable maintenance message to correct the fault.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- a) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault.
- c) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 8) If the CDS BITE test does not show a hydraulic oil pressure fault or a DEU fault, then do the Fault Isolation Procedure - Internal Leakage below.
- (c) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.

(3) Replace the hydraulic system B EMDP. To replace it, these are the tasks:

- Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
- Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure - Internal Leakage

- (1) Do a check for internal leakage of the ailerons, elevator, elevator feel, rudder, autopilot, and flight spoilers (AMM 29-00-00/601).
 - (a) Replace any component that has an internal leakage more than the maximum allowable limit.

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- (b) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (c) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

G. Fault Isolation Procedure - EDP

- (1) Replace the hydraulic system B EDP. These are the tasks:
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM TASK 29-11-11-000-801-001
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Installation, AMM TASK 29-11-11-400-801-001

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- (a) Pressurize the hydraulic system B with an EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————



812. Hydraulic Fluid Leakage Problem - Fault Isolation**A. Description**

- (1) This fault isolation procedure is used to find if the hydraulic system is in good condition. It will help you to find which parts are worn.
- (2) You can use this procedure to find if the parts have too much external leakage or the general internal condition of the hydraulic system. You can also use it for trouble shooting the system.
 - (a) When you are trouble-shooting the hydraulic system, it is only necessary for you to do these procedures for the system (A, B, or standby) with the problem. When you can, use standard tools to measure heat, vibration, or sound. Before you get near parts that move, operate them to make sure they can not hit you.

B. Possible Causes

- (1) Damage or worn parts

C. Fault Isolation Procedure

- (1) Do a hydraulic system external leakage check. To do it, do this task: Hydraulic System External Leakage Check, AMM TASK 29-00-00-790-801.

NOTE: You can feel for hot tubes or actuators, or listen for fluid leaks to find which parts have the problem.

- (a) If the hydraulic fluid leakage rate is more than the external leakage limits, then repair the cause of the leak (AMM TASK 29-00-00-790-801).
 - (b) If the hydraulic fluid leakage rate is not more than the external leakage limits, then continue.
- (2) Do a hydraulic system internal leakage check (AMM PAGEBLOCK 29-00-00/601).
 - (a) If the hydraulic fluid leakage rate is more than the internal leakage limits, then repair the cause of the leak.

END OF TASK

813. System A or System B Hydraulic Pressure Momentarily Below 2850 psi Problem - Fault Isolation**A. Description**

- (1) When selecting landing gear or high lift devices, hydraulic system pressures may drop for up to 10 seconds during normal operation. Momentary hydraulic pressure drops lasting from 10 to 40 seconds may be indications of a fault.
- (2) The low pressure light illuminates when the pressure drops below 1200 psi.
- (3) Hydraulic system pressure drop during high flow demand is usually caused by cavitation of the engine driven pump (EDP). Cavitation may be caused by a restriction in the EDP supply line or by reservoir pressurization system problems.
- (4) The landing gear runs off of System A pressure, and the wing high lift devices run off of System B pressure. Each system is tested separately in this procedure.
- (5) A hydraulic pump can be damaged if it operates during a momentary loss of pressure. If pressure is lost for an extended time, then check the applicable pressure and case drain filters. A contaminated filter can be an indication of a damaged pump.

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B. Possible Causes

- (1) If there is a momentary loss of, or no recovery of hydraulic pressure after ending high demand activities, the following are possible causes, in order of probability:
 - (a) Symptoms that occur during descent, but which can not be duplicated on the ground, may be caused by water trapped in the reservoir pressurization system freezing during cruise. These symptoms are considered intermittent faults.
 - (b) Reservoir pressurization system faults:

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- 1) Reservoir pressurization module filter plugged;
- 2) Reservoir pressurization orifice assembly is corroded or plugged;

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- 3) Air pressure filter assembly plugged;
- 4) Secondary check valve is corroded or plugged;
- 5) Cross fitting assembly is corroded or plugged;

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- 6) Reservoir pressurization system leakage.
- (c) Engine-driven pump supply line kinks or obstructions;
- (d) Hose liner collapse;
- (e) Quick-disconnect broken:
 - 1) Center body of the quick disconnect may have broken loose, obstructing flow.
- (f) Faulty check valves in the nose landing gear steering lines (System A only);
- (g) Faulty engine-driven pump.

C. Related Data

- (1) (SSM 29-00-00)
- (2) (WDM 29-10-01)
- (3) (SSM 29-33-11)
- (4) (WDM 29-33-11)

D. Initial Evaluation

- (1) Do the following steps to configure the airplane and prepare for an initial evaluation:
 - (a) Make sure that the FLT CONTROL and SPOILER switches, on the P5 panel, are in the OFF position.
- WARNING:** MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.
- (b) Pressurize the hydraulic system A and system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (c) Make sure the system A and system B hydraulic system pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue.



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- (d) If the system A or system B hydraulic pressure indication on the center instrument panel, P2, is less than 2850, then, do this task: System A Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 810 or, do this task: System B Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 811, as appropriate.
- (e) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2850 and 3200 psi, then continue with Test System B Hydraulic Pressure Recovery.

NOTE: There is no test of the system A hydraulic pressure recovery. The test requires operating high-flow systems while running the EDP. Proper testing of system A would retract the landing gear, which would require that the airplane be on jacks. This is not practical while running the EDP. If momentary hydraulic pressure drops have only been noted in system A, go to the Fault Isolation below.

(2) Test System B Hydraulic Pressure Recovery

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- (a) Make sure that the FLT CONTROL and SPOILER switches, on the P5 panel, are in the ON position.
- (b) Deploy the leading edge flaps and slats, and trailing edge flaps.
- (c) Monitor the system B hydraulic pressure indication on the center instrument panel, P2, during the deployment time period.
- (d) If the system B hydraulic pressure indication on the center instrument panel, P2, dropped during the deployment of the leading edge flaps and slats, and trailing edge flaps and did not recover, then do the Fault Isolation Procedure - Pressurization Faults.
- (e) If the system B hydraulic pressure indication on the center instrument panel, P2, dropped during the deployment of the leading edge flaps and slats, and trailing edge flaps, and then recovered to normal pressures within 10 seconds, then there was an intermittent fault in system B. Trapped water which freezes in the reservoir pressurization system during flight is the most likely cause of the intermittent fault.

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- (f) Stow the leading edge flaps and slats, and trailing edge flaps.
- (g) Continue with Restore the Airplane to Its Usual condition to complete this task.

E. Restore the Airplane to Its Usual Condition

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- (1) Make sure that the FLT CONTROL and SPOILER switches, on the P5 panel, are in the OFF position.



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(2) Remove hydraulic power from hydraulic system A and system B. To remove it, do this task:
Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure - Pressurization Faults**HAP 001-013, 015-026, 028-030 PRE SB 737-29-1106**

- (1) Do a check to see if the reservoir pressurization module filter is plugged.
 - (a) Pressurize the hydraulic reservoirs. Do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801
 - (b) If air does not flow continuously from the vent caps between the reservoir pressurization module and the reservoirs, then replace the reservoir pressurization module filter element.
 - 1) Do this task: Hydraulic Reservoir Pressurization Module Filter Removal, AMM TASK 29-11-02-000-802.
 - 2) Do this task: Hydraulic Reservoir Pressurization Module Filter Installation, AMM TASK 29-11-02-400-802.
 - (c) If air flows continuously from the vent caps between the reservoir pressurization module and the reservoirs, then continue.
- (2) Do a check of the reservoir pressurization orifice tee for corrosion or plugged passages. Do this task: AMM TASK 29-11-01-860-801.
 - (a) Do a check for air flow from the vent caps between the reservoir pressurization module and the reservoirs.
 - (b) Do a check for air pressure shown on the reservoir pressurization gauges.
 - (c) If there is no air flow, or the gauges show no pressure, then clean or replace the tee.
 - (d) If there is air flow then continue.
- (3) Do a check for reservoir pressurization system leakage. Do this task: Hydraulic Reservoir Pressurization Leakage Test, AMM TASK 29-11-01-700-801.
 - (a) If there is leakage, then repair the leaks as necessary.
 - (b) If there is no leakage, then continue.
- (4) Symptoms that occur during descent, but cannot be reproduced on the ground, may be caused by water trapped in the reservoir pressurization system. The trapped water can freeze during cruise, causing a blockage during descent but not on the ground.
 - (a) Do a check of and clean the vent caps, and remove the reservoir pressurization module filter bowl and drain water, as necessary. Do this task: Vent Cap Check, AMM TASK 29-11-03-220-801.
 - (b) If the vent caps were clean and not clogged, the fault was an intermittent fault. This completes the fault isolation task.

HAP 031-054, 101-999; HAP 001-013, 015-026, 028-030 POST SB 737-29-1106

- (5) Do a check to see if the air pressure filter assembly is plugged. Do this task: AMM TASK 29-09-00-860-801.
 - (a) If air does not flow continuously from the vents between the air pressure filter assembly and the reservoirs, then replace the air pressure filter assembly filter element.
 - 1) Do this task: AMM TASK 29-09-01-000-801.

NOTE: Do only the steps to remove the filter element. It is not necessary to remove the filter assembly to replace the filter element.

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- 2) Do this task: AMM TASK 29-09-01-400-801.

NOTE: Do only the steps to install the filter element. It is not necessary to remove the filter assembly to replace the filter element.

- (b) If air flows continuously from the vents between the air pressure filter assembly and the reservoirs, then continue.
- (6) Do a check of the secondary check valve for corrosion or plugged passages. Do this task: AMM TASK 29-09-00-860-801.
 - (a) Do a check for air flow from the vents between the air pressure filter assembly and the reservoirs.
 - (b) If air does not flow continuously from the vents, then clean or replace the secondary check valve.
 - 1) Do this task: AMM TASK 29-09-01-000-802.
 - 2) Do this task: AMM TASK 29-09-01-400-802.
 - (c) If air flows continuously from the vents, then continue.
- (7) Do a check of the cross fitting assembly for corrosion or plugged passages. Do this task: AMM TASK 29-09-00-860-801.
 - (a) Do a check for air flow from the vents between the cross fitting assembly and the reservoirs.
 - (b) Do a check for air pressure shown on the reservoir pressurization gauges.
 - (c) If there is no air flow, or the gauges show no pressure, then clean or replace the cross fitting assembly.
 - 1) Do this task: AMM TASK 29-09-04-000-801.
 - 2) Do this task: AMM TASK 29-09-04-400-801.
 - (d) If air flows continuously from the vents, then continue.
- (8) Do a check for reservoir pressurization system leakage. Do this task: AMM TASK 29-09-00-860-803.
 - (a) If there is leakage, then repair the leaks as necessary.
 - (b) If there is no leakage, then continue.
- (9) Symptoms that occur during descent, but cannot be reproduced on the ground, may be caused by water trapped in the reservoir pressurization system. The trapped water can freeze during cruise, causing a blockage during descent but not on the ground.
 - (a) Do a check of and clean the vents, and remove the air pressure filter assembly filter element and drain water as necessary.
If the vents were clean and not clogged, the fault was an intermittent fault. This completes the fault isolation task.

HAP ALL

- (10) Do a check for hose-liner collapse in the engine-driven pump supply hose.
 - (a) Inspect for kinked hoses.
 - (b) Remove the EDP supply hoses and inspect the liner. To remove the hose, do the following steps:

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- 1) Prepare for the hose removal.
 - a) For the applicable hydraulic system, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - b) Release pressure from the applicable hydraulic reservoir. To release the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-11-01-860-802 or Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
 - c) For engine 1, open this circuit breaker and install safety tag:
F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	15	C00779	HYD SYS ENG PUMP DEPRESS VALVE 1
 - d) For engine 2, open this circuit breaker and install safety tag:
F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	17	C00780	HYDRAULIC SYSTEM ENG PUMP DEPRESS VALVE 2
- 2) Remove the hose.
 - a) Disconnect the electrical connector, DP1204, from the receptacle on the pump, under the hose.
 - b) Put a container, (1 gal) under the pump to catch spills.
 - c) Disconnect the hydraulic supply line.
- 3) Inspect the hose liner for separation or collapse.

NOTE: Look for kinked hoses.
- 4) Inspect the hose quick-disconnect fitting for broken or obstructed passages.

NOTE: Look for the quick-disconnect halves being completely screwed together, or the center-body of the disconnect being broken.
- 5) If the hose is separated, collapsed, broken or obstructed, then replace the hose.
- 6) If the hose is not faulty, then continue.
- 7) Install the hose.
 - a) Lubricate the hydraulic supply hose union to pump o-ring with MCS 352B fluid, D00054.
 - b) Install the hydraulic supply hose union in the forward port of the pump.
 - c) Tighten the union to 855-945 pound-inches (97-107 newton meters).
 - d) Lubricate the hydraulic supply hose union to hose o-ring with MCS 352B fluid, D00054.
 - e) Connect the hydraulic supply hose to the hydraulic supply hose union.
 - f) Tighten the hydraulic supply line hose to fitting joint to 1520-1680 pound-inches (172-190 newton-meters).
- 8) Put the airplane back to its usual condition.



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- a) For the left fan cowl panel, do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

- b) For engine 1, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	15	C00779	HYD SYS ENG PUMP DEPRESS VALVE 1

- c) For engine 2, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	17	C00780	HYDRAULIC SYSTEM ENG PUMP DEPRESS VALVE 2

- d) This completes the fault isolation task.

- 9) Do a check for faulty check valves in the nose landing gear steering lines (system A only). If leaky, these check valves can allow flow to go directly from pressure to return (Landing gear up to down, or down to up), creating a high flow demand and possible reduced system pressure. Do the following steps:

- a) Install the landing gear down lock pins. Do this task: Landing Gear Downlock Pins Installation, AMM TASK 32-00-01-480-801.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- b) Pressurize the hydraulic system A and system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - c) Select landing gear DOWN.
 - d) Do a check of the steering gear check valves.
 - e) If the check valves are hot, replace them.
 - f) Select landing gear Up.
 - g) If the check valves are hot, replace them.
 - h) If the check valves are not hot, then continue.
 - i) Replace the engine-driven pump. Do this task: Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM TASK 29-11-11-000-801-001.
 - j) This completes the fault isolation task.

G. Confirmation of Fault Correction

- (1) Repeat the Initial Evaluation tests above.

- (a) If the hydraulic pressure in each system momentarily drops and then recovers, or does not drop at all, you have corrected the fault.

— END OF TASK —





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801. Engine Driven Pump Operates (engine windmills) with the Supply Shutoff Valve Closed (fire handle pulled) - Fault Isolation

A. Description

- (1) The engine fire switches isolate the engine if there is an engine fire. Each engine fire switch controls the supply shutoff valve for its related Engine Driven Pump (EDP).
- (2) When you pull the engine fire switch, the Engine Driven Pump (EDP) supply shutoff valve moves to the closed position. This stops the supply of hydraulic fluid to the EDP.

B. Possible Causes

- (1) Because the supply of hydraulic fluid to EDP stops when you move the engine fire switch up, case drain flow does not flow through the EDP. If the engine continues to turn (windmill) with the supply shutoff valve in the closed position, the EDP may be damaged.

C. Initial Evaluation

- (1) If you move either engine No. 1 or 2 fire switches to the up position with the corresponding engine driven pump (EDP) operating, then do this check:
 - (a) If the supply shutoff valve was closed for less than five minutes, no maintenance action is required and shutoff periods are not accumulative.
 - (b) If the supply shutoff valve was closed for more than five minutes, make sure that the EDP has operated for at least one minute with supply fluid available before you check the filter elements. This is to permit fluid to reach the filter that may have metal contamination, possibly generated during fluid shutoff, then do the Fault Isolation Procedure below:

D. Fault Isolation Procedure

- (1) Check the case drain filter element for metal contamination. To check it, do this task: EDP Case Drain Filter Element Removal, AMM TASK 29-11-51-000-801.
- (2) Check the pressure filter for metal contamination. To check it, do this task: Hydraulic Systems A and B Pressure Filter Module Element Removal, AMM TASK 29-11-71-000-802.
- (3) If no metal contamination is found in either filter, then do the steps that follow:
 - (a) Install a new EDP case drain filter element. To install it, do this task: EDP Case Drain Filter Element Installation, AMM TASK 29-11-51-400-801.
 - (b) Install a new pressure filter element. To install it, do this task: Hydraulic Systems A and B Pressure Module Filter Element Installation, AMM TASK 29-11-71-400-802.
 - (c) Continue to operate the EDP and recheck the EDP case drain filter element and the pressure filter element in 200 hours.
- (4) If you find metal contamination in either filter, then do the steps that follow:
 - (a) Replace the EDP. To replace it, these are the tasks:
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Removal, AMM TASK 29-11-11-000-801-001
 - Hydraulic Systems A and B Engine-Driven Pump (EDP) Installation, AMM TASK 29-11-11-400-801-001
 - (b) Flush the hydraulic lines between the EDP and the filters. To flush the lines, do this task: Hydraulic System A or B Flushing, AMM TASK 29-11-00-170-801.

————— END OF TASK —————



29-11 TASK 801

801. Standby Hydraulic EMDP Does Not Operate - Fault Isolation**A. Description**

- (1) The standby hydraulic system electric motor-driven pump (EMDP) supplies hydraulic pressure to the standby hydraulic system.
- (2) The standby hydraulic system EMDP has an electric motor that mechanically connects to the EMDP. The motor operates with three-phase, 400 hertz, 115 VAC power.
- (3) The EMDP is rated at 4.2 gpm at 2700 psi. The standby hydraulic system EMDP is in the right aft wing to body fairing.

B. Possible Causes

- (1) Standby hydraulic pump relay, R643
- (2) Standby hydraulic System EMDP, M242
- (3) Flight controls panel, P5-3
- (4) Wiring problem

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
C	11	C00362	FLIGHT CONTROL SHUTOFF VALVES STBY RUD

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

D. Related Data

- (1) (SSM 29-22-11)
- (2) (WDM 29-22-11)

E. Initial Evaluation

- (1) Do this check of the standby hydraulic system EMDP, M242:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (b) If the standby hydraulic system EMDP does not operate, then do the Fault Isolation Procedure below.
- (c) If the standby hydraulic system EMDP operates, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.



F. Fault Isolation Procedure

- (1) Do a check of the standby hydraulic system EMDP, M242:
 - (a) Disconnect connector D812 from the standby hydraulic system EMDP, M242.
 - (b) Do a check for 115 VAC from pins A, B, and C of connector D812 to structure ground (WDM 29-22-11).
 - (c) If there is 115 VAC at pins A, B, and C of connector D812, then do these steps:
 - 1) Replace the standby hydraulic system EMDP, M242. These are the tasks:
 - Standby Hydraulic System Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-21-21-000-801
 - Standby Hydraulic System Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-21-21-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If there is not 115 VAC at pin A, B, or C of connector D812, then do these steps:
 - 1) Re-connect connector D812.
 - 2) Replace the standby hydraulic pump relay, R643 in the power distribution panel 2, P92.

NOTE: The power distribution panel 2, P92, is in the electrical/electronic compartment.
 - 3) Do the Repair Confirmation at the end of this task.
 - 4) If the Repair Confirmation is not satisfactory, then continue.
 - 5) Disconnect connector D11740 from the power distribution panel, P92.
 - 6) Disconnect connector D812 from the standby hydraulic system EMDP, M242.
 - 7) Do a wiring check between these pins of connector D812 at the standby hydraulic system EMDP, M242 and connector D11740 at the panel P92 (WDM 29-22-11):

NOTE: You only need to do the wiring check at the pin that does not have 115 VAC.

D812	D11740
pin A -----	pin A
pin B -----	pin B
pin C -----	pin C

- 8) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D812.
 - c) Re-connect connector D11740.
 - d) Do the Repair Confirmation at the end of this task.
- (e) If there is not 115 VAC at pins A, B, and C of connector D812, then continue.
 - 1) Re-connect connector D812.
 - 2) Re-connect connector D11740.
- (2) Do this wiring check of the standby hydraulic pump relay, R643:
 - (a) Disconnect connector D11448 from the power distribution panel, P92.

NOTE: The power distribution panel, P92 is in the electrical/electronic compartment.
 - (b) Do a check for 28 VDC at pin 25 of connector D11448 to structure ground (WDM 29-22-11).
 - (c) If there is 28 VDC at pin 25 of connector D11448, then do these steps:

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- 1) Replace the standby hydraulic pump relay, R643 in the power distribution panel, P92.
- 2) Re-connect connector D11448.
- 3) Do the Repair Confirmation at the end of this task.
- 4) If the Repair Confirmation is not satisfactory, then continue.
- 5) Do a check for 115 VAC from the load terminal of this circuit breaker, C1449, to structure ground (WDM 29-22-11):
 - a) This is the circuit breaker:

Power Distribution Panel Number 2, P92

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	2	C01449	STANDBY HYDRAULIC PUMP

- 6) If there is not 115 VAC at circuit breaker, C1449, then do these steps:
 - a) Replace the circuit breaker, C1449.
 - b) Do the Repair Confirmation at the end of this task.
- (d) If there is not 28 VDC at pin 25 of connector D11448, then continue.
- (3) Do this wiring check:
 - (a) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - (b) Disconnect connector D624 from the flight controls panel, P5-3.
 - (c) Do a wiring check between these pins of connector D624 at the P5-3 panel and D11448 at the panel P92 (WDM 29-22-11):

D624	D11448
pin 21	-----
	pin 25
- (d) If there is a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D11448.
 - 3) Re-connect connector D624.
 - 4) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D11448.
- (4) Do this check of the flight controls panel, P5-3:
 - (a) Do a check for 28 VDC at pin 11 of connector D624 to structure ground (WDM 29-22-11).
 - (b) If there is 28 VDC at pin 11 of connector D624, then do these steps:
 - 1) Install a new flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If there is not 28 VDC at pin 11 of connector D624, then continue.
- (5) Do this check of the circuit breaker, C362:
 - (a) Do a check for 28 VDC from the load terminal of this circuit breaker, C362, to structure ground (WDM 29-22-11):





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- 1) This is the circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONTROL SHUTOFF VALVES STBY RUD

- (b) If there is not 28 VDC at circuit breaker, C362, then do these steps:
 - 1) Replace the circuit breaker, C362.
 - 2) Re-connect connector D624.
 - 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (c) If there is 28 VDC at circuit breaker, C362, then do these steps:
 - 1) Repair the wiring between pin 11 of connector D624 at the panel P5-3 to the load terminal of circuit breaker C362 at panel P6 (WDM 29-22-11).
 - 2) Re-connect connector D624.
 - 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the standby hydraulic system EMDP, M242:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (b) If the standby hydraulic system EMDP operates, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.

————— END OF TASK —————

804. Power Transfer Unit (PTU) Does Not Operate - Fault Isolation

A. Description

- (1) The power transfer unit (PTU) supplies alternative hydraulic pressure to the leading edge flaps and slats.
- (2) The PTU has a hydraulic motor and a hydraulic pump on a common shaft. The PTU motor receives pressure from the hydraulic system A through the PTU control valve to turn the motor. The PTU pump receives fluid supply from the hydraulic system B reservoir. The PTU pump supplies alternative pressure to the leading edge flaps and slats.

B. Possible Causes

- (1) Standby shutoff valve indication relay, R625



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- (2) PTU control valve, V133
- (3) Hydraulic system B EDP pressure switch, S855
- (4) Wiring problem
- (5) Power transfer unit (PTU)
- (6) System B EDP relay, R353

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
A	15	C01081	HYDRAULIC SYSTEM PTU VALVE CONT 1
A	16	C01085	HYDRAULIC SYSTEM PTU VALVE CONT 2

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
C	16	C01356	LANDING GEAR AIR/GND SYS 1

D. Related Data

- (1) (SSM 29-25-11)
- (2) (WDM 29-25-11)

E. Initial Evaluation

- (1) Do this check of the power transfer unit (PTU):
 - (a) Make sure the ALTERNATE FLAPS ARM switch, on the flight controls panel, P5-3, is not in the ARM position.
 - (b) Make sure the ALTERNATE FLAPS switch, on the flight controls panel, P5-3, is not in the DOWN position.
 - (c) Do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-11-01-860-801 or Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
 - (d) Open this circuit breaker and install safety tag:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Pressurize hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (f) Move the flap control lever to the 5-unit detent.
- (g) Remove hydraulic power from the hydraulic system B. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(h) Pressurize hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE FLAPS AND SLATS. THE LEADING EDGE FLAPS AND SLATS CAN MOVE AUTOMATICALLY. THIS CAN OCCUR WHEN THE HYDRAULIC SYSTEM B EDP PRESSURE IS LESS THAN 2400 PSI, THE TRAILING EDGE FLAPS ARE NOT IN THE UP POSITION, AND THE MAIN LANDING GEAR AIR/GROUND RELAYS IS IN THE AIR MODE. THIS CAN CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

(i) Do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.

(j) If the PTU control valve does not open, then do the Fault Isolation Procedure - Valve Not Open below.

(k) If the PTU control valve opens, then do these steps:

- 1) If the PTU does not operate, then do the Fault Isolation Procedure - Valve Open below.
- 2) If the PTU operates, then there was an intermittent fault. Do these steps to complete the task:
 - a) Do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
 - b) Remove the safety tag and close this circuit breaker:

Power Distribution Panel Number 2, P92

Row	Col	Number	Name
F	2	C01449	STANDBY HYDRAULIC PUMP

(c) Remove hydraulic power from the hydraulic system A. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure - Valve Not Open

(1) Do this check of the power transfer unit (PTU) control valve, V133:

- (a) Disconnect connector D3244 from the PTU control valve, V133.
- (b) Do a check for 28 VDC from pin 3 of connector D3244 to structure ground (WDM 29-25-11).
- (c) If there is 28 VDC at pin 3 of connector D3244, then do these steps:
 - 1) Replace the PTU control valve, V133. These are the tasks:
 - Power Transfer Unit (PTU) Control Valve Removal, AMM TASK 29-22-31-000-801
 - Power Transfer Unit (PTU) Control Valve Installation, AMM TASK 29-22-31-400-801
 - 2) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.
 - 3) If the operational test is satisfactory, then you corrected the fault.
- (d) If there is not 28 VDC at pin 3 of connector D3244, then continue.
 - 1) Re-connect connector D3244.



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(2) Do this power wiring check:

(a) Disconnect connector D3254 from the hydraulic system B EDP relay, R353, in the junction box J11.

NOTE: The junction box J11 is in the aft cargo bay near aft bulkhead.

(b) Do a check of 28 VDC from pins B1 and X1 of connector D3254 to structure ground (WDM 29-25-11).

(c) If there is 28 VDC at pins B1 and X1 of connector D3254, then do these steps:

1) Do a check for 28 VDC from pin X1 to X2 (ground) of connector D3254 (WDM 29-25-11).

2) If there is 28 VDC at pin X1 of connector D3254, then do these steps:

a) Install a new hydraulic system B EDP relay, R353.

b) Do the operational test of the PTU. To do it, do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.

c) If the operational test is satisfactory, then you corrected the fault.

d) If the operational test is not satisfactory, then continue.

e) Disconnect connector D3244 from the PTU control valve, V133.

f) Remove the hydraulic system B EDP relay, R353.

g) Repair the wiring between these pins of connector D3244 at the PTU control valve, V133 and connector D3254 at the junction box J11 (WDM 29-25-11):

D3244

pin 3

D3254

pin B2

h) Re-connector connector D3244.

i) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.

j) If the operational test is satisfactory, then you corrected the fault.

3) If there is not 28 VDC at pin X1 or ground at pin X2 of connector D3254, then do these steps:

a) Replace the hydraulic system B EDP pressure switch, S855. These are the tasks:

- Engine Driven Pump (EDP) Pressure Switch Auto Slat System Removal, AMM TASK 29-22-41-000-801

- Engine Driven Pump (EDP) Pressure Switch Auto Slat System Installation, AMM TASK 29-22-41-400-801

b) Re-connect connector D3254.

c) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.

d) If the operational test is satisfactory, then you corrected the fault.

e) If the operational test is not satisfactory, then continue.

f) Disconnect connector D3242 from the hydraulic system B EDP pressure switch, S855.

g) Remove the hydraulic system B EDP relay, R353.

h) Repair wiring between these pins of connector D3242 at the hydraulic system B EDP pressure switch, S855 and connector D3254 at the junction box J11 (WDM 29-25-11):



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D3242

pin 3 -----

D3254

pin X2

- i) Repair the wiring between pin 2 of connector D3242 to DC ground (WDM 29-25-11).
- j) Re-connect connector D3242.
- k) Re-connect connector D3254.
- l) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.
- m) If the operational test is satisfactory, then you corrected the fault.
- (d) If there is not 28 VDC at pin B1 and/or X1 of connector D3254, then continue.

(3) Do this wiring check:

- (a) Remove the standby shutoff valve indication relay, R625 from the junction box J11.

NOTE: The junction box J11 is in the aft cargo bay near aft bulkhead.

- (b) Do a wiring check between these pins of connector D11370 at standby shutoff valve indication relay, R625 and connector D3254 at the hydraulic system B EDP relay, R353 (WDM 29-25-11):

D11370

pin A3 -----

pin A3 -----

D3254

pin B1

pin X1

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

- 1) Repair the wiring.
- 2) Re-install the standby shutoff valve indication relay, R625.
- 3) Re-connect connector D3254.
- 4) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.
- 5) If the operational test is satisfactory, then you corrected the fault.

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

- 1) Re-install the hydraulic system B EDP relay, R353.

(4) Install a new standby shutoff valve indication relay, R625.

- (a) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.

- 1) If the operational test is satisfactory, then you corrected the fault.

G. Fault Isolation Procedure - Valve Open

(1) Replace the power transfer unit (PTU). These are the tasks:

- Power Transfer Unit (PTU) Removal, AMM TASK 29-22-11-000-801
- Power Transfer Unit Installation, AMM TASK 29-22-11-400-801

- (a) Do the operational test of the PTU. Do this task: Power Transfer Unit Operational Test, AMM TASK 29-22-00-710-801.

- 1) If the operational test is satisfactory, then you corrected the fault.

————— END OF TASK —————



29-20 TASK 804



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FAULT ISOLATION MANUAL

805. Primary Landing Gear Transfer Valve Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-24001 PRI LGTV FAIL
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the landing gear transfer valve.

B. Possible Causes

- (1) Landing gear transfer valve, V123
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of landing gear transfer valve, V123:
 - (a) Disconnect connector D2860 from the landing gear transfer valve, V123.
 - (b) Measure the resistance between pin 2 and pin 1 of the landing gear transfer valve, V123.
 - (c) If the resistance is not between 60-80 ohms, then do these steps:
 - 1) Replace the landing gear transfer valve, V123. These are the tasks:
 - Landing Gear Transfer Valve Removal, AMM TASK 32-31-71-020-801
 - Landing Gear Transfer Valve Installation, AMM TASK 32-31-71-400-801
 - 2) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If the resistance is between 60-80 ohms, then continue.
- (2) Do this wiring check:
 - (a) Disconnect connector D11138 from the proximity switch electronics unit (PSEU).
 - (b) Do a wiring check between these pins of connector D11138 at the E11 shelf and connector D2860 at the landing gear transfer valve, V123:





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D11138

pin 2 -----

D2860

pin 1

- 1) Do a check for the ground at pin 2 of connector D2860.
- 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2860.
 - c) Re-connect connector D11138 to the PSEU.
 - d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (c) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D2860.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
 - (a) If the maintenance message does not show after the PSEU installation test, then you corrected the fault.

————— END OF TASK —————

806. Secondary Landing Gear Transfer Valve Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-24002 SEC LGTV FAIL
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the landing gear transfer valve.

B. Possible Causes

- (1) Landing gear transfer valve, V123
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.



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FAULT ISOLATION MANUAL

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

F. Fault Isolation Procedure

- (1) Do this check of landing gear transfer valve, V123:
 - (a) Disconnect connector D2860 from the landing gear transfer valve, V123.
 - (b) Measure the resistance between pin 3 and pin 4 of the landing gear transfer valve, V123.
 - (c) If the resistance is not between 60-80 ohms, then do these steps:
 - 1) Replace the landing gear transfer valve, V123. These are the tasks:
 - Landing Gear Transfer Valve Removal, AMM TASK 32-31-71-020-801
 - Landing Gear Transfer Valve Installation, AMM TASK 32-31-71-400-801
 - 2) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If the resistance is between 60-80 ohms, then continue.
- (2) Do this wiring check:
 - (a) Disconnect connector D11140 from the proximity switch electronics unit (PSEU).
 - (b) Do a wiring check between these pins of connector D11140 at the E11 shelf and connector D2860 at the landing gear transfer valve, V123:

D11140	D2860
pin 2	-----
	pin 3

 - 1) Do a check for the ground at pin 4 of connector D2860.
 - 2) If there is a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2860.
 - c) Re-connect connector D11140 to the PSEU.
 - d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - (c) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D2860.
 - (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
 - (a) If the maintenance message does not show after the PSEU installation test, then you corrected the fault.

END OF TASK

807. Landing Gear Primary Power Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-20001 NO LGTV PRI PWR



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(2) The proximity switch electronics unit (PSEU) has detected a fault from the primary landing gear circuit breaker.

NOTE: Power is only provided through the circuit breaker when the 115V AC transfer busses are powered.

B. Possible Causes

- (1) Wiring problem
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11))
- (2) (WDM 29-23-11))

E. Initial Evaluation

- (1) Supply Electrical Power to the 115VAC Transfer Buses: (Supply Electrical Power, AMM TASK 24-22-00-860-811).
- (2) Make sure these lights on the P5-4 are OFF:
 - (a) 1 TRANSFER BUS OFF
 - (b) 2 TRANSFER BUS OFF
- (3) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

- (4) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (5) Do this check of the circuit breaker, C781:
 - (a) Do a check for 28 VDC from the load terminal of this circuit breaker, C781, to structure ground.
 - 1) This is the circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

- (b) If there is not 28 VDC at circuit breaker C781, then do these steps:
 - 1) Replace the circuit breaker, C781.



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- 2) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (c) If there is 28 VDC at circuit breaker C781, then continue.

F. Fault Isolation Procedure

- (1) Do this check of the landing gear primary power signal to the PSEU:
 - (a) Push the ON/OFF button on the front panel of the PSEU to turn on the BITE display.
NOTE: The display will show EXISTING FAULTS.
 - (b) Select OTHER FUNCTNS from the MAIN MENU on the PSEU.
 - (c) Select I/O MONITOR from the OTHER FUNCTNS menu
 - (d) Select INPUTS from the I/O MONITOR menu.
 - (e) Select Connector D11138 PIN 7 from the list of inputs.
 - (f) If the PSEU BITE display shows VLTGE, then do these steps:
 - 1) Remove the proximity switch electronics unit (PSEU), M2061. To remove it, do this task: (Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801).
 - 2) Install a new PSEU, M2061. To install it, do this task: (Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801).
 - 3) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
 - 4) If the maintenance message does not show, then you corrected the fault.
 - (g) If the PSEU BITE display shows NO VLTGE, then do these steps:
 - 1) Repair the wiring between pin 7 of connector D11138 at the PSEU to the load terminal of circuit breaker C781 at the panel P6.
 - 2) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
 - 3) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

808. Landing Gear Secondary Power Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-20002 NO LGTV SEC PWR
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the secondary landing gear circuit breaker.

NOTE: Power is only provided through the circuit breaker when the 115V AC transfer busses are powered.

B. Possible Causes

- (1) Wiring problem
- (2) Proximity switch electronics unit (PSEU), M2061



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FAULT ISOLATION MANUAL**C. Circuit Breakers**

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

(1) (SSM 29-23-11)

(2) (WDM 29-23-11)

E. Initial Evaluation

(1) Supply Electrical Power to the 115VAC Transfer Buses. Do this task: Supply Electrical Power, AMM TASK 24-22-00-860-811.

(2) Make sure these lights on the P5-4 are OFF:

- (a) 1 TRANSFER BUS OFF
- (b) 2 TRANSFER BUS OFF

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC

(4) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.

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

F. Fault Isolation Procedure

(1) Do this check of the circuit breaker, C799:

- (a) Do a check for 28 VDC from the load terminal of this circuit breaker, C799, to structure ground.
 - 1) This is the circuit breaker

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC

- (b) If there is not 28 VDC at pin 7 of connector D11140, then continue.

- 1) Replace the circuit breaker, C799.
- 2) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
- 3) If the maintenance message does not show, then you corrected the fault.

- (c) If there is 28 VDC at circuit breaker C799, then continue.

(2) Do this check of the landing gear secondary power signal to the PSEU:

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(a) Push the ON/OFF button on the front panel of the PSEU to turn on the BITE display.

NOTE: The display will show EXISTING FAULTS.

(b) Select OTHER FUNCTNS from the MAIN MENU on the PSEU.

(c) Select I/O MONITOR from the OTHER FUNCTNS menu

(d) Select INPUTS from the I/O MONITOR menu

(e) Select Connector D11140 PIN 7 from the list of inputs

(f) If the PSEU BITE display shows VLTGE, then do these steps:

- 1) Remove the proximity switch electronics unit (PSEU), M2061. To remove it, do this task: (Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801).
- 2) Install a new PSEU, M2061. To install it, do this task: (Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801).
- 3) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
- 4) If the maintenance message does not show, then you corrected the fault.

(g) If the PSEU BITE display shows NO VLTGE, then do these steps:

- 1) Repair the wiring between pin 7 of connector D11140 at the PSEU to the load terminal of circuit breaker C799 at the panel P6
- 2) Do this task: (Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801).
- 3) If the maintenance message does not show, then you corrected the fault.

END OF TASK

809. Left Engine Running Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 29-22001 ENG RUN L FAULT
 - (b) 29-23001 ENG NOT RUNNING
- (2) The maintenance messages show when these conditions occur:
 - (a) The left engine is on, but the left engine-running relay is not providing a ground signal to the PSEU input.
 - (b) The left engine thrust lever is advanced more than 64 degrees.

B. Possible Causes

- (1) Left engine running relay, R564
- (2) Proximity switch electronics unit (PSEU), M2061

C. Circuit Breakers

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	3	C01312	ENGINE 1 RUN/PWR





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F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)
- (3) (SSM 73-22-14)
- (4) (WDM 73-22-31)

E. Initial Evaluation

- (1) Do these steps to prepare for the initial evaluation:

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

- (b) Make sure that a minimum of 3 out of 4 entry/service doors are closed.
 - (c) Make sure that the airplane is in ground mode.
 - (d) Make sure that the engine start switches on the P5-20 panel are in the OFF position.
 - (e) Move the engine start levers on the control stand to IDLE.
 - (f) Wait for 5 minutes, then move the engine thrust levers on the control stand to the fully advanced position.
- (2) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.



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F. Fault Isolation Procedure

- (1) Replace the left engine running relay, R564.

NOTE: The left engine running relay, R564 is installed in the junction box, J22.

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

- 1) If the maintenance message does not show, then you corrected the fault.
- 2) If the maintenance message shows, then continue.

- (2) Do this wiring check:

- (a) Remove the proximity switch electronics unit (PSEU). To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
- (b) Remove the left engine running relay, R564, from the J22 junction box.
- (c) Do a wiring check between these pins of connector D10986 at the E11 and connector D10918 at the J22 junction box:

D10986	D10918
pin 39 -----	pin A1

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the left engine running relay, R564.
 - c) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - d) Do the Repair Confirmation at the end of this task:
 - <1> If the maintenance message does not show, then you corrected the fault.
 - <2> If you do not find a problem with the wiring, then continue.

- (3) Install a new PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.

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

G. Repair Confirmation

- (1) Do these steps to prepare for the Repair Confirmation:

- (a) Make sure that these circuit breakers are open and have 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, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

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



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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) Make sure that the right-engine running relay, R563 is installed.
- (c) Make sure that a minimum of 3 out of 4 entry/service doors are closed.
- (d) Make sure that the airplane is in ground mode.
- (e) Make sure that the engine start switches on the P5-20 panel are in the OFF position.
- (f) Move the engine start levers on the control stand to IDLE.
- (g) Wait for 5 minutes, then move the engine thrust levers on the control stand to the fully advanced position.

(2) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.

- (a) If the maintenance message shows, return to the Fault Isolation Procedure and continue.
- (b) If the maintenance message does not show, then you corrected the fault, continue the procedure below.

H. Put the Airplane in its Usual Condition

(1) Do these steps to put the airplane back to its usual condition.

- (a) Move the engine start levers to CUTOFF.
- (b) Move the engine thrust levers to idle.
- (c) Make sure the engine start switches are OFF.
- (d) 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, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

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
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

END OF TASK



29-20 TASK 809



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FAULT ISOLATION MANUAL

810. Hydraulic Quantity B Normal Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-22002 HYD QTY B FAULT
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the hydraulic system B quantity/transmitter.

B. Possible Causes

- (1) Hydraulic system B quantity transmitter, T184
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Look at the QTY indication for the hydraulic system B on the pilots center panel, P2.
 - (a) If the QTY indication for hydraulic system B is less than 76%, then, do this task: Hydraulic Fluid Quantity Indication Problem - Fault Isolation, 29-30 TASK 807.
 - (b) if the QTY indication for the hydraulic system B is greater than 76%, then continue.
- (2) Do this wiring check:
 - (a) Remove the proximity switch electronics unit (PSEU). To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (b) Disconnect the connector D2674 from the hydraulic system B quantity/transmitter, T184.
 - (c) Do a wiring check between these pins of connector D10986 at the E11 and connector D1674 at the hydraulic system B quantity/transmitter, T184:

D10986	D2674
pin 9	-----
	pin 5

- 1) Do a check for ground at pin 4 of connector D2674.
- 2) If you find a problem with the wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-connect connector D2674.



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- c) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
- d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.

(3) Replace the hydraulic system B quantity/transmitter, T184. These are the tasks:

- Hydraulic Fluid Quantity Transmitter/Indicator Removal, AMM TASK 29-33-12-000-801
- Hydraulic Fluid Quantity Transmitter/Indicator Installation, AMM TASK 29-33-12-400-801
- (a) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
- (b) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (c) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue.

(4) Replace the PSEU, M2061. These are the tasks:

- Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
- Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
- (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

811. Hydraulic Quantity B Normal BITE Signal to PSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 29-22003 HYD QTY B NORM BITE
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the hydraulic system B quantity/transmitter.

B. Possible Causes

- (1) Hydraulic system B quantity transmitter, T184
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)



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E. Initial Evaluation

(1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.

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

F. Fault Isolation Procedure

(1) Do this wiring check:

- (a) Remove the proximity switch electronics unit (PSEU). To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
- (b) Disconnect the connector D2674 from the hydraulic system B quantity/transmitter, T184.
- (c) Do a wiring check between these pins of connector D10986 at the E11 and connector D1674 at the hydraulic system B quantity/transmitter, T184:

D10986	D2674
pin 21	-----
	pin 5

- 1) Do a check for ground at pin 4 of connector D2674.
- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D2674.
 - c) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.
- (2) Replace the hydraulic system B quantity/transmitter, T184. These are the tasks:
 - Hydraulic Fluid Quantity Transmitter/Indicator Removal, AMM TASK 29-33-12-000-801
 - Hydraulic Fluid Quantity Transmitter/Indicator Installation, AMM TASK 29-33-12-400-801
 - (a) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - (b) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (c) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
 - (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

812. Alternate Nose Wheel Steering Signal to PSEU Problem - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

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- (a) 29-22004 ALT NOSE STRG FLT
- (b) 29-23002 ALT NOSE STRG SEL
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the alternate nose wheel steering switch, S1.

B. Possible Causes

- (1) Alternate nose wheel steering switch, S1
- (2) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Remove the proximity switch electronics unit (PSEU). To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (b) Remove the captain's instrument panel, P1.
 - (c) Disconnect connector D903 from the alternate nose wheel steering switch, S1.
 - (d) Do a wiring check between these pins of connector D10982 at the E11 and connector D903 at the alternate nose wheel steering switch, S1:

D10982	D903
pin 39	pin 5

- 1) Do a check for ground at pin 6 of connector D903.
- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D903.
 - c) Re-install the captain's instrument panel, P1.
 - d) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - e) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.



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- f) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
- (2) Replace the alternate wheel steering switch, S1.
 - (a) Re-install the captain's instrument panel, P1.
 - (b) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - (c) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (d) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
 - (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK**813. Landing Gear System Transfer Valve Set Signal to PSEU Problem - Fault Isolation****A. Description**

- (1) This task is for these maintenance messages:
 - (a) 29-22005 LGTV SET FAULT

HAP 037-054, 101-999; HAP 001-013, 015-026, 028-036 POST SBC 285A1600-32-04

- (b) 29-22105 LGTV SET FAULT

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- (c) 29-24003 LGTV RESET

- (2) The proximity switch electronics unit (PSEU) has detected a fault from the landing gear system transfer valve set signal.

B. Possible Causes

- (1) Wiring problem
- (2) Landing gear system transfer valve, V123
- (3) Proximity switch electronics unit (PSEU), M2061

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
C	15	C00799	HYD SYS LDG GR SYS XFR VALVE SEC
C	16	C00781	HYD SYS LDG GR SYS XFR VALVE PRI

D. Related Data

- (1) (SSM 29-23-11)
- (2) (WDM 29-23-11)

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E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check:

- (a) Disconnect connector D10984 from the proximity switch electronics unit (PSEU), M2061.
- (b) Disconnect connector D2860 from the landing gear system transfer valve, V123.
- (c) Do a wiring check between these pins of connector D10984 and connector D2860 at the landing gear system transfer valve, V123:

D10984	D2860
pin 57	-----
	pin 11

- 1) Do a check for ground at pin 9 of connector D2860.
- 2) Check the connectors for bent, broken, damaged, or corroded pins.
- 3) If you find a problem with the wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-connect connector D2860.
 - (c) Re-connect connector D10984.
 - (d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (e) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.
- (2) Replace the landing gear system transfer valve, V123. These are the tasks:
 - Landing Gear Transfer Valve Removal, AMM TASK 32-31-71-020-801
 - Landing Gear Transfer Valve Installation, AMM TASK 32-31-71-400-801
 - (a) Re-connect connector D2860.
 - (b) Re-connect connector D10984.
 - (c) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (d) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
 - (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

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29-20 TASK 813

803. System A Hydraulic Pressure Reads Zero - Fault Isolation**A. Description**

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system A pressure transmitter is on the hydraulic system A pressure module.

B. Possible Causes

- (1) Hydraulic leak
- (2) Wiring problem
- (3) System A pressure transmitter, T424
- (4) Display electronic unit 1 (DEU-1), M1808

C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system A hydraulic pressure:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system A hydraulic quantity is low and the pressure indication on the center instrument panel, P2, is zero psi, then do the Fault Isolation Procedure - Hydraulic Fluid Leakage.
- (c) If the system A hydraulic quantity is not low and the pressure indication on the center instrument panel, P2, is zero psi, then do the Fault Isolation Procedure - Indication Problem.
- (d) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - Hydraulic Fluid Leakage

- (1) Do a check of the hydraulic system A for external leakage.
 - (a) Do this task: Hydraulic System External Leakage Check, AMM TASK 29-00-00-790-801.
 - 1) If you find external leakage of hydraulic fluid, then repair the cause of the leak and continue.
 - 2) If you do not find external leakage of hydraulic fluid, then do continue.
 - (b) Fill the system A hydraulic reservoir with hydraulic fluid. To fill it, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.

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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (c) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (d) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If the system A hydraulic pressure indication on the center instrument panel, P2, is zero then do the Fault Isolation Procedure - Indication Problem

F. Fault Isolation Procedure - Indication Problem

- (1) Do this check of the wiring:
 - (a) Remove the display electronic unit 1 (DEU-1), M1808. To remove it, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (b) Disconnect connector D662 from the system A pressure transmitter, T424.
 - (c) Do a wiring check between these pins of connector D3973A at E3-1 shelf and connector D662 at system A pressure transmitter, T424 (WDM 29-32-11):

D3973A	D662
pin A9	-----
pin B9	-----
	pin 3
	pin 2

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DEU-1, M1808. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 3) Re-connect connector D662.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If you do not find a problem with the wiring, then do these steps and continue.
 - 1) Re-install the DEU-1, M1808. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 2) Re-connect connector D662.



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(2) Replace the system A pressure transmitter, T424. These are the tasks:

- System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
- System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (c) If the system A hydraulic pressure indication on the center instrument panel, P2, is zero psi, then continue.

(3) Replace the display electronic unit 1 (DEU-1), M1808. 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

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system A hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK**804. System B Hydraulic Pressure Reads Zero - Fault Isolation****A. Description**

- (1) The system pressure transmitter monitors the system pressure and sends the information to the flight compartment. The system pressure transmitter sends pressure signals between 0 and 4000 psi.
- (2) The hydraulic system B pressure transmitter is on the hydraulic system B pressure module.

B. Possible Causes

- (1) Hydraulic leak
- (2) Wiring problem
- (3) System B pressure transmitter, T423
- (4) Display electronic unit 2 (DEU-2), M1809

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C. Related Data

- (1) (SSM 29-32-11)
- (2) (WDM 29-32-11)

D. Initial Evaluation

- (1) Do this check of the system B hydraulic pressure:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system B hydraulic quantity is low and the pressure indication on the center instrument panel, P2, is zero psi, then do the Fault Isolation Procedure - Hydraulic Fluid Leakage.
- (c) If the system B hydraulic quantity is not low and the pressure indication on the center instrument panel, P2, is zero psi, then do the Fault Isolation Procedure - Indication Problem.
- (d) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - Hydraulic Fluid Leakage

- (1) Do a check of the hydraulic system B for external leakage.
 - (a) Do this task: Hydraulic System External Leakage Check, AMM TASK 29-00-00-790-801.
 - 1) If you find external leakage of hydraulic fluid, then repair the cause of the leak and continue.
 - 2) If you do not find external leakage of hydraulic fluid, then do continue.
 - (b) Fill the system B hydraulic reservoir with hydraulic fluid. To fill it, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (c) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (d) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If the system B hydraulic pressure indication on the center instrument panel, P2, is zero then do the Fault Isolation Procedure - Indication Problem



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F. Fault Isolation Procedure - Indication Problem

(1) Do this wiring check:

- (a) Remove the display electronic unit 2 (DEU-2), M1809. To remove it, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
- (b) Disconnect connector D660 from the system B pressure transmitter, T423.
- (c) Do a wiring check between these pins of connector D3975A at E3-1 shelf and connector D660 at system B pressure transmitter, T423 (WDM 29-32-11):

D3975A	D660
pin A9	-----
pin B9	-----
pin 3	pin 2

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

- 1) Repair the wiring.
- 2) Re-install the DEU-2, M1809. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
- 3) Re-connect connector D660.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 4) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 5) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - a) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

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

- 1) Re-install the DEU-2, M1809. To install it, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
- 2) Re-connect connector D660.

(2) Replace the system B pressure transmitter, T423. These are the tasks:

- System Pressure Transmitter Removal, AMM TASK 29-31-12-000-801
- System Pressure Transmitter Installation, AMM TASK 29-31-12-400-801

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:



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- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (c) If the system B hydraulic pressure indication on the center instrument panel, P2, is zero psi, then continue.
- (3) Replace the display electronic unit 2 (DEU-2), M1809. 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

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) If the system B hydraulic pressure indication on the center instrument panel, P2, is between 2900 and 3200 psi, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

805. ELEC 1 OVERHEAT Light On - Fault Isolation**A. Description**

- (1) The ELEC 1 OVERHEAT light comes on when the hydraulic fluid temperature in the case drain line below the electric motor-driven pump (EMDP) increases to more than normal.
- (2) The hydraulic fluid overheat warning switch in the case drain line monitors the temperature of the EMDP. This overheat warning switch supplies a ground for the amber OVERHEAT light when the case drain fluid temperature is more than 225 degrees F.
- (3) The hydraulic fluid overheat warning switch for the hydraulic system B is installed directly below the hydraulic system B EMDP.
- (4) The EMDP overheat warning switch monitors the temperature of the EMDP electric motor. It is internal to the EMDP and it opens at 255 degrees F (124 degrees C). The EMDP stops when the EMDP overheat warning switch opens, but this switch is not used for overheat indication.
- (5) The hydraulic fluid is cooled through the heat exchanger in the main fuel tank.
- (6) This is normal operation of the ELEC 1 OVERHEAT light:
 - (a) When the system B EMDP operates, the ELEC 1 OVERHEAT light is off.
 - (b) When the temperature of the system B EMDP case drain fluid is above 225 degrees F (107 degrees C), the ELEC 1 OVERHEAT light will come on.

B. Possible Causes

- (1) Wiring problem
- (2) Hydraulic system B hydraulic fluid overheat warning switch, S799
- (3) Supply line blockage
- (4) Hydraulic system B EMDP case drain filter
- (5) Hydraulic system B EMDP, M1104

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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
F	11	C00317	INDICATOR MASTER DIM SECT 5

D. Related Data

- (1) (SSM 29-34-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-34-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ELEC 1 OVERHEAT light, L4:

- (a) Make sure the fuel tank has a minimum of 250 gallons (1675 lbs, 760 kg) of fuel in it.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - (c) If the ELEC 1 OVERHEAT light is on after the EMDP has operated long enough for its temperature to become stable, then do the Fault Isolation Procedure below.
 - (d) If the ELEC 1 OVERHEAT light is not on, then there was an intermittent fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this wiring check:

- (a) Disconnect connector D2690 from the system B hydraulic fluid overheat warning switch, S799.
 - (b) Do a check for 28v DC from pin B to pin A (ground) of connector D2690 (WDM 29-34-11).
 - (c) If you do not find 28v DC or if you do not find ground at pin A of connector D2690, then do these steps:
 - 1) Repair the wiring (WDM 29-34-11).
 - 2) Re-connect connector D2690.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you find 28v DC and there is ground at pin A of connector D2690, then continue.

- (2) Replace the hydraulic fluid overheat warning switch, S799. These are the tasks:

- Hydraulic Fluid Overheat Warning Switch Removal, AMM TASK 29-32-12-000-801
- Hydraulic Fluid Overheat Warning Switch Installation, AMM TASK 29-32-12-400-801



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- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do a check for correct connection of the quick-disconnect for hydraulic system B.

NOTE: The quick-disconnect for the hydraulic system B is on the inboard side of the hydraulic system B reservoir.

 - (a) If the quick-disconnect is not installed correctly, then do these steps:
 - 1) Re-install the quick-disconnect correctly.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the quick-disconnect is installed correctly, then continue.
- (4) Do a check for contamination of the case drain filter:
 - (a) Remove the system B EMDP case drain filter element. To remove it, do this task: EMDP Case Drain Filter Element Removal, AMM TASK 29-11-41-000-801.
 - (b) Look for metal contamination on the EMDP case drain filter.
 - (c) If you find metal contamination, then do these steps:
 - 1) Repair or replace those component that have metal contamination. To do it, do this task: EMDP Case Drain Filter - Metal Contamination Check, AMM TASK 29-11-41-700-801.
 - 2) Re-install the system B case drain filter element. To install it, do this task: EMDP Case Drain Filter Element Installation, AMM TASK 29-11-41-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find metal contamination, then continue.
 - 1) Re-install the system B case drain filter element. To install it, do this task: EMDP Case Drain Filter Element Installation, AMM TASK 29-11-41-400-801.
- (5) Replace the system B EMDP, M1104. These are the tasks:
 - Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
 - Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the ELEC 1 OVERHEAT light, L4:
 - (a) Make sure the fuel tank has a minimum of 250 gallons (1675 lbs, 760 kg) of fuel in it.
- WARNING:** MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

 - (b) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - (c) If the ELEC 1 OVERHEAT light is not on, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK ————



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806. ELEC 2 OVERHEAT Light On - Fault Isolation

A. Description

- (1) The ELEC 2 OVERHEAT light comes on when the hydraulic fluid temperature in the case drain line below the electric motor-driven pump (EMDP) increases to more than normal.
- (2) The hydraulic fluid overheat warning switch in the case drain line monitors the temperature of the EMDP. This overheat warning switch supplies a ground for the amber OVERHEAT light when the case drain fluid temperature is more than 225 degrees F.
- (3) The hydraulic fluid overheat warning switch for the hydraulic system A is installed directly below the hydraulic system A EMDP.
- (4) The EMDP overheat warning switch monitors the temperature of the EMDP electric motor. It is internal to the EMDP and it opens at 255 degrees F (124 degrees C). The EMDP stops when the EMDP overheat warning switch opens, but this switch is not used for overheat indication.
- (5) The hydraulic fluid is cooled through the heat exchanger in the main fuel tank.
- (6) This is normal operation of the ELEC 2 OVERHEAT light:
 - (a) When the system A EMDP operates, the ELEC 2 OVERHEAT light is off.
 - (b) When the temperature of the system A EMDP case drain fluid is above 225 degrees F (107 degrees C), the ELEC 2 OVERHEAT light will come on.

B. Possible Causes

- (1) Wiring problem
- (2) Hydraulic system A hydraulic fluid overheat warning switch, S798
- (3) Supply line blockage
- (4) Hydraulic system A EMDP case drain filter
- (5) Hydraulic system A EMDP, M1103

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
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) (SSM 29-34-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-34-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ELEC 2 OVERHEAT light, L3:
 - (a) Make sure the fuel tank has a minimum of 250 gallons (1675 lbs, 760 kg) of fuel in it.



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (c) If the ELEC 2 OVERHEAT light is on after the EMDP has operated long enough for its temperature to become stable, then do the Fault Isolation Procedure below.
- (d) If the ELEC 2 OVERHEAT light is not on, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Disconnect connector D2688 from the system A hydraulic fluid overheat warning switch, S798.
 - (b) Do a check for 28v DC from pin B to pin A (ground) of connector D2688 (WDM 29-34-11).
 - (c) If you do not find 28v DC or if you do not find ground at pin A of connector D2688, then do these steps:
 - 1) Repair the wiring (WDM 29-34-11).
 - 2) Re-connect connector D2688.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you find 28v DC and there is ground at pin A of connector D2688, then continue.
- (2) Replace the hydraulic fluid overheat warning switch, S798. These are the tasks:
 - Hydraulic Fluid Overheat Warning Switch Removal, AMM TASK 29-32-12-000-801
 - Hydraulic Fluid Overheat Warning Switch Installation, AMM TASK 29-32-12-400-801
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do a check for correct connection of the quick-disconnect for hydraulic system A.

NOTE: The quick-disconnect for the hydraulic system A is at the bottom the hydraulic system A reservoir.

 - (a) If the quick-disconnect is not installed correctly, then do these steps:
 - 1) Re-install the quick-disconnect correctly.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the quick-disconnect is installed correctly, then continue.
- (4) Do a check for contamination of the case drain filter:
 - (a) Remove the system A EMDP case drain filter element. To remove it, do this task: EMDP Case Drain Filter Element Removal, AMM TASK 29-11-41-000-801.
 - (b) Look for metal contamination on the EMDP case drain filter.
 - (c) If you find metal contamination, then do these steps:





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- 1) Repair or replace those component that have metal contamination. To do it, do this task: EMDP Case Drain Filter - Metal Contamination Check, AMM TASK 29-11-41-700-801.
- 2) Re-install the system A case drain filter element. To install it, do this task: EMDP Case Drain Filter Element Installation, AMM TASK 29-11-41-400-801.
- 3) Do the Repair Confirmation at the end of this task.
- (d) If you do not find metal contamination, then continue.
 - 1) Re-install the system A case drain filter element. To install it, do this task: EMDP Case Drain Filter Element Installation, AMM TASK 29-11-41-400-801.
- (5) Replace the system A EMDP, M1103. These are the tasks:
 - Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-11-21-000-801-001
 - Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-11-21-400-801-001
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the ELEC 2 OVERHEAT light, L3:
 - (a) Make sure the fuel tank has a minimum of 250 gallons (1675 lbs, 760 kg) of fuel in it.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (c) If the ELEC 2 OVERHEAT light is not on, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

807. Hydraulic Fluid Quantity Indication Problem - Fault Isolation

A. Description

- (1) The hydraulic fluid quantity transmitter/indicators show the hydraulic fluid level in the hydraulic system A and B reservoirs.
- (2) The indicator shows the fluid quantity on the mechanical gage on the reservoir in the main landing gear wheel well.
- (3) The transmitter sends signal to the display electronic units (DEUs). The fluid quantity shows on the engine display.
- (4) This fault can cause the 31-63210 HYDRAULIC OIL QUANTITY SYS A INVALID or 31-63220 HYDRAULIC OIL QUANTITY SYS B INVALID maintenance message to show on the control display unit (CDU).

B. Possible Causes

- (1) Hydraulic fluid quantity transmitter/indicator
- (2) Wiring problem



C. Related Data

- (1) (SSM 29-31-11)
- (2) (WDM 29-31-11)

D. Initial Evaluation

- (1) If the hydraulic fluid quantity does not show on the engine display, then do the Fault Isolation Procedure below.
- (2) If the hydraulic fluid quantity shows on the engine display, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the applicable hydraulic fluid quantity transmitter/indicator. To replace it, these are the tasks:
 - Hydraulic Fluid Quantity Transmitter/Indicator Removal, AMM TASK 29-33-12-000-801
 - Hydraulic Fluid Quantity Transmitter/Indicator Installation, AMM TASK 29-33-12-400-801
 - (a) If the test in the installation task for the hydraulic fluid quantity transmitter/indicator is satisfactory, then you corrected the fault.
 - (b) If the test in the installation task for the hydraulic fluid quantity transmitter/indicator is not satisfactory, then continue.
- (2) For the hydraulic system A fluid quantity indication, do this check of the wiring:
 - (a) Remove the DEU-1(M1808), and the DEU-2 (M1809). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (b) Disconnect the connector D674 from the hydraulic oil quantity system A transmitter, T436.
 - (c) Do a wiring check between these pins of connector D3973A at the E3-1 shelf and connector D674 at the hydraulic oil quantity system A transmitter (WDM 29-31-11):

D3973A	D674
pin J4 -----	pin 2
pin K4 -----	pin 1

- (d) Do a wiring check between these pins of connector D3973B at the E3-1 shelf and connector D674 at the hydraulic oil quantity system A transmitter (WDM 29-31-11):

D3973B	D674
pin E14 -----	pin 3

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the DEU-1 (M1808) and the DEU-2 (M1809). To install them, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 3) Re-connect connector D674.
 - 4) If the hydraulic system A fluid quantity shows on the engine display, then you corrected the fault.

- (3) For the hydraulic system B fluid quantity indication, do this check of the wiring:

- (a) Remove the DEU-1(M1808) and the DEU-2 (M1809). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
- (b) Disconnect the connector D2674 from the hydraulic oil quantity system B transmitter, T184.
- (c) Do a wiring check between these pins of connector D3973D at the E3-1 shelf and connector D2674 at the hydraulic oil quantity system B transmitter (WDM 29-31-11):

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D3973D

pin J4 -----
pin K4 -----

D2674

pin 2
pin 1

(d) Do a wiring check between these pins of connector D3973E at the E3-1 shelf and connector D2674 at the hydraulic oil quantity system B transmitter (WDM 29-31-11):

D3973E

pin E14 -----

D2674

pin 3

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

- 1) Repair the wiring.
- 2) Re-install the DEU-1(M1808) and the DEU-2 (M1809). To install them, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
- 3) Re-connect connector D2674.
- 4) If the hydraulic system B fluid quantity shows on the engine display, then you corrected the fault.

————— END OF TASK —————

808. Hydraulic Reservoir Gage Problem - Fault Isolation

A. Description

- (1) The hydraulic fluid quantity transmitter/indicators show the hydraulic fluid level in the hydraulic system A and B reservoirs.
- (2) The indicator shows the fluid quantity on the mechanical gage on the reservoir in the main landing gear wheel well.
- (3) The transmitter sends signal to the display electronic units (DEUs). The fluid quantity shows on the engine display.
- (4) Reservoir quantity may be reduced in flight by thermal contraction of the hydraulic fluid. Reservoir quantity should be checked on the ground when the hydraulic fluid has reached ambient temperature.

B. Possible Causes

- (1) Hydraulic fluid quantity transmitter/indicator

C. Related Data

- (1) (SSM 29-31-11)
- (2) (WDM 29-31-11)

D. Initial Evaluation

- (1) Do this check of the hydraulic reservoir gage:

- (a) Fully lower the hydraulic fluid to the applicable hydraulic system reservoir. To do this, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.
- (b) Slowly fill the applicable hydraulic reservoir. To do this, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.

NOTE: Make sure the hydraulic reservoir gage and the HYD Q% indication on the engine display show increasing fluid level as you fill the reservoir.



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- (c) If the hydraulic reservoir gage and the HYD Q% indication on the engine display does not show increasing fluid level, then do the Fault Isolation Procedure below.
- (d) If the hydraulic reservoir gage and the HYD Q% indication on the engine display show increasing fluid level, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Replace the applicable hydraulic fluid quantity transmitter/indicator. These are the tasks:
 - Hydraulic Fluid Quantity Transmitter/Indicator Removal, AMM TASK 29-33-12-000-801
 - Hydraulic Fluid Quantity Transmitter/Indicator Installation, AMM TASK 29-33-12-400-801
- (a) If the test in the installation task for the hydraulic fluid quantity transmitter/indicator is satisfactory, then you corrected the fault.

END OF TASK**809. STANDBY HYD LOW QUANTITY Light On - Fault Isolation****A. Description**

- (1) The standby hydraulic system reservoir low quantity switch sends a signal when the fluid level is less than 50 percent. The signal goes to the STANDBY HYD LOW QUANTITY light amber light on the flight control panel.
- (2) This is normal operation of the STANDBY HYD LOW QUANTITY light:
 - (a) When the standby EMDP operates with less than 50 percent of hydraulic fluid, the STANDBY HYD LOW QUANTITY light will come on.

B. Possible Causes

- (1) Hydraulic leakage in the standby hydraulic system
- (2) STANDBY HYD LOW QUANTITY light, L4
- (3) Standby hydraulic system reservoir low quantity switch, S49
- (4) Wiring problem

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
E	14	C00316	INDICATOR MASTER DIM SECT 4

D. Related Data

- (1) (SSM 29-31-11)
- (2) (SSM 33-18-31)
- (3) (WDM 29-31-11)
- (4) (WDM 33-18-31)

E. Initial Evaluation

- (1) Do this check of the STANDBY HYD LOW QUANTITY light, L4:
 - (a) Make sure the standby hydraulic reservoir is full.

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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (c) If the STANDBY HYD LOW QUANTITY light comes on, then do the Fault Isolation Procedure below.
- (d) If the STANDBY HYD LOW QUANTITY light does not come on, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.

F. Fault Isolation Procedure

- (1) Do an external leakage check of the standby hydraulic system. To do it, do this task: Hydraulic System External Leakage Check, AMM TASK 29-00-00-790-801.
 - (a) If there is external hydraulic leakage, then do these steps:
 - 1) Repair or replace the component that causes the leakage (AMM TASK 29-00-00-790-801).
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If there is no external hydraulic leakage, then continue.
- (2) Do an internal leakage check of the standby hydraulic system (AMM 29-00-00-6).
 - (a) If there is internal hydraulic leakage, then do these steps:
 - 1) Repair or replace the component that causes the leakage.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If there is no internal hydraulic leakage, then continue.
- (3) Replace the STANDBY HYD LOW QUANTITY light, L4 on the flight controls panel, P5-3 (WDM 29-31-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (4) Do this wiring check:
 - (a) Disconnect connector D678 from the standby hydraulic system reservoir low quantity switch, S49.

NOTE: You can find this low quantity switch on the standby hydraulic reservoir.
 - (b) Do a check for 28v DC from pin 2 to pin 1 (ground) of connector D678 (WDM 29-31-11).
 - (c) If there is not 28v DC at pin 2 or ground at pin 1 of connector D678, then do these steps:
 - 1) Repair the wiring (WDM 29-33-11).
 - 2) Re-connect connector D678.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is 28v DC at pin 2 of connector D678, then continue.
- (5) Replace the standby hydraulic system reservoir low quantity switch, S49. These are the tasks:
 - Standby Reservoir Low Quantity Switch Removal, AMM TASK 29-33-21-000-801



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- Standby Reservoir Low Quantity Switch Installation, AMM TASK 29-33-21-400-801

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

G. Repair Confirmation

- (1) Do this check of the STANDBY HYD LOW QUANTITY light, L4:

- (a) Make sure the standby hydraulic reservoir is full.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (c) If the STANDBY HYD LOW QUANTITY light does not come on, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.

————— END OF TASK —————

810. ELEC 1 LOW PRESSURE Light On - Fault Isolation**A. Description**

- (1) The ELEC 1 LOW PRESSURE light comes on when the electric motor-driven pump (EMDP) for the hydraulic system B is below 1200 psi.
- (2) The system B EMDP relay is connected to ground through an internal temperature switch on the EMDP. When the temperature of the EMDP is normal, the temperature switch is closed to enable control of the EMDP from the hydraulic control panel. When the EMDP temperature is more than 255 degrees F (124 degrees C), the temperature switch opens and removes the ground from the EMDP relay. This stops the EMDP and causes the ELEC 1 LOW PRESSURE light to come on.
- (3) This is normal operation of the ELEC 1 LOW PRESSURE light:
 - (a) When the system B EMDP operates, the ELEC 1 LOW PRESSURE light is off.
 - (b) When the pressure of the system B EMDP is below normal, the ELEC 1 LOW PRESSURE light will come on.
 - (c) When the system B EMDP does not operate, the ELEC 1 LOW PRESSURE light will come on.

B. Possible Causes

- (1) Hydraulic system B EMDP, M1104
- (2) Hydraulic system B EMDP overheat
- (3) ELEC 1 LOW PRESSURE light, L2
- (4) Hydraulic system B EMDP low pressure switch, S795
- (5) Wiring problem

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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
F	11	C00317	INDICATOR MASTER DIM SECT 5

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ELEC 1 LOW PRESSURE light, L2:

- (a) Make sure that the temperature of the system B EMDP is less than 140 degrees F (60 degrees C).

NOTE: If an overheat condition has occurred, then the EMDP temperature must decrease to less than 140 degrees F (60 degrees C) for the temperature switch to reset to the closed position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - (c) If the system B EMDP does not operate, or operates intermittently, then do this task: Electrical Power to the System B EMDP Problem - Fault Isolation, 29-10 TASK 804.
 - (d) If the ELEC 1 LOW PRESSURE light is on, then do the Fault Isolation Procedure below.
 - (e) If the ELEC 1 LOW PRESSURE light goes off, then there was an intermittent fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this check of the hydraulic system B EMDP:
 - (a) Look at the hydraulic pressure indication on the engine display.
 - (b) If the hydraulic system B pressure is less than 2900, then do this task: System B Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 811.
 - (c) If the hydraulic system B pressure is greater than 2900 psi, then continue.
- (2) Replace the ELEC 1 LOW PRESSURE light, L2 on the hydraulic control module, P5-8 (WDM 29-33-11).
 - (a) Do the Repair Confirmation at the end of this task.



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FAULT ISOLATION MANUAL

(b) If the Repair Confirmation is not satisfactory, then continue.

(3) Do this wiring check:

- Disconnect connector D2682 from the hydraulic system B EMDP low pressure switch, S795.
- Do a check for 28v DC from pin 2 to pin 3 (ground) of connector D2682 (WDM 29-33-11).
- If there is not 28v DC at pin 2 or ground at pin 3 of connector D2682, then do these steps:
 - Repair the wiring (WDM 29-33-11).
 - Re-connect connector D2682.
 - Do the Repair Confirmation at the end of this task.
- If there is 28v DC at pin 2 of connector D2682, then continue.

(4) Replace the hydraulic system B EMDP low pressure switch, S795. These are the tasks:

- Hydraulic System A or B EMDP Low Pressure Switch Removal, AMM
TASK 29-34-21-000-801
- Hydraulic System A or B EMDP Low Pressure Switch Installation, AMM
TASK 29-34-21-400-801

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

G. Repair Confirmation

- Do this check of the ELEC 1 LOW PRESSURE light, L2:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- Pressurize the hydraulic system B with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM
TASK 29-11-00-860-803.
- If the ELEC 1 LOW PRESSURE light goes off, then you corrected the fault. Do this step to complete the task:
 - Do this task: Hydraulic System A or B Power Removal, AMM
TASK 29-11-00-860-805.

END OF TASK

811. ELEC 2 LOW PRESSURE Light On - Fault Isolation

A. Description

- The ELEC 2 LOW PRESSURE light comes on when the electric motor-driven pump (EMDP) for the hydraulic system A is below 1200 psi.
- The system A EMDP relay is connected to ground through an internal temperature switch on the EMDP. When the temperature of the EMDP is normal, the temperature switch is closed to enable control of the EMDP from the hydraulic control panel. When the EMDP temperature is more than 255 degrees F (124 degrees C), the temperature switch opens and removes the ground from the EMDP relay. This stops the EMDP and causes the ELEC 2 LOW PRESSURE light to come on.
- This is normal operation of the ELEC 2 LOW PRESSURE light:
 - When the system A EMDP operates, the ELEC 2 LOW PRESSURE light is off.
 - When the pressure of the system A EMDP is below normal, the ELEC 2 LOW PRESSURE light will come on.



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(c) When the system A EMDP does not operate, the ELEC 2 LOW PRESSURE light will come on.

B. Possible Causes

- (1) Hydraulic system A EMDP, M1103
- (2) Hydraulic system A EMDP overheat
- (3) ELEC 2 LOW PRESSURE light, L1
- (4) Hydraulic system A EMDP low pressure switch, S794
- (5) Wiring problem

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
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ELEC 2 LOW PRESSURE light, L1:

- (a) Make sure that the temperature of the system A EMDP is less than 140 degrees F (60 degrees C).

NOTE: If an overheat condition has occurred, then the EMDP temperature must decrease to less than 140 degrees F (60 degrees C) for the temperature switch to reset to the closed position.

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (c) If the system A EMDP does not operate, then do this task:
Electrical Power to the System A EMDP Problem - Fault Isolation, 29-10 TASK 803.
- (d) If the ELEC 2 LOW PRESSURE light is on, then do the Fault Isolation Procedure below.
- (e) If the ELEC 2 LOW PRESSURE light goes off, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



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F. Fault Isolation Procedure

- (1) Do this check of the hydraulic system A EMDP:
 - (a) Look at the hydraulic pressure indication on the engine display.
 - (b) If the hydraulic system A pressure is less than 2900, then, do this task: System A Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 810.
 - (c) If the hydraulic system A pressure is greater than 2900 psi, then continue.
- (2) Replace the ELEC 2 LOW PRESSURE light, L1 on the hydraulic control module, P5-8 (WDM 29-33-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do this wiring check:
 - (a) Disconnect connector D2680 from the hydraulic system A EMDP low pressure switch, S794.
 - (b) Do a check for 28v DC from pin 2 to pin 3 (ground) of connector D2680 (WDM 29-33-11).
 - (c) If there is not 28v DC at pin 2 or ground at pin 3 of connector D2680, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2680.
 - (d) Do the Repair Confirmation at the end of this task.
- (4) Replace the hydraulic system A low pressure switch, S794. These are the tasks:
 - Hydraulic System A or B EMDP Low Pressure Switch Removal, AMM TASK 29-34-21-000-801
 - Hydraulic System A or B EMDP Low Pressure Switch Installation, AMM TASK 29-34-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the ELEC 2 LOW PRESSURE light, L1:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EMDP. To pressurize it, do this task: Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
- (b) If the ELEC 2 LOW PRESSURE light goes off, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK ————



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812. ENG 1 LOW PRESSURE Light On - Fault Isolation

A. Description

- (1) The ENG 1 LOW PRESSURE light comes on when the engine-driven pump (EDP) for the hydraulic system A is below normal.
- (2) This is normal operation of the ENG 1 LOW PRESSURE light:
 - (a) When the system A EDP operates, the ENG 1 LOW PRESSURE light is off.
 - (b) When the pressure of the system A EDP is below 1200 psi, the ENG 1 LOW PRESSURE light will come on.
 - (c) When the system A EDP does not operate, the ENG 1 LOW PRESSURE light will come on.

B. Possible Causes

- (1) Hydraulic system A EDP
- (2) ENG 1 LOW PRESSURE light, L5
- (3) Hydraulic system A EDP low pressure switch, S796
- (4) Case drain hose not installed correctly at the strut fitting.
- (5) Wiring problem
- (6) EDP case drain filter module/check valve is installed in the wrong direction.

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
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)

E. Initial Evaluation

- (1) Do this check of the ENG 1 LOW PRESSURE light, L5:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the ENG 1 LOW PRESSURE light is on, then do the Fault Isolation Procedure below.



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(c) If the ENG 1 LOW PRESSURE light goes off, then there was an intermittent fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this check of the hydraulic system A EDP:
 - (a) Look at the hydraulic pressure indication on the engine display.
 - (b) If the hydraulic system A pressure is less than 2900, then, do this task: System A Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 810.
 - (c) If the hydraulic system A pressure is greater than 2900 psi, then continue.
- (2) Replace the ENG 1 LOW PRESSURE light, L5 on the hydraulics control module, P5-8 (WDM 29-33-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do this wiring check:
 - (a) Disconnect connector D2684 from the hydraulic system A EDP low pressure switch, S796.
 - (b) Do a check for 28v DC from pin 3 to pin 2 (ground) of connector D2684 (WDM 29-33-11).
 - (c) If there is not 28v DC at pin 3 or ground at pin 2 of connector D2684, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2684.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is 28v DC at pin 3 of connector D2684, then continue.
- (4) Do a check of the EDP case drain quick disconnect hose where it attaches to the strut.
 - (a) Make sure that the case drain, quick disconnect hose is hand tight and the lock tooth is engaged.
 - (b) If the lock tooth is correctly engaged, then continue.
- (5) Replace the hydraulic system A EDP low pressure switch, S796. These are the tasks:
 - Hydraulic System A or B EMDP Low Pressure Switch Removal, AMM TASK 29-34-21-000-801
 - Hydraulic System A or B EMDP Low Pressure Switch Installation, AMM TASK 29-34-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Make sure EDP case drain filter module is installed correctly with the arrow on the filter head pointing aft:
 - EDP Case Drain Filter Module Installation, AMM TASK 29-11-51-400-802

G. Repair Confirmation

- (1) Do this check of the ENG 1 LOW PRESSURE light, L5:



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WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system A with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the ENG 1 LOW PRESSURE light goes off, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

813. ENG 2 LOW PRESSURE Light On - Fault Isolation

A. Description

- (1) The ENG 2 LOW PRESSURE light comes on when the engine-driven pump (EDP) for the hydraulic system B is below normal.
- (2) This is normal operation of the ENG 2 LOW PRESSURE light:
 - (a) When the system B EDP operates, the ENG 2 LOW PRESSURE light is off.
 - (b) When the pressure of the system B EDP is below 1200 psi, the ENG 2 LOW PRESSURE light will come on.
 - (c) When the system B EDP does not operate, the ENG 2 LOW PRESSURE light will come on.

B. Possible Causes

- (1) Hydraulic system B EDP
- (2) ENG 2 LOW PRESSURE light, L6
- (3) Hydraulic system B EDP low pressure switch, S797
- (4) Case drain hose not installed correctly at the strut fitting.
- (5) Wiring problem
- (6) EDP case drain filter module/check valve is installed in the wrong direction.

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
F	11	C00317	INDICATOR MASTER DIM SECT 5

D. Related Data

- (1) (SSM 29-33-11)
- (2) (SSM 33-18-35)
- (3) (WDM 29-33-11)
- (4) (WDM 33-18-35)



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E. Initial Evaluation

- (1) Do this check of the ENG 2 LOW PRESSURE light, L6:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the ENG 2 LOW PRESSURE light is on, then do the Fault Isolation Procedure below.
- (c) If the ENG 2 LOW PRESSURE light goes off, then there was an intermittent fault. Do this step to complete the task:

- 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this check of the hydraulic system B EDP:
 - (a) Look at the hydraulic pressure indication on the engine display.
 - (b) If the hydraulic system B pressure is less than 2900, then, do this task: System B Hydraulic Pressure Below 2850 psi Problem - Fault Isolation, 29-10 TASK 811.
 - (c) If the hydraulic system B pressure is greater than 2900 psi, then continue.
- (2) Replace the ENG 2 LOW PRESSURE light, L6 on the hydraulics control module, P5-8 (WDM 29-33-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do this wiring check:
 - (a) Disconnect connector D2686 from the hydraulic system B EDP low pressure switch, S797.
 - (b) Do a check for 28v DC from pin 3 to pin 2 (ground) of connector D2686 (WDM 29-33-11).
 - (c) If there is not 28v DC at pin 3 or ground at pin 2 of connector D2686, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2686.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is 28v DC at pin 3 of connector D2686, then continue.
- (4) Do a check of the of EDP case drain hose where it attaches to the strut.
 - (a) Make sure that the case drain hose is hand tight and the lock tooth is engaged.
 - (b) If the lock tooth is correctly engaged, then continue.
- (5) Replace the hydraulic system B EDP low pressure switch, S797. These are the tasks:
 - Hydraulic System A or B EMDP Low Pressure Switch Removal, AMM TASK 29-34-21-000-801
 - Hydraulic System A or B EMDP Low Pressure Switch Installation, AMM TASK 29-34-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.



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(6) Make sure EDP case drain filter module is installed correctly with the arrow on the filter head pointing aft:

- EDP Case Drain Filter Module Installation, AMM TASK 29-11-51-400-802

G. Repair Confirmation

(1) Do this check of the ENG 2 LOW PRESSURE light, L6:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B with the EDP. To pressurize it, do this task: Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (b) If the ENG 2 LOW PRESSURE light goes off, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— END OF TASK —————

814. STANDBY HYD LOW PRESSURE Light On - Fault Isolation

A. Description

- (1) The STANDBY HYD LOW PRESSURE light comes on when the standby electric motor-driven pump (EMDP) is below normal.
- (2) This is normal operation of the STANDBY HYD LOW PRESSURE light:
 - (a) When the standby hydraulic EMDP operates, the STANDBY HYD LOW PRESSURE light is off.
 - (b) When the pressure of the standby hydraulic system EMDP is below 1300 psi, the STANDBY HYD LOW PRESSURE light will come on.
 - (c) When the standby hydraulic system EMDP not operates, the STANDBY HYD LOW PRESSURE light will come on.

B. Possible Causes

- (1) Standby electric motor-driven pump (EMDP)
- (2) STANDBY HYD LOW PRESSURE light, L2
- (3) Standby hydraulic system low pressure switch, S143
- (4) Wiring problem
- (5) Reservoir tubing, and quick disconnects

NOTE: Verify the that standby hydraulic system tubing and quick disconnects are tight with no leakage. Check surfaces for cracks and bends that may prevent system operation.





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C. Circuit Breaker

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

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
E	14	C00316	INDICATOR MASTER DIM SECT 4

D. Related Data

- (1) (SSM 29-35-11)
- (2) (SSM 33-18-31)
- (3) (WDM 29-35-11)
- (4) (WDM 33-18-31)

E. Initial Evaluation

- (1) Do this check of the STANDBY HYD LOW PRESSURE light, L2:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (b) If the STANDBY HYD LOW PRESSURE light is on, then do these steps:
 - 1) If the STANDBY HYD LOW QUANTITY light is also on, then, do this task: STANDBY HYD LOW QUANTITY Light On - Fault Isolation, 29-30 TASK 809.
 - 2) If the STANDBY HYD LOW QUANTITY light is not on, then do the Fault Isolation Procedure below.
- (c) If the STANDBY HYD LOW PRESSURE light goes off, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.

F. Fault Isolation Procedure

- (1) Do a check of the standby electric motor-driven pump (EMDP):
 - (a) Do this task: Operational Test of the Standby Hydraulic System, AMM TASK 29-21-00-700-801.
 - (b) If the test is not satisfactory, then do these steps:
 - 1) Replace the standby EMDP. These are the tasks:
 - Standby Hydraulic System Electric Motor-Driven Pump (EMDP) Removal, AMM TASK 29-21-21-000-801
 - Standby Hydraulic System Electric Motor-Driven Pump (EMDP) Installation, AMM TASK 29-21-21-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If the test is satisfactory, then continue.



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- (2) Replace the STANDBY HYD LOW PRESSURE light, L2 on the flight control panel, P5-3 (WDM 29-35-11).
 - (a) Do the Repair Confirmation at the end of this task.
 - (b) If the Repair Confirmation is not satisfactory, then continue.
- (3) Do this wiring check:
 - (a) Disconnect connector D824 from the standby hydraulic system low pressure switch, S143.
 - (b) Do a check for 28v DC from pin 3 to pin 2 (ground) of connector D824 (WDM 29-35-11).
 - (c) If there is not 28v DC at pin 3 or ground at pin 2 of connector D824, then do these steps:
 - 1) Repair the wiring (WDM 29-35-11).
 - 2) Re-connect connector D824.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is 28v DC at pin 3 of connector D824, then continue.
- (4) Replace the standby hydraulic system low pressure switch, S143. These are the tasks:
 - Standby System EMDP Low Pressure Switch Removal, AMM TASK 29-34-31-000-801
 - Standby System EMDP Low Pressure Switch Installation, AMM TASK 29-34-31-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the STANDBY HYD LOW PRESSURE light, L2:

WARNING: MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the standby hydraulic system. To pressurize it, do this task: Standby Hydraulic System Pressurization, AMM TASK 29-21-00-000-801.
- (b) If the STANDBY HYD LOW PRESSURE light goes off, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Standby Hydraulic System Power Removal, AMM TASK 29-21-00-000-802.

END OF TASK

815. Hydraulic Fluid Quantity Problem - Fault Isolation

A. Description

- (1) The hydraulic fluid quantity transmitter/indicators show the hydraulic fluid level in the hydraulic system A and B reservoirs.
- (2) The indicator shows the fluid quantity on the mechanical gage on the reservoir in the main landing gear wheel well.
- (3) The transmitter sends signal to the display electronic units (DEUs). The fluid quantity shows on the engine display.

B. Possible Causes

- (1) Hydraulic fluid servicing



29-30 TASKS 814-815



737-600/700/800/900

FAULT ISOLATION MANUAL

- (2) Failure from the CDU BITE procedure

C. Related Data

- (1) (SSM 29-31-11)

- (2) (WDM 29-31-11)

D. Fault Isolation Procedure

- (1) Fill the applicable hydraulic reservoir. To fill it, do this task: Hydraulic Reservoir Servicing, AMM TASK 12-12-00-610-801.

- (a) If the applicable hydraulic fluid quantity indicator shows F (100%), then you corrected the fault.

- (b) If the applicable hydraulic fluid quantity indicator does not show F (100%), then continue.

- (2) Do this task: CDS BITE Procedure, 31-62 TASK 801.

- (a) If the BITE test fails, then do the fault isolation task for the applicable maintenance message.

————— END OF TASK —————

