CHAPTER

77

ENGINE INDICATION

(CFM56 ENGINES (CFM56-7))

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

CHAPTER 77
ENGINE INDICATION

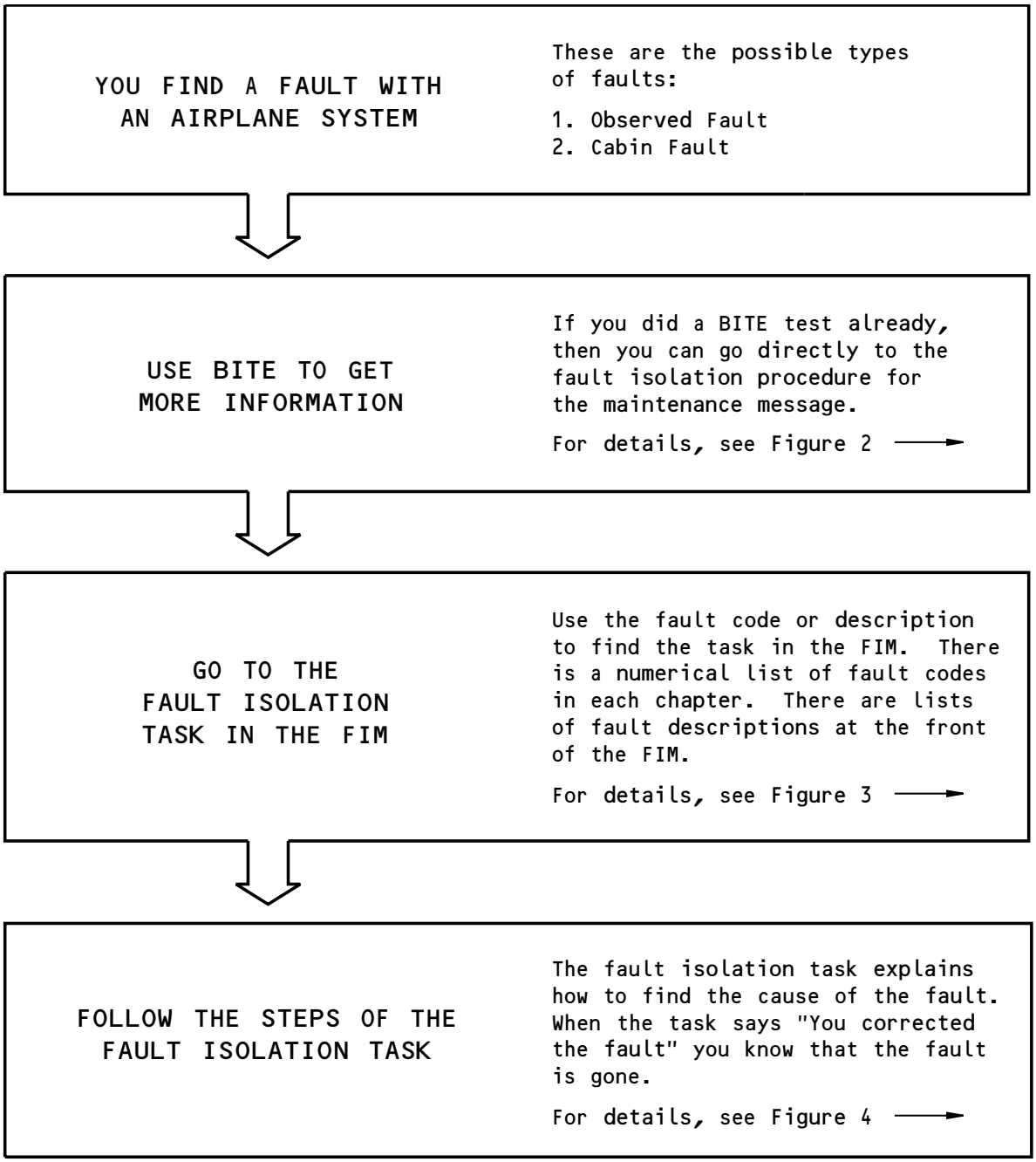
A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

77-EFFECTIVE PAGES

CHAPTER 77
ENGINE INDICATION

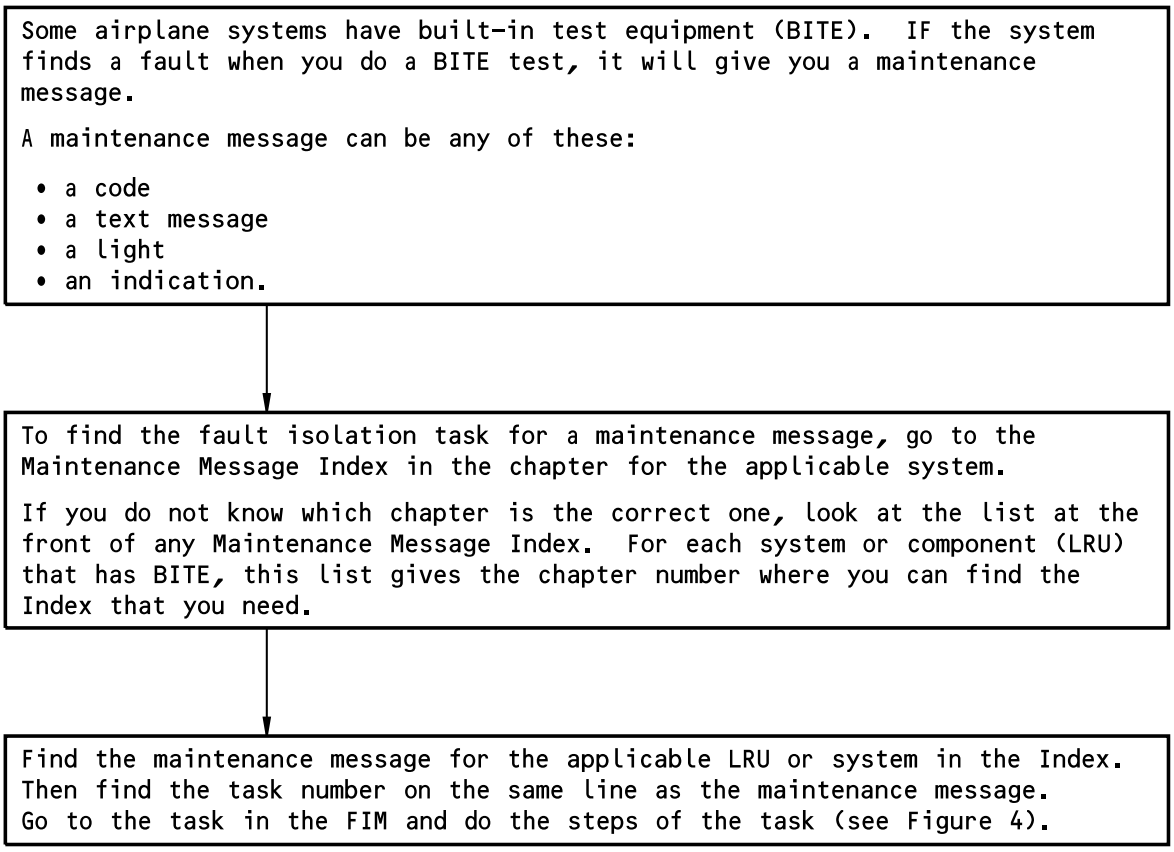
A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

77-EFFECTIVE PAGES



G04902 S0000148576_V1

Basic Fault Isolation Process
Figure 1



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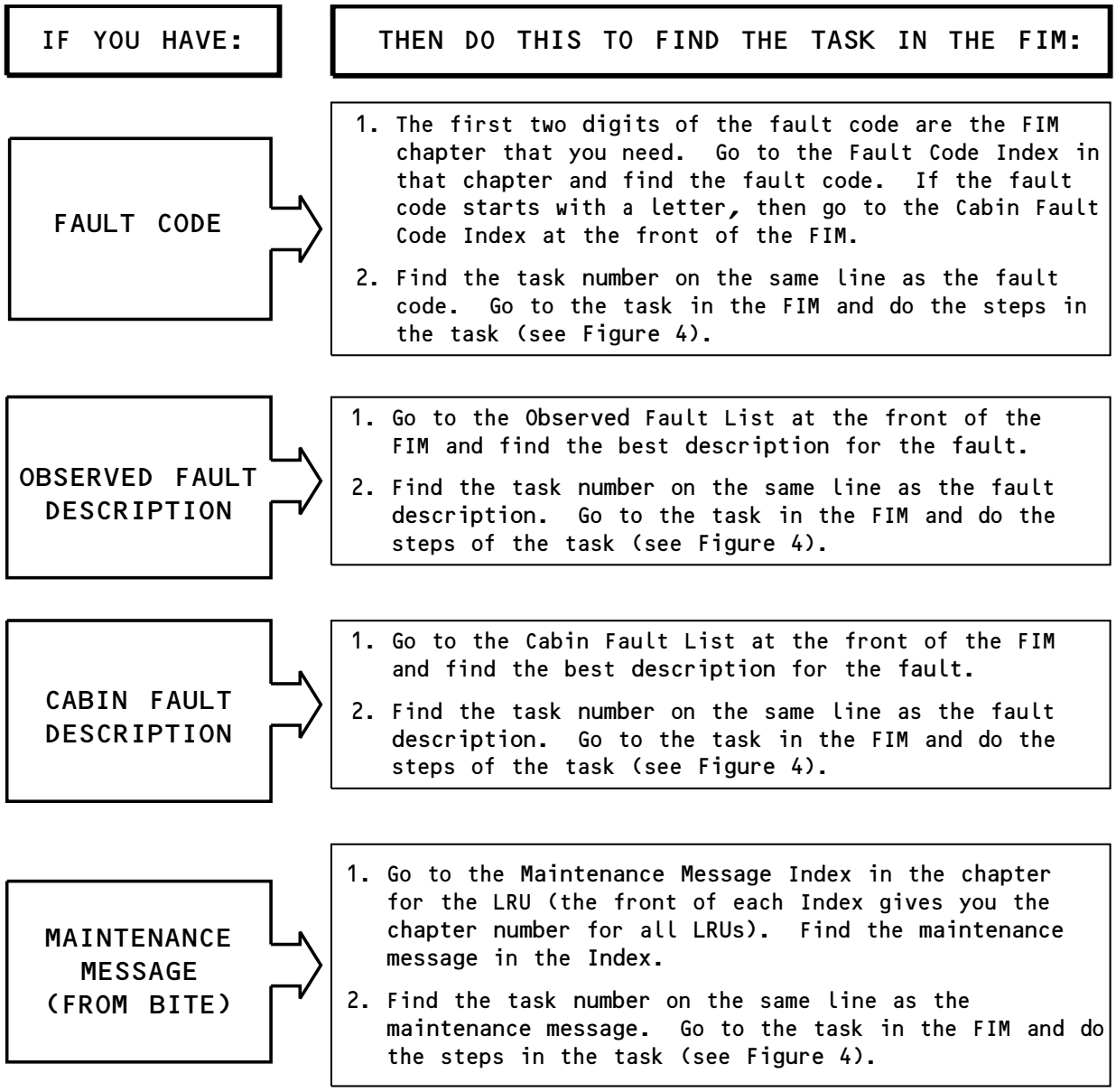
Getting Fault Information from BITE
Figure 2



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Finding the Fault Isolation Task in the FIM
Figure 3

ASSUMED CONDITIONS AT START OF TASK

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

POSSIBLE CAUSES

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

INITIAL EVALUATION PARAGRAPH

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

FAULT ISOLATION STEPS

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

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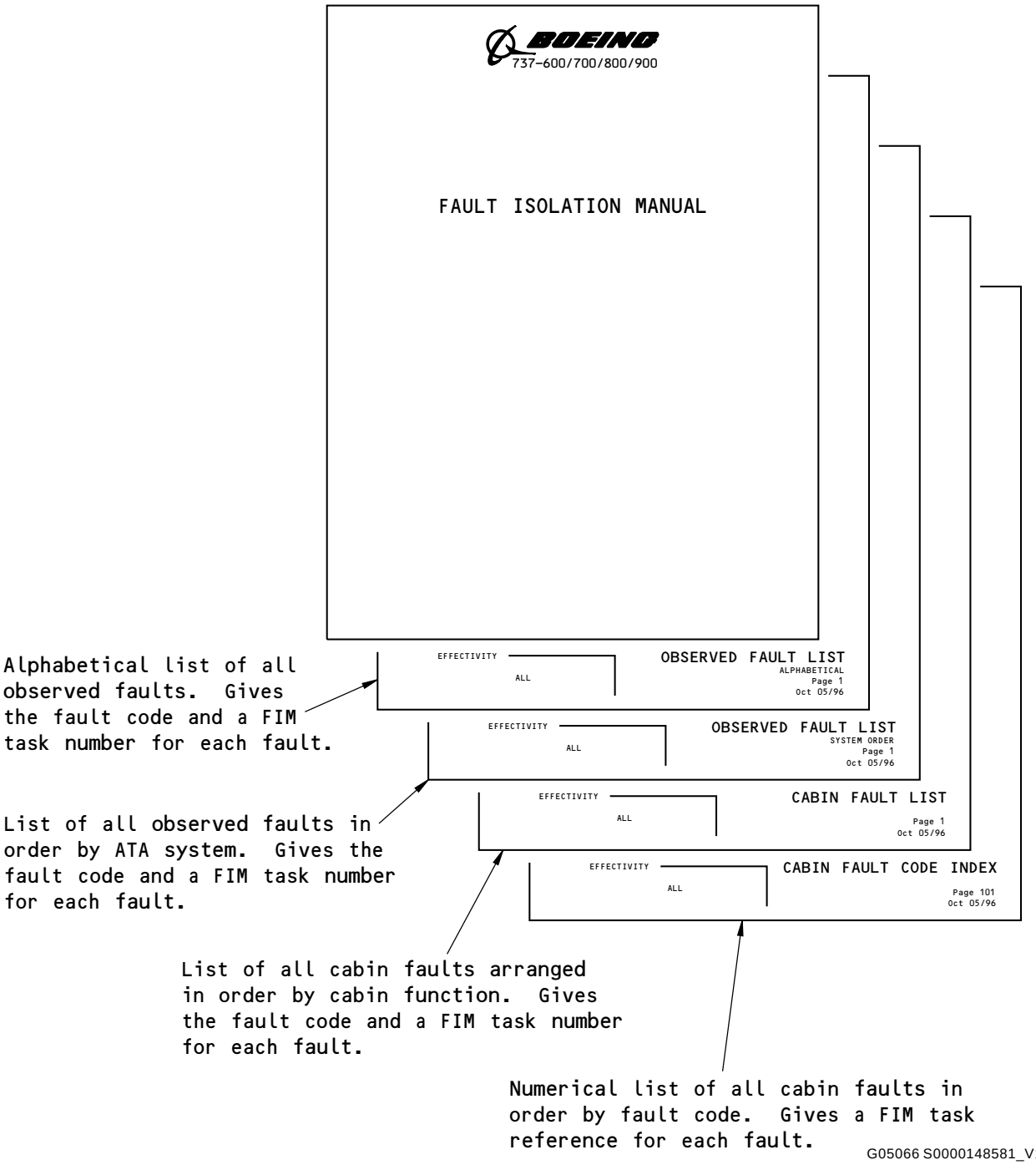
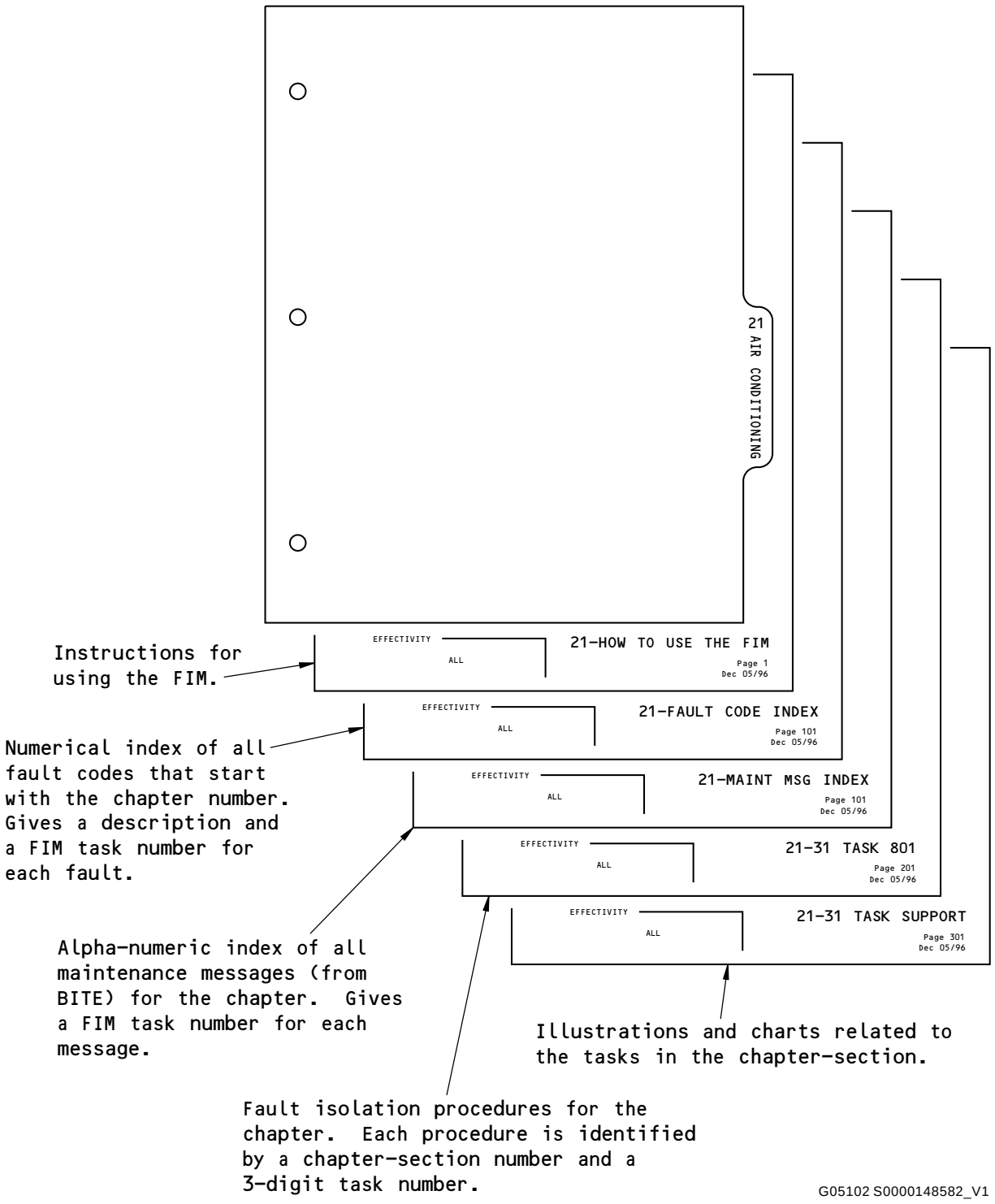
Doing the Fault Isolation Task
Figure 4



Subjects at Front of FIM
Figure 5



Subjects in Each FIM Chapter
Figure 6

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
770 010 51	Engine EGT indication: blank - engine 1.	73-05 TASK 804
770 010 52	Engine EGT indication: blank - engine 2.	73-05 TASK 804
770 015 51	Engine EGT indication: Zero or fluctuates - engine 1.	77-05 TASK 801
770 015 52	Engine EGT indication: Zero or fluctuates - engine 2.	77-05 TASK 801
770 020 51	Engine N1 indication: blank - engine 1.	77-05 TASK 802
770 020 52	Engine N1 indication: blank - engine 2.	77-05 TASK 802
770 025 51	Engine N1 indication: fluctuates - engine 1.	77-05 TASK 806
770 025 52	Engine N1 indication: fluctuates - engine 2.	77-05 TASK 806
770 030 51	Engine N2 indication: blank - engine 1.	77-05 TASK 803
770 030 52	Engine N2 indication: blank - engine 2.	77-05 TASK 803
770 035 51	Engine N2 indication: fluctuates - engine 1.	77-05 TASK 807
770 035 52	Engine N2 indication: fluctuates - engine 2.	77-05 TASK 807
770 040 51	Engine VIB indication: blank - engine 1.	77-05 TASK 805
770 040 52	Engine VIB indication: blank - engine 2.	77-05 TASK 805
770 050 51	Engine VIB indication: Zero or fluctuates - engine 1.	77-05 TASK 804
770 050 52	Engine VIB indication: Zero or fluctuates - engine 2.	77-05 TASK 804
770 061 00	AVM signal conditioner: display blank.	77-05 TASK 809
770 062 51	AVM signal conditioner: flight history shows "00" for two of the vibration indications - engine 1.	77-05 TASK 808
770 062 52	AVM signal conditioner: flight history shows "00" for two of the vibration indications - engine 2.	77-05 TASK 808

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

LRU/SYSTEM	SHORT NAME	CHAPTER
Generator Control Unit - 1	GCU - 1	24
Generator Control Unit - 2	GCU - 2	24
Ground Proximity Computer	GROUND PROX	34
High Frequency Transceiver	HF XCVR	23
Multi-Mode Receiver	MMR	34
Nitrogen Generation System BITE Display Unit	NGS	47
Pack Flow Temperature Controller	PFTC	21
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
Window Heat Control Unit - Right Side	WHCU - R SIDE	30

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
AVM SIG COND	A9	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 00	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 01	77-31 TASK 807
AVM SIG COND	AVM Syst Fault 02	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 03	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 04	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 05	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 06	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 07	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 08	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 09	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 10	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 11	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 12	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 13	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 14	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 15	77-31 TASK 805
AVM SIG COND	AVM Syst Fault 17	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 18	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 19	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 20	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 21	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 22	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 23	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 24	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 25	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 26	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 27	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 28	77-31 TASK 805
AVM SIG COND	AVM Syst Fault 30	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 31	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 32	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 33	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 34	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 35	77-31 TASK 803

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
AVM SIG COND	AVM Syst Fault 36	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 37	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 38	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 39	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 40	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 41	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 42	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 43	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 44	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 45	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 46	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 48	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 49	77-31 TASK 803
AVM SIG COND	B1	77-31 TASK 804
AVM SIG COND	B2	77-31 TASK 805
AVM SIG COND	B3	77-31 TASK 804
AVM SIG COND	B4	77-31 TASK 805
AVM SIG COND	E1N1TACH SEN/CABL FAULT-B1	77-31 TASK 804
AVM SIG COND	E1N2TACH SEN/CABL FAULT-B2	77-31 TASK 805
AVM SIG COND	E2N1TACH SEN/CABL FAULT-B3	77-31 TASK 804
AVM SIG COND	E2N2TACH SEN/CABL FAULT-B4	77-31 TASK 805
AVM SIG COND	N1 Tacho loss E1	77-31 TASK 804
AVM SIG COND	N1 Tacho loss E2	77-31 TASK 804
AVM SIG COND	N2 Tacho loss E1	77-31 TASK 805
AVM SIG COND	N2 Tacho loss E2	77-31 TASK 805
AVM SIG COND	NO BALANCE FUNCTION	77-31 TASK 803
AVM SIG COND	SELFTEST FAILED REPLACE	77-31 TASK 803
ENGINE - 1	77-10841 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 1	77-10851 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802
ENGINE - 1	77-10861 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 1	77-10871 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 1	77-11131 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 1	77-11171 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 1	77-11181 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802
ENGINE - 1	77-20841 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 1	77-20851 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802
ENGINE - 1	77-20861 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 1	77-20871 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 1	77-21131 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803
ENGINE - 1	77-21171 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 1	77-21181 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802
ENGINE - 1	77-30841 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 1	77-30851 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802
ENGINE - 1	77-30861 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 1	77-30871 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 1	77-31131 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803
ENGINE - 1	77-31171 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 1	77-31181 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802
ENGINE - 2	77-10842 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 2	77-10852 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802
ENGINE - 2	77-10862 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 2	77-10872 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 2	77-11132 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803
ENGINE - 2	77-11172 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 2	77-11182 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802
ENGINE - 2	77-20842 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 2	77-20852 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
ENGINE - 2	77-20862 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 2	77-20872 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 2	77-21132 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803
ENGINE - 2	77-21172 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 2	77-21182 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802
ENGINE - 2	77-30842 THE TOP RIGHT EGT SIGNAL (T495S1) IS OUT OF RANGE	77-21 TASK 801
ENGINE - 2	77-30852 THE BOTTOM RIGHT EGT SIGNAL (T495S2) IS OUT OF RANGE	77-21 TASK 802
ENGINE - 2	77-30862 THE BOTTOM LEFT EGT SIGNAL (T495S3) IS OUT OF RANGE	77-21 TASK 803
ENGINE - 2	77-30872 THE TOP LEFT EGT SIGNAL (T495S4) IS OUT OF RANGE	77-21 TASK 804
ENGINE - 2	77-31132 N2 SPEED SENSOR SIGNAL DISAGREE	77-11 TASK 803
ENGINE - 2	77-31172 THE N1 SIGNAL IS OUT OF RANGE	77-11 TASK 801
ENGINE - 2	77-31182 THE N2 SIGNAL IS OUT OF RANGE	77-11 TASK 802

801. Engine EGT Indication High, Low, Blank or Fluctuates - Fault Isolation

A. Description

(1) Engine EGT indication is high, low, blank or fluctuates as an obvious indication fault, with the engine in operation. The other engine indications are normal.

B. Possible Causes

(1) CJ9 wire harness to top right (aft looking fwd) T49.5 probe connection

(2) CJ9 wire harness to bottom right (aft looking fwd) T49.5 probe connection

(3) CJ10 wire harness to bottom left (aft looking fwd) T49.5 probe connection

(4) CJ10 wire harness to top left (aft looking fwd) T49.5 probe connection

(5) CJ9 wire harness to J9 wire harness connection

(6) CJ10 wire harness to J10 wire harness connection

(7) EEC, M1818

(8) DEU, M1808 (DEU1) or M1809 (DEU2)

(9) Top right (aft looking fwd) T49.5 probe, T521

(10) Bottom right (aft looking fwd) T49.5 probe, T522

(11) Bottom left (aft looking fwd) T49.5 probe, T523

(12) Top left (aft looking fwd) T49.5 probe, T524

(13) J9 or CJ9 wire harness

(14) J10 or CJ10 wire harness

(15) Dual loss of EEC output buses.

(a) Oil temperature and oil pressure is blank.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(2) For Engine 2:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 73-24-11)

(4) (SSM 73-24-12)

(5) (SSM 73-24-21)

(6) (SSM 77-12-11)

(7) (SSM 77-21-11)

(8) (WDM 73-22-11)

(9) (WDM 73-24-11)

(10) (WDM 73-24-12)

(11) (WDM 73-24-21)

(12) (WDM 77-12-11)

(13) (WDM 77-21-11)

E. Fault Isolation Procedure

(1) If it is apparent from the pilot's report or from the engine condition monitoring system report that this fault is not an indication fault but an engine operational fault, do this task: Engine Parameters EGT High, Low or Fluctuates - Fault Isolation, 71-06 TASK 807.

(2) Do these steps to apply power to the EEC (to show INITIALIZING EEC X on the FMCS CDU for Engine 1 or Engine 2):

(a) If you are not at one of the ENGINE 1 or ENGINE 2 BITE TEST displays, then do these steps:

NOTE: The FMCS CDU does not support a type-ahead function. You must have the prompt on the FMCS CDU screen before you type in the response.

1) Push the INIT REF function key.

2) If the PERF INIT display shows, then push the line select key next to the INDEX prompt.

NOTE: This makes the INIT/REF INDEX show.

3) Push the line select key (LSK) next to the MAINT prompt.

(b) From the MAINT BITE INDEX, push the line select key (LSK) next to the ENGINE prompt.

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

(c) Push the LSK next to the Applicable ENGINE X, (X = 1 or 2) prompt.

NOTE: This LSK causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The FMCS CDU will show INITIALIZING EEC X and EEC Sorting Fault History Data, for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

(d) Look for a loss of the oil temperature and oil pressure displays on the center Display Unit (DU).

(3) If you can not see the oil temperature and oil pressure displays, then there is a dual data bus failure and do these steps:

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

1) Do the corrective action for related EEC data and DEU data maintenance messages that you find first.

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

2) If you do not find the maintenance messages or the problem continues, then continue.

(4) If you can see the oil temperature and oil pressure displays, then continue.

(5) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(a) Look for INTERNAL EEC and EGT maintenance messages.

1) Do the corrective action for the maintenance message that you find.

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

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

(b) If you do not find the maintenance messages, then continue.

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

(a) Do the corrective action for related DEU data and DEU maintenance messages that you find.

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

(7) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) Look for INTERNAL EEC and EGT maintenance messages.

1) Do the corrective action for the maintenance message that you find.

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

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

(b) If you do not find the maintenance messages, then continue.

(8) Do the Input Monitoring of the T49.5 system:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do these steps to get access to the T49.5 input monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES.

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen: (Figure 303)

NOTE: The EEC channel that is in control will show first.

a) Make sure that the four T49.5 parameters are available.

NOTE: If an indication is not available, then the field will show question marks (?).

b) Make sure that the four T49.5 parameters are not out of range.

NOTE: If an indication is out of range, then the field will show dashes (-).

c) Make sure that the four T49.5 parameters do not fluctuate.

d) Make sure that the difference between the four T49.5 parameters is not more than 50 degrees C.

6) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

7) If a T49.5 parameter is not in the linits above, then continue the fault isolation procedure for the applicable probe. (Figure 302)

(9) Do these steps for the wire harness inspection:

(a) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(b) For Engine 2:

1) Open these circuit breakers and install safety tags:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

(c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

(10) Examine the CJ9 or CJ10 harness connectors:

(a) See if the CJ9 or CJ10 harness connectors are correctly connected to the T49.5 probes, and continue.

(b) Disconnect the CJ9 or CJ10 harness connectors from the T49.5 probes.

(c) Visually examine the T49.5 probe receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If a T49.5 probe receptacle is damaged, then replace the T49.5 probe. These are the tasks:

- T49.5 Probe Removal, AMM TASK 77-21-01-000-801-F00
- T49.5 Probe Installation, AMM TASK 77-21-01-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a CJ9 or CJ10 harness connector is damaged, then replace the CJ9 or CJ10 wire harness. These are the tasks:
   - Core Engine Harness Removal, AMM TASK 73-21-06-000-803-F00
   - Core Engine Harness Installation, AMM TASK 73-21-06-400-803-F00
   a) Do the Repair Confirmation at the end of this task.
   b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
3) Clean the CJ9 or CJ10 harness connector. Do this task: Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00
4) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(11) Examine the J9 and J10 harness connectors at the CJ9 and CJ10 junction box:

NOTE: The CJ9 and CJ10 junction box is at the 2:00 o'clock position aft of the right VSV actuator above the HPTACC valve.

(a) See if the J9 and J10 harness connectors are correctly connected to the CJ9 and CJ10 harness receptacles, and continue.

(b) Disconnect the J9 and J10 harness connectors from the CJ9 and CJ10 harness receptacles.

(c) Visually examine the CJ9 and CJ10 harness receptacles and the J9 and J10 harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If the CJ9 or CJ10 harness receptacle is damaged, then replace the CJ9 or CJ10 wire harness. These are the tasks:
   - Core Engine Harness Removal, AMM TASK 73-21-06-000-803-F00
   - Core Engine Harness Installation, AMM TASK 73-21-06-400-803-F00
   a) Do the Repair Confirmation at the end of this task.
   b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
2) If the J9 or J10 harness connector is damaged, then replace the J9 or J10 wire harness. These are the tasks:
   - 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
   - 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00
   a) Do the Repair Confirmation at the end of this task.
   b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
3) Clean the CJ9 or CJ10 harness receptacle and the J9 or J10 harness connector. Do this task: Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00
4) If the connectors were not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(12) Examine the J9 and J10 harness connectors at the EEC:

(a) Make sure the J9 and J10 harness connectors are correctly connected to the EEC receptacles, and continue.

(b) Disconnect the J9 and J10 harness connectors from the EEC.

(c) Visually examine the EEC receptacles and the J9 and J10 harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If the EEC receptacle is damaged, then replace the EEC. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the J9 or J10 harness connector is damaged, then replace the J9 or J10 wire harness. These are the tasks:

- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) Clean the EEC receptacles and the J9 and J10 harness connector. Do this task: Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00

4) If the connectors were not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(13) Do this task: T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00.

(a) If you found and repaired a T49.5 probe problem, then do the Repair Confirmation at the end of this task.

(b) If you did not find a problem, then continue.

(14) Replace the T49.5 probe. These are the tasks:

- T49.5 Probe Removal, AMM TASK 77-21-01-000-801-F00
- T49.5 Probe Installation, AMM TASK 77-21-01-400-801-F00

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the CJ9 and CJ10 harness connectors are correctly connected to the T49.5 probes.

(b) Make sure that the J9 and J10 harness connectors are correctly connected to the junction box.

(c) Make sure that the J9 and J10 harness connectors are correctly connected to the EEC.

(d) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(e) For Engine 2:

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

(f) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Interrogate the CDU, the Input monitoring and the EGT display while the engine is in operation and look for EGT indications that are not normal or fluctuating.

(c) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(d) If all of the T49.5 probe indications are normal and the EGT display is normal, then you corrected the fault.

(e) If one or more of the T49.5 probe indications are not normal or are fluctuating, then continue the Fault Isolation procedure (engine hardware failure).

(f) If all of the T49.5 probe indications are normal but the EGT display is not normal or is fluctuating, then continue the Fault Isolation procedure (aircraft indication failure).

END OF TASK

802. Engine N1 Indication Blank - Fault Isolation

A. Description

(1) Engine N1 indication is blank when the EEC is OFF. This indicates that the analog signal from the engine speed probe to the DEU's is not available.

(2) Engine N1 indication is blank when the EEC is ON. This indicates that the digital signals from the EEC and the analog signal is not available or the DEU's are not functional.

B. Possible Causes

(1) N1 speed sensor, T421

(2) Airborne vibration monitor signal conditioner (AVM), M1240

(3) Wires and connectors between the N1 speed sensor, the AVM and the DEUs

(4) DEU, M1808 (DEU1) or M1809 (DEU2)

(5) J7 wire harness (Ch A)

(6) J8 wire harness (Ch B)

(7) EEC, M1818.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-31-11)

(5) (WDM 77-12-11)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure for N1 Blank With EEC OFF

(1) Do these steps to make sure that the EEC is off:

(a) Make sure that the start switch is OFF.

(b) Make sure that the start levers are in the CUTOFF position.

(c) Make sure that no engine tests menus show on the FMCS CDU.

(2) Do these steps to prepare for the electrical check:

(a) Make sure that the engine N1 indication is blank.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(c) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(d) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(e) Get access to the E3-2 shelf in the EE bay.

(f) Remove the two display electronic units (DEU1 and DEU2). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.

(g) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(h) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(3) Examine the electrical connector, DP0103 at the N1 sensor:

(a) See if the electrical connector, DP0103 is correctly connected to the N1 sensor, and then continue.

(b) Disconnect the electrical connector, DP0103 from the N1 sensor.

(c) Do a visual check of the N1 sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the N1 sensor receptacle is damaged, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, MW0301. These are the tasks:

- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
- Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(4) Measure the resistance between these pins at the N1 sensor receptacle:

N1 SENSOR	CONNECTOR	STUDS	RESISTANCE
	PIN 1	PIN 2	45 TO 75 OHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified range, then continue.

(5) If not already done, connect the electrical connector, DP0103 to the N1 sensor receptacle.

(6) Measure the resistance at the terminal block, TB3102, through the N1 sensor:

TB3102 ENGINE 1	CONNECTOR	STUDS	RESISTANCE
	PIN YA47	PIN YB47	45 TO 75 OHMS
	PIN YA47	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN YB47	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

TB3102 ENGINE 2	CONNECTOR	STUDS	RESISTANCE
	PIN YA69	PIN YB69	45 TO 75 OHMS
	PIN YA69	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN YB69	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified limits, then repair the wiring between the TB3102 and the N1 sensor (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(7) Do a resistance check between these pins, to examine the wires between the DEU 1 and the terminal block TB3102:

ENG 1	DEU 1 D3973A	TB3102	RESISTANCE
	PIN A10	PIN YA47	LESS THAN 10 OHMS
	PIN B10	YB47	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

ENG 2	DEU 1 D3973D	TB3102	RESISTANCE
	PIN A10	PIN YA69	LESS THAN 10 OHMS
	PIN B10	PIN YB69	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the DEU 1 and the terminal block TB3102, studs, YA47 and YB47 (Engine 1), or YA69 and YB69 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(8) Do a resistance check between these pins, to examine the wires between the DEU 2 and the terminal block TB3102:

ENG 1	DEU 1 D3975A	TB3102	RESISTANCE
	PIN A10	PIN YA47	LESS THAN 10 OHMS
	PIN B10	YB47	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

ENG 2	DEU 1 D3975D	TB3102	RESISTANCE
	PIN A10	PIN YA69	LESS THAN 10 OHMS
	PIN B10	PIN YB69	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the DEU 2 and the terminal block TB3102, studs, YA47 and YB47 (Engine 1), or YA69 and YB69 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(9) Measure the resistance between these pins to examine the wires between the AVM connector, D3228A on the wire harness to the terminal block, TB3102:

ENG 1	AVM D3228A	TB3102	RESISTANCE
	PIN A8	PIN YA47	LESS THAN 10 OHMS
	PIN B8	PIN YB47	LESS THAN 10 OHMS
	PIN A8	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B8	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

ENG 2	AVM D3228A	TB3102	RESISTANCE
	PIN A8	YA69	LESS THAN 10 OHMS
	PIN B8	PIN YB69	LESS THAN 10 OHMS
	PIN A8	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B8	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the AVM and the terminal block TB3102, studs, YA47 and YB47 (Engine 1), or YA69 and YB69 (Engine 2) (SWPM Ch 20).

1) Do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified limits, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.
1) Do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If the fault continues, then replace the applicable DEU (the most likely LRU from the Possible Causes list). 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

1) Do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation was not satisfactory, then replace the EEC (the subsequent LRU from the Possible Causes list). These are the tasks:
      - EEC Removal, AMM TASK 73-21-60-000-801-F00
      - EEC Installation, AMM TASK 73-21-60-400-801-F00
   b) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure for N1 Blank With EEC ON

(1) If the EEC is ON, then do these steps to make sure that the EEC is off:
   (a) Make sure that the start switch is OFF.
   (b) Make sure that the start levers are in the CUTOFF position.
   (c) Make sure that no engine tests menus show on the FMCS CDU.

(2) Do these steps to find out if the fault is a analog or digital signal fault:
   (a) If the engine N1 indication is blank, then do the Fault Isolation Procedure for N1 Blank With EEC OFF.
      1) Do the Repair Confirmation at the end of this task.
         a) If the Repair Confirmation is not satisfactory, then continue.
   (b) If the engine N1 indication is zero, then continue.

(3) Do these steps to make sure that the EEC is on:
   (a) Make sure that the start switch is in the CONT position.

(4) If the engine N1 indication is blank, then do these steps:
   (a) Do this task: CDS BITE Procedure, 31-62 TASK 801.
      1) Do the corrective action for related DEU data and DEU maintenance messages that you find first.
         a) Do the Repair Confirmation at the end of this task.
         b) If the Repair Confirmation is not satisfactory, then continue.
      2) If you do not find the maintenance messages, then replace the DEU. These are the tasks:
         - Display Electronic Unit Removal, AMM TASK 31-62-21-000-801

- Display Electronic Unit Installation, AMM TASK 31-62-21-400-801

(5) If the engine N1 indication is zero, then do these steps:

(a) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(b) Look for INTERNAL EEC and N1 maintenance messages.

1) Do the corrective action for the maintenance message that you find first.

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

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

2) If you do not find the maintenance messages, then continue.

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

(a) Do the corrective action for the maintenance message relating to invalid N1 data.

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

G. Repair Confirmation for N1 Blank With EEC OFF

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) If the two DEUs are not installed, then, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

(c) Make sure that the electrical connectors, DP0103 is connected at the N1 sensor.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(e) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(f) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(g) With electrical power on the airplane and the EEC is OFF, if the N1 display shows and is zero, then you corrected the fault.

H. Repair Confirmation for N1 Blank With EEC ON

(1) Do these steps:

(a) Make sure that the electrical connectors, DP0103 is connected at the N1 sensor.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(c) For Engine 1:

1) Make sure that these circuit breakers are closed:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(d) For Engine 2:

1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(e) Move the start switch to the CONT position to energize the EEC.

(f) If the N1 display shows and is zero, then you corrected the fault.

——— END OF TASK ———

803. Engine N2 Indication Blank - Fault Isolation

A. Description

(1) Engine N2 indication is blank when the EEC is OFF. This indicates that the analog signal from the N2 speed sensor to the DEU's is not available.

(2) Engine N2 indication is blank when the EEC is ON. This indicates that the digital signals from the EEC and the analog signal is not available or the DEU's are not functional.

B. Possible Causes

(1) N2 speed sensor, T422

(2) Airborne vibration monitor signal conditioner (AVM), M1240

(3) Wires and connectors between the N2 speed sensor, the AVM and the DEUs

(4) DEU, M1808 (DEU1) or M1809 (DEU2)

(5) J5 wire harness (Ch A)

(6) J6 wire harness (Ch B)

(7) EEC, M1818

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-21)

(4) (SSM 77-31-11)

(5) (WDM 77-12-21)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure for N2 Blank With EEC OFF

(1) Do these steps to make sure that the EEC is off:

(a) Make sure that the start switch is OFF.

(b) Make sure that the start levers are in the CUTOFF position.

(c) Make sure that no engine tests menus show on the FMCS CDU.

(2) Do these steps to prepare for the electrical check:

(a) Make sure that the engine N2 indication is blank.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(c) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(d) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(e) Get access to the E3-2 shelf in the EE bay.

(f) Remove the two display electronic units (DEU1 and DEU2). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.

(g) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(h) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(3) Examine the electrical connector, DP1201 at the N2 sensor:

(a) See if the electrical connector, DP1201 is correctly connected to the N2 sensor, and then continue.

(b) Disconnect the electrical connector, DP1201 from the N2 sensor.

(c) Visually examine the N2 sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the N2 sensor receptacle is damaged, then replace the N2 sensor, T422. These are the tasks:

- N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00
- N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, MW0312. These are the tasks:

- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
- Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(4) Measure the resistance between these pins at the N2 sensor receptacle:

N2 SENSOR	CONNECTOR	STUDS	RESISTANCE
	PIN 1	PIN 2	45 TO 75 OHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the N2 sensor, T422. These are the tasks:

- N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00
- N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified range, then continue.

(5) If not already done, connect the electrical connector, DP1201 to the N2 sensor receptacle.

(6) Measure the resistance between these wires and connectors between the terminal block, TB3102, to the N2 sensor:

TB3102 ENGINE 1	CONNECTOR	STUDS	RESISTANCE
	PIN YA49	PIN YB49	45 TO 75 OHMS
	PIN YA49	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN YB49	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

TB3102 ENGINE 2	CONNECTOR	STUDS	RESISTANCE
	PIN YA71	PIN YB71	45 TO 75 OHMS
	PIN YA71	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN YB71	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified limits, then repair the wiring between the TB3102 and the N2 sensor (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(7) Do a resistance check between these pins, to examine the wires between the DEU 1 and the terminal block TB3102:

ENG 1	DEU 1 D3973B	TB3102	RESISTANCE
	PIN A10	PIN YA49	LESS THAN 10 OHMS
	PIN B10	YB49	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

ENG 2	DEU 1 D3973E	TB3102	RESISTANCE
	PIN A10	PIN YA71	LESS THAN 10 OHMS
	PIN B10	PIN YB71	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the DEU 1 and the terminal block TB3102, studs, YA49 and YB49 (Engine 1), or YA71 and YB71 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(8) Do a resistance check between these pins, to examine the wires between the DEU 2 and the terminal block TB3102:

ENG 1	DEU 2 DB3975B	TB3102	RESISTANCE
	PIN A10	PIN YA49	LESS THAN 10 OHMS
	PIN B10	PIN YB49	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATTER THAN 1 MEGOHM

ENG 2	DEU 2 D3975E	TB3102	RESISTANCE
	PIN A10	PIN YA71	LESS THAN 10 OHMS
	PIN B10	YB71	LESS THAN 10 OHMS
	PIN A10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the DEU 2 and the terminal block TB3102, studs, YA49 and YB49 (Engine 1), or YA71 and YB71 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then continue.

(9) Measure the resistance between these pins to examine the wires between the AVM connector, D3228A on the wire harness to the terminal block, TB3102:

ENG 1	AVM D3228A	TB3102	RESISTANCE
	PIN C10	PIN YA49	LESS THAN 10 OHMS
	PIN D10	PIN YB49	LESS THAN 10 OHMS
	PIN C10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN D10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN B10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

ENG 2	AVM D3228A	TB3102	RESISTANCE
	PIN C10	YA71	LESS THAN 10 OHMS
	PIN D10	PIN YB71	LESS THAN 10 OHMS
	PIN C10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM
	PIN D10	AIRPLANE GROUND	GREATER THAN 1 MEGOHM

(a) If the resistance is not in the specified limits, then repair the wiring between the AVM and the terminal block TB3102, studs, YA49 and YB49 (Engine 1), or YA71 and YB71 (Engine 2) (SWPM Ch 20).

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified limits, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If the fault continues, then replace the applicable DEU (the most likely LRU from the Possible Causes list). 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

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

a) If the Repair Confirmation was not satisfactory, then replace the EEC (the subsequent LRU from the Possible Causes list). These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

F. Fault Isolation Procedure for N2 Blank With EEC ON

(1) If the EEC is ON, then do these steps to make sure that the EEC is off:

(a) Make sure that the start switch is OFF.

(b) Make sure that the start levers are in the CUTOFF position.

(c) Make sure that no engine tests menus show on the FMCS CDU.

(2) Do these steps to find out if the fault is a analog or digital signal fault:

(a) If the engine N2 indication is blank, then do the Fault Isolation Procedure for N2 Blank With EEC OFF.

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

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

(b) If the engine N2 indication is zero, then continue.

(3) Do this step to make sure that the EEC is on:

(a) Make sure that the start switch is in the CONT position.

(4) If the engine N2 indication is blank, then do these steps:

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

1) Do the corrective action for related DEU data and DEU maintenance messages that you find first.

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

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

2) If you do not find the maintenance messages, then replace the DEU. These are the tasks:

- Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
- Display Electronic Unit Installation, AMM TASK 31-62-21-400-801

(5) If the engine N2 indication is zero, then do these steps:

(a) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(b) Look for INTERNAL EEC and N2 maintenance messages.

1) Do the corrective action for the maintenance message that you find first.

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

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

2) If you do not find the maintenance messages, then continue.

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

(a) Do the corrective action for the maintenance message relating to invalid N2 data.

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

G. Repair Confirmation for N2 Blank With EEC OFF

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) If the two DEUs are not installed, then, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

(c) Make sure that the electrical connectors, DP1201 is connected at the N2 sensor.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(e) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(f) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(g) With electrical power on the airplane and the EEC is OFF, if the N2 display shows and is zero, then you corrected the fault.

H. Repair Confirmation for N2 Blank With EEC ON

(1) Do these steps:

(a) Make sure that the electrical connectors, DP1201 is connected at the N2 sensor.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(c) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1

(d) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	3	C00360	FUEL SPAR VALVE ENG 2

(e) Move the start switch to the CONT position to energize the EEC.

(f) If the N2 display shows and is zero, then you corrected the fault.

——— END OF TASK ———

804. Engine VIB Indication Zero or Fluctuates - Fault Isolation

A. Description

(1) Engine VIB indicator is zero or fluctuates during engine operation.

B. Possible Causes

(1) Airborne vibration monitor signal conditioner (AVM), M1240

(2) DEU, M1808 (DEU1) or M1809 (DEU2).

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-12-21)

(5) (SSM 77-31-11)

(6) (WDM 77-12-11)

(7) (WDM 77-12-21)

(8) (WDM 77-31-11)

(9) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) Prepare for the procedure:

(a) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

(b) For Engine 2:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

(d) Get access to the E3-2 shelf in the EE Bay.

(2) Examine the FFCCV sensor electrical connector on the W5310 wire harness at the AVM:

(a) Remove the AVM, M1240, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then install a new AVM, M1240, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then repair or replace the W5310 wire harness.

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

b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.

(c) If you did not find a problem, then continue.

(3) Disconnect the applicable electrical connector, DP1101, from the FFCCV sensor receptacle.

(a) Install a jumper between pins 2 and 3 of the FFCCV sensor electrical connector, DP1101:

(b) Measure the resistance at these pins on the applicable wire harness connector at the AVM:

AVM	CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	STUDS	RESISTANCE
	PIN A1	PIN B1	LESS THAN 10 OHMS
	PIN A1	AIRPLANE GROUND	GREATER THAN 10 MEGOHMS

(c) If the resistance is in the specified range, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

a) If the Repair Confirmation was not satisfactory, then continue.

(d) If the resistance is not in the specified range, then continue.

(4) Examine the No. 1 bearing vibration sensor electrical connector on the W5156 wire harness at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then install a new AVM, M1240. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then repair or replace the W5156 wire harness.

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

b) If the Repair Confirmation was not satisfactory, then open the circuit breakers above and continue.

(c) If you did not find a problem, then continue.

(5) Disconnect the applicable electrical connector, DP1304, from the No. 1 bearing vibration sensor receptacle.

(a) Install a jumper between pins 2 and 3 of the No. 1 bearing vibration sensor electrical connector, DP1304:

(b) Measure the resistance at these pins on the applicable wire harness connector at the AVM:

AVM	CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	STUDS	RESISTANCE
	PIN A4	PIN B4	LESS THAN 10 OHMS
	PIN A4	AIRPLANE GROUND	GREATER THAN 10 MEGOHMS

(c) If the resistance is in the specified range, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

(d) If the resistance is not in the specified range, then repair or replace the wire harness, W5156 (SWPM Ch 20).

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Remove the jumper from the FFCCV sensor.

(b) Remove the jumper from the No. 1 bearing vibration sensor.

(c) Make sure that the electrical connector, DP1101, is connected to the FFCCV sensor receptacle.

(d) Make sure that the electrical connector, DP1304, is connected to the No. 1 bearing vibration sensor receptacle.

(e) Make sure that the AVM is installed (AMM TASK 77-31-03-400-801-F00).

(f) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

(g) For Engine 2:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

(2) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

(3) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(c) If the VIB display operated correctly, then you corrected the fault.

END OF TASK

805. Engine VIB Indication Blank - Fault Isolation

A. Description

(1) Engine VIB indicator is blank during engine operation or with electrical power on the airplane.

B. Possible Causes

(1) Airborne vibration monitor signal conditioner (AVM), M1240

(2) 115 VAC electrical power to the AVM

(3) DEU, M1808 (DEU1) or M1809 (DEU2).

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-12-21)

(5) (SSM 77-31-11)

(6) (WDM 77-12-11)

(7) (WDM 77-12-21)

(8) (WDM 77-31-11)

(9) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(2) If one of the two VIB displays are blank, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner - Self Test, AMM TASK 77-31-00-700-801-F00.

(a) If the AVM display is blank after the AVM self-test, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

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

(b) If the AVM display shows maintenance messages, do the corrective action for the maintenance message that you find.

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

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

(3) If the two VIB displays are blank, then look for electrical power at the AVM:

(a) For the applicable engine:

1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(c) For the applicable engine:

1) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D3228C	CONNECTOR	STUDS	EXPECTED RESULT
	PIN 2	AIRPLANE GROUND	115 VAC
	PIN 2	PIN 4 (GROUND)	115 VAC
	PIN 2	PIN 3 (GROUND)	115 VAC

2) If you do not find that the voltage or grounds are in the specified range, then examine and repair the wires between the connector pin 2 and the 115V AC TRANSFER BUS 2 circuit breaker, or pins 3 or 4 to airplane ground (SWPM Ch 20).
   a) Do the Repair Confirmation at the end of this task.
   b) If the Repair Confirmation is not satisfactory, then continue.
3) If you found the 115 VAC and the grounds are satisfactory, then replace the AVM, M1240. These are the tasks:
   - Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
   - Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

   a) Do the Repair Confirmation at the end of this task.
   b) If no problem is found or the Repair Confirmation is not satisfactory, then continue.

(4) Do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.
   (a) Do the corrective action for the maintenance message that you find.
      1) Do the Repair Confirmation at the end of this task.
         a) If the Repair Confirmation is not satisfactory, then continue.
   (b) If you do not find the maintenance messages, then continue.
(5) Do this task: CDS BITE Procedure, 31-62 TASK 801.
   (a) Do the corrective action for related DEU and DEU data maintenance messages that you find.
      1) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

(1) Do these steps:
   (a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.
   (b) For the applicable engine:
      1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(3) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(c) If the VIB display operated correctly, then you corrected the fault.

——— END OF TASK ———

806. Engine N1 Indication Fluctuates - Fault Isolation

A. Description

(1) Engine N1 indication fluctuates as an indication fault.

B. Possible Causes

(1) J7 wire harness (Ch A)

(2) J8 wire harness (Ch B)

(3) N1 speed sensor, T421

(4) EEC, M1818

(5) DEU, M1808 (DEU1) or M1809 (DEU2)

(6) W5310 wire harness

(7) W5156 wire harness

(8) MW0301 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-31-11)

(5) (WDM 77-12-11)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) If it is apparent from the pilot's report that this fault is not an indication fault but an engine operational fault, do this task: Engine Fuel - N1, N2, EGT, and Fuel Flow are Low or Fluctuates - Fault Isolation, 73-06 TASK 809.

(2) Do this task: EEC BITE Procedure, 73-00 TASK 801.
   (a) Look for INTERNAL EEC and N1 maintenance messages.
      1) Do the corrective action for the maintenance message that you find first.
      2) Do the Repair Confirmation at the end of this task.
         a) If the Repair Confirmation is not satisfactory, then continue.
   (b) If you do not find the maintenance messages, then continue.

(3) Do this task: CDS BITE Procedure, 31-62 TASK 801.
   (a) Do the corrective action for related DEU data and DEU maintenance messages that you find.
      1) Do the Repair Confirmation at the end of this task.
         a) If the Repair Confirmation is not satisfactory, then continue.
   (b) If you do not find the maintenance messages, then continue.

(4) Do these steps to remove the electrical power from DEU2:
   (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
E	12	C01373	DISPLAY CTR LWR

   (b) If engine N1 indication does not fluctuate, then replace the DEU2. 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
      1) Do the Repair Confirmation at the end of this task.
   (c) If engine N1 indication does fluctuate, then continue.

(5) Do these steps to remove the electrical power from DEU1:
   (a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	2	C01372	DISPLAY CTR UPR

   (b) If engine N1 indication does not fluctuate, then replace the DEU1. 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
      1) Do the Repair Confirmation at the end of this task.
   (c) If engine N1 indication does fluctuate, then continue.

(6) Do these steps to prepare for the electrical check:
   (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

   (b) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(c) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(d) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(7) Examine the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), at the N1 sensor:

(a) See if the electrical connector, DP0701 (Ch A) and DP0801 (Ch B), are correctly connected to the N1 sensor, and continue.

(b) Disconnect the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), from the N1 sensor.

(c) Visually examine the N1 sensor receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If a N1 sensor receptacle is damaged, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00

- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(8) Do an electrical check of the N1 sensor:

(a) Measure the resistance between these pins at the N1 sensor receptacles, CH A and CH B:

RECEPTACLE CH A	RECEPTACLE CH A	RESISTANCE
PIN 1	PIN 2	45 TO 75 OHMS
PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(b) If the resistance is not in the specified range, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If the resistance is in the specified range, then continue.

(9) Connect the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), to the N1 sensor.

(10) Examine the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), at the EEC:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

(a) See if the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), are correctly connected to the EEC, and continue.

(b) Disconnect the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), from the EEC.

(c) Visually examine the EEC receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If an EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If a harness connector was not correctly connected and no other problems were found, then re-connect the harness connector to the EEC.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(11) Measure the resistance at these pins on the applicable electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), on the wire harness through the N1 sensor:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

CONNECTOR DP0707	CONNECTOR DP0808	RESISTANCE
PIN N	PIN n	45 TO 75 OHMS
PIN N	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
PIN n	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

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

(b) If the resistance is in the specified range, then replace the EEC. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

2) If the Repair Confirmation is not satisfactory, then continue to replace components from the Possible Causes list until the fault is corrected.

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), are connected at the N1 sensor.

(b) Make sure that the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), are connected at the EEC.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	2	C01372	DISPLAY CTR UPR

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
E	12	C01373	DISPLAY CTR LWR

(e) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(f) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do these steps:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(b) Let the engine idle for a minimum of 2 minutes.

NOTE: If the engine is warm, it is not necessary to warm the engine for 2 minutes. The engine can be stopped when you are satisfied the fault is corrected or not.

(c) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(d) If the N1 display operated correctly, then you corrected the fault.

(3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

——— END OF TASK ———

807. Engine N2 Indication Fluctuates - Fault Isolation

A. Description

(1) Engine N2 indicator fluctuates as an indication fault.

B. Possible Causes

(1) J5 wire harness (Ch A)

(2) J6 wire harness (Ch B)

(3) N2 speed sensor, T422

(4) EEC, M1818

(5) DEU, M1808 (DEU1) or M1809 (DEU2)

(6) W5310 wire harness

(7) W5156 wire harness

(8) MW0312 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-21)

(4) (SSM 77-31-11)

(5) (WDM 77-12-21)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) If it is apparent from the pilot's report that this fault is not an indication fault but an engine operational fault, do this task: Engine Fuel - N1, N2, EGT, and Fuel Flow are Low or Fluctuates - Fault Isolation, 73-06 TASK 809.

(2) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(a) Look for INTERNAL EEC and N2 maintenance messages.

1) Do the corrective action for the maintenance message that you find first.
2) Do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation is not satisfactory, then continue.

(b) If you do not find the maintenance messages, then continue.

(3) Do this task: CDS BITE Procedure, 31-62 TASK 801.
   (a) Do the corrective action for related DEU data and DEU maintenance messages that you find.
      1) Do the Repair Confirmation at the end of this task.
         a) If the Repair Confirmation is not satisfactory, then continue.
   (b) If you do not find the maintenance messages, then continue.

(4) Do these steps to remove the electrical power from DEU2:
   (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
E	12	C01373	DISPLAY CTR LWR

   (b) If engine N2 indication does not fluctuate, then replace the DEU2. 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

      1) Do the Repair Confirmation at the end of this task.
   (c) If engine N2 indication does fluctuate, then continue.

(5) Do these steps to remove the electrical power from DEU1:
   (a) Open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	2	C01372	DISPLAY CTR UPR

   (b) If engine N2 indication does not fluctuate, then replace the DEU1. 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

      1) Do the Repair Confirmation at the end of this task.
   (c) If engine N2 indication does fluctuate, then continue.

(6) Do these steps to prepare for the electrical check:
   (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

   (b) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(c) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(d) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(7) Examine the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), at the N2 sensor:

(a) See if the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), are correctly connected to the N2 sensor, and continue.

(b) Disconnect the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), from the N2 sensor.

(c) Visually examine the N2 sensor receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If a N2 sensor receptacle is damaged, then replace the N2 sensor, T422. These are the tasks:

- N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00
- N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00

- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(8) Do an electrical check of the N2 sensor:

(a) Measure the resistance between these pins at the applicable N2 sensor receptacle, CH A and CH B:

RECEPTACLE CH A	RECEPTACLE CH B	
PIN 1	PIN 2	45 TO 75 OHMS
PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(b) If the resistance is not in the specified range, then replace the N2 sensor, T422. These are the tasks:

- N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00
- N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If the resistance is in the specified range, then continue.

(9) Connect the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), to the N2 sensor.

(10) Examine the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

(a) See if the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected to the EEC, and continue.

(b) Disconnect the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), from the EEC.

(c) Visually examine the EEC receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If an EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If a connector was not correctly connected and no other problem was found, then re-connect the electrical connectors and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(11) Measure the resistance at these pins on the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), on the wire harnesses through the N2 sensor:

NOTE: The electrical connector, DP0505 (Ch A), is on the J7 wire harness. The electrical connector, DP0606 (Ch B), is on the J8 wire harness.

CONNECTOR DP0505	**CONNECTOR DP0606**	
PIN e	PIN d	45 TO 75 OHMS
PIN e	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
PIN d	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

(b) If the resistance is not in the specified range, then replace the EEC. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

2) If the Repair Confirmation is not satisfactory, then continue to replace components from the Possible Causes list until the fault is corrected.

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), are correctly connected at the N2 sensor.

(b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
D	2	C01372	DISPLAY CTR UPR

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
E	12	C01373	DISPLAY CTR LWR

(e) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(f) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do these steps:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(b) Let the engine idle for a minimum of 2 minutes.

NOTE: If the engine is warm, it is not necessary to warm the engine for 2 minutes. The engine can be stopped when you are satisfied the fault is corrected or not.

(c) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(d) If the N2 display operated correctly, then you corrected the fault.

(3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

——— END OF TASK ———

808. AVM Signal Conditioner Flight History Shows 00 for Two of the Vibration Indicators - Fault Isolation

A. Description

(1) AVM signal conditioner shows no signal from the No. 1 bearing vibration sensor. This is indicated if the FAN and HPC vibration signals in flight history show 0.0.

(2) AVM signal conditioner shows no signal from the fan frame compressor case vibration (FFCCV) sensor. This is indicated if the LPT and HPT vibration signals in flight history show 0.0.

B. Possible Causes

(1) No. 1 bearing vibration sensor, T532

(2) Fan frame compressor case vibration (FFCCV) sensor, T537

(3) Airborne vibration monitor (AVM) signal conditioner, M1240

(4) MW0311 wire harness

(5) MW0313 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-31-11)

(4) (WDM 77-31-11)

(5) (WDM 77-31-21)

E. Fault Isolation Procedure for AVM Signal Conditioner Shows No Signal from the No. 1 Bearing Vibration Sensor

(1) Prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(2) Examine the electrical connector, D3228A (engine 1) or D3228B (engine 2), at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20).

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

(c) If you did not find a problem, then continue.

(3) Examine the electrical connector, DP1304, on the fan case aft of the oil tank, just above the engine nameplate:

(a) See if the electrical connector, DP1304, is correctly connected to the fan case disconnect, and continue.

(b) Disconnect the electrical connector, DP1304, from the fan case disconnect.

(c) Visually examine the fan case disconnect receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the fan case disconnect receptacle is damaged, then deactivate the No. 1 bearing vibration sensor, T332 or replace the No. 1 bearing vibration sensor, T332. To deactivate the No. 1 bearing vibration sensor, do this task: No. 1 Bearing Vibration Sensor Deactivation, AMM TASK 77-31-05-040-801-F00.

2) To replace the No. 1 bearing vibration sensor, you must replace the engine. These are the tasks:

- Power Plant Removal, AMM TASK 71-00-02-000-801-F00

- Power Plant Installation, AMM TASK 71-00-02-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

3) If the wire harness connector is damaged, then replace the wire harness, MW0313. These are the tasks:

- Nacelle Wiring Harnesses Removal, AMM TASK 71-51-03-000-801-F00
- Nacelle Wiring Harnesses Installation, AMM TASK 71-51-03-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

4) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

(d) If you did not find a problem, then continue.

(4) Do a continuity check between these pins of the wires between the applicable AVM connector on the wire harness and the fan case disconnect:

AVM	CONNECTOR D3228A (ENG 1) D3228B (ENG 2) PINS	CONNECTOR DP1304 DP1304 PINS	CONTINUITY
	PIN A4	PIN 2	YES
	PIN B4	PIN 3	YES
	PIN A4	CONNECTOR SHELL	NO
	PIN B4	CONNECTOR SHELL	NO

(a) If the continuity is not correct, then do these steps:

1) Repair the wire harness between the AVM and the fan case disconnect (SWPM Ch 20).

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

(b) If the continuity is correct, then deactivate the No. 1 bearing vibration sensor, T332 or replace the No. 1 bearing vibration sensor, T332. To deactivate the No. 1 bearing vibration sensor, do this task: No. 1 Bearing Vibration Sensor Deactivation, AMM TASK 77-31-05-040-801-F00

(c) To replace the No. 1 bearing vibration sensor, you must replace the engine (the most likely LRU from the Possible Causes list). These are the tasks:

- Power Plant Removal, AMM TASK 71-00-02-000-801-F00
- Power Plant Installation, AMM TASK 71-00-02-400-801-F00

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

F. Fault Isolation Procedure for AVM Signal Conditioner Shows No Signal from the FFCCV Sensor

(1) Prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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

(c) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

(2) Examine the electrical connector, D3228A (engine 1) or D3228B (engine 2), at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20).

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

(c) If you did not find a problem, then continue.

(3) Examine the electrical connector, DP1101, to the FFCCV sensor on the rear fan frame at the 3 o'clock strut:

(a) See if the electrical connector, DP1101, is correctly connected to the FFCCV sensor, and continue.

(b) Disconnect the electrical connector, DP1101, from the FFCCV sensor.

(c) Visually examine the fan frame disconnect receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the FFCCV sensor receptacle is damaged, then replace the FFCCV sensor, T537. These are the tasks:

- FFCC Vibration Sensor Removal, AMM TASK 77-31-04-000-801-F00
- FFCC Vibration Sensor Installation, AMM TASK 77-31-04-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

2) If the wire harness connector is damaged, then replace the wire harness, MW0311. These are the tasks:

- 3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00
- 3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

(d) If you did not find a problem, then continue.

(4) Do a continuity check between these pins of the wires between the AVM connector on the wire harness and the electrical connector, DP1101, to the fan frame compressor case vibration sensor pigtail:

AVM	CONNECTOR D3228A (ENG 1) D3228B (ENG 2) PINS	CONNECTOR DP1101 DP1101 PINS	CONTINUITY
	PIN A1	PIN 2	YES
	PIN B1	PIN 3	YES
	PIN A1	CONNECTOR SHELL	NO
	PIN B1	CONNECTOR SHELL	NO

(a) If the continuity is not correct, then do these steps:

1) Repair the wire harness between the AVM and the fan frame compressor case vibration sensor (SWPM Ch 20).

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

(b) If the continuity is correct, then replace the FFCCV sensor, T537 (the most likely LRU from the Possible Causes list). These are the tasks:

- FFCC Vibration Sensor Removal, AMM TASK 77-31-04-000-801-F00
- FFCC Vibration Sensor Installation, AMM TASK 77-31-04-400-801-F00

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

G. Repair Confirmation for AVM Signal Conditioner Shows No Signal from the No. 1 Bearing Vibration Sensor

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) Make sure that the electrical connector, DP1304, to the No. 1 bearing vibration sensor is connected.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) Record and erase all the BITE maintenance messages, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(e) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(3) If the FAN and HPC vibration levels show more than 0.0 in flight history, then put the airplane back into service and monitor on subsequent flights.

(a) Record the steps that you did to find and repair this fault.

(4) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

H. Repair Confirmation for AVM Signal Conditioner Shows No Signal from the FFCCV Sensor

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) Make sure that the electrical connector, DP1101, to the FFCCV sensor is connected.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) Record and erase all the BITE maintenance messages, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(e) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

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

(f) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(3) If the LPT and HPT vibration levels show more than 0.0 in flight history, then put the airplane back into service and monitor on subsequent flights.

(a) Record the steps that you did to find and repair this fault.

——— END OF TASK ———

809. AVM Signal Conditioner Display Blank - Fault Isolation

A. Description

(1) AVM signal conditioner does not respond (display remains blank) to interrogation or self test.

B. Possible Causes

(1) Airborne vibration monitor (AVM) signal conditioner, M1240

(2) 115 VAC electrical power to the AVM

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-31-11)

(4) (WDM 77-31-11)

(5) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Open this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

(2) Examine the electrical connector, D3228C, at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20).

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breaker above and continue.

(c) If you do not find a problem, then continue.

(3) Look for electrical power at the AVM:

(a) If AVM was re-installed, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D3228C	CONNECTOR	STUDS	EXPECTED RESULT
	PIN 2	AIRPLANE GROUND	115 VAC
	PIN 2	PIN 3 (GROUND)	115 VAC
	PIN 2	PIN 4 (GROUND)	115 VAC

1) If you do not find that the voltage or grounds are in the specified range, then examine and repair the wires between the connector pin 2 and the 115V AC TRANSFER BUS 2 circuit breaker, or pins 3 or 4 to airplane ground (SWPM Ch 20).

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

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

2) If you found the 115 VAC and the grounds are satisfactory, then replace the AVM, M1240. These are the tasks:

- Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00
- Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

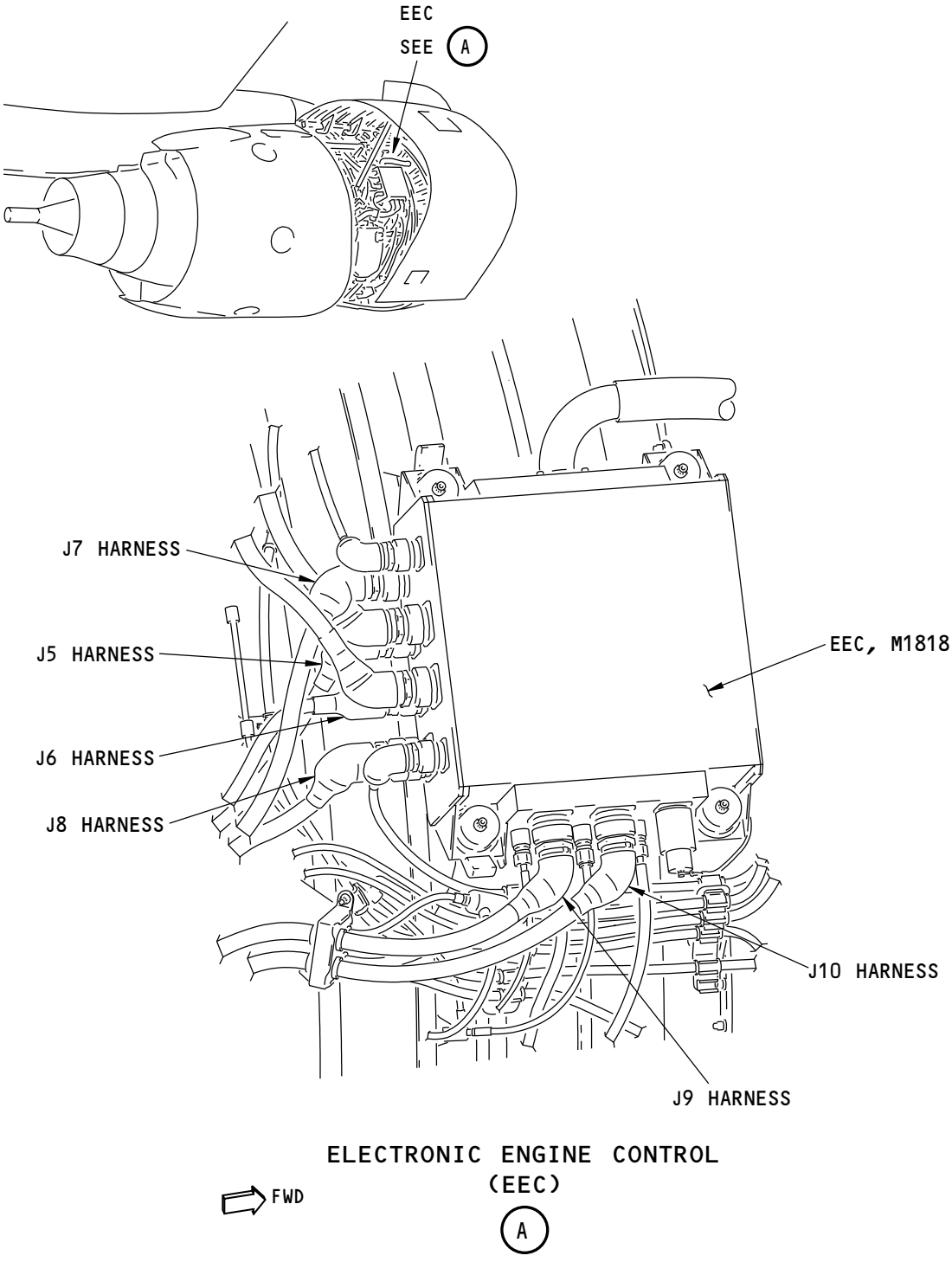
(c) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner - Self Test, AMM TASK 77-31-00-700-801-F00.

1) If the AVM signal conditioner passed the self test, then you corrected the fault.

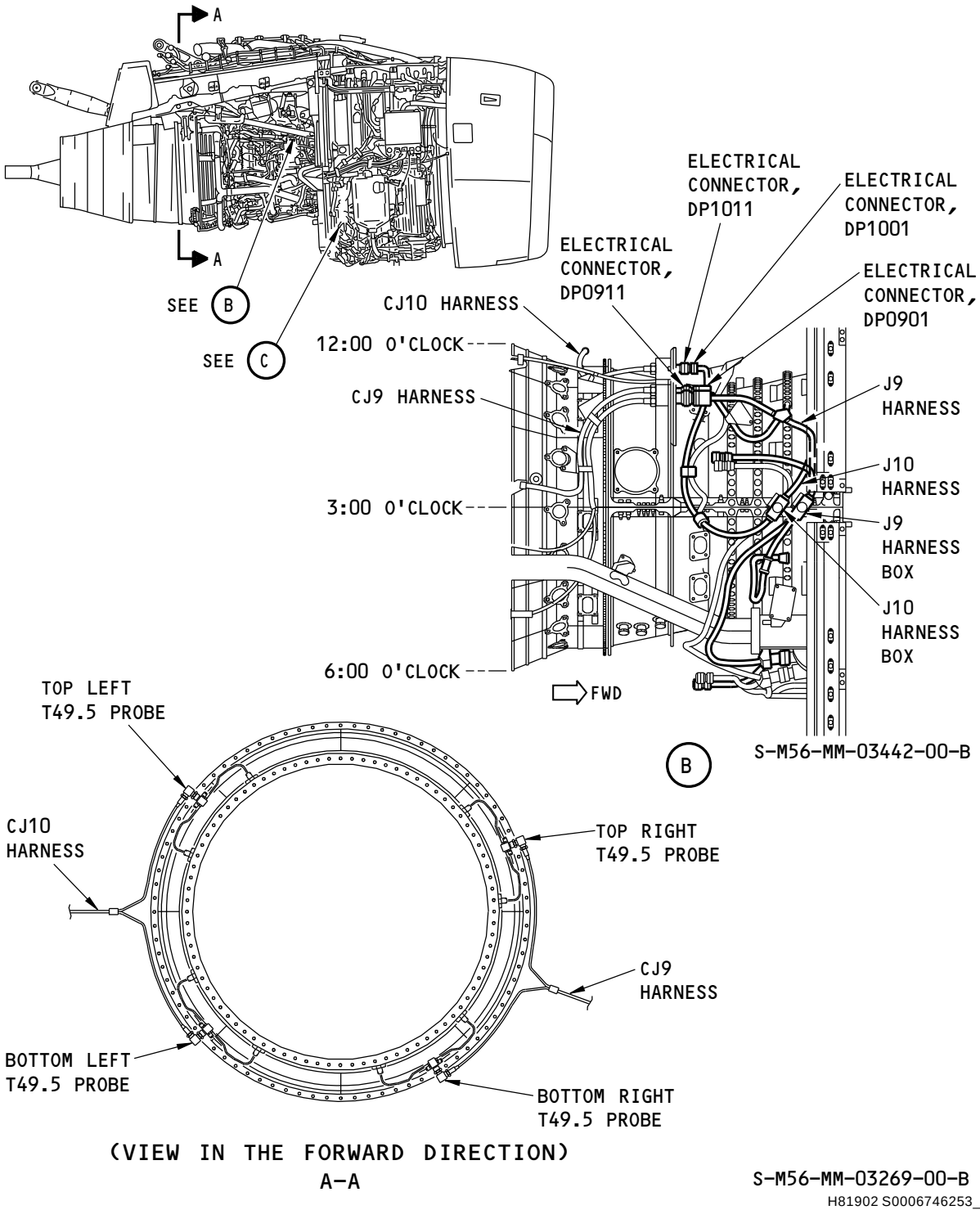
(2) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

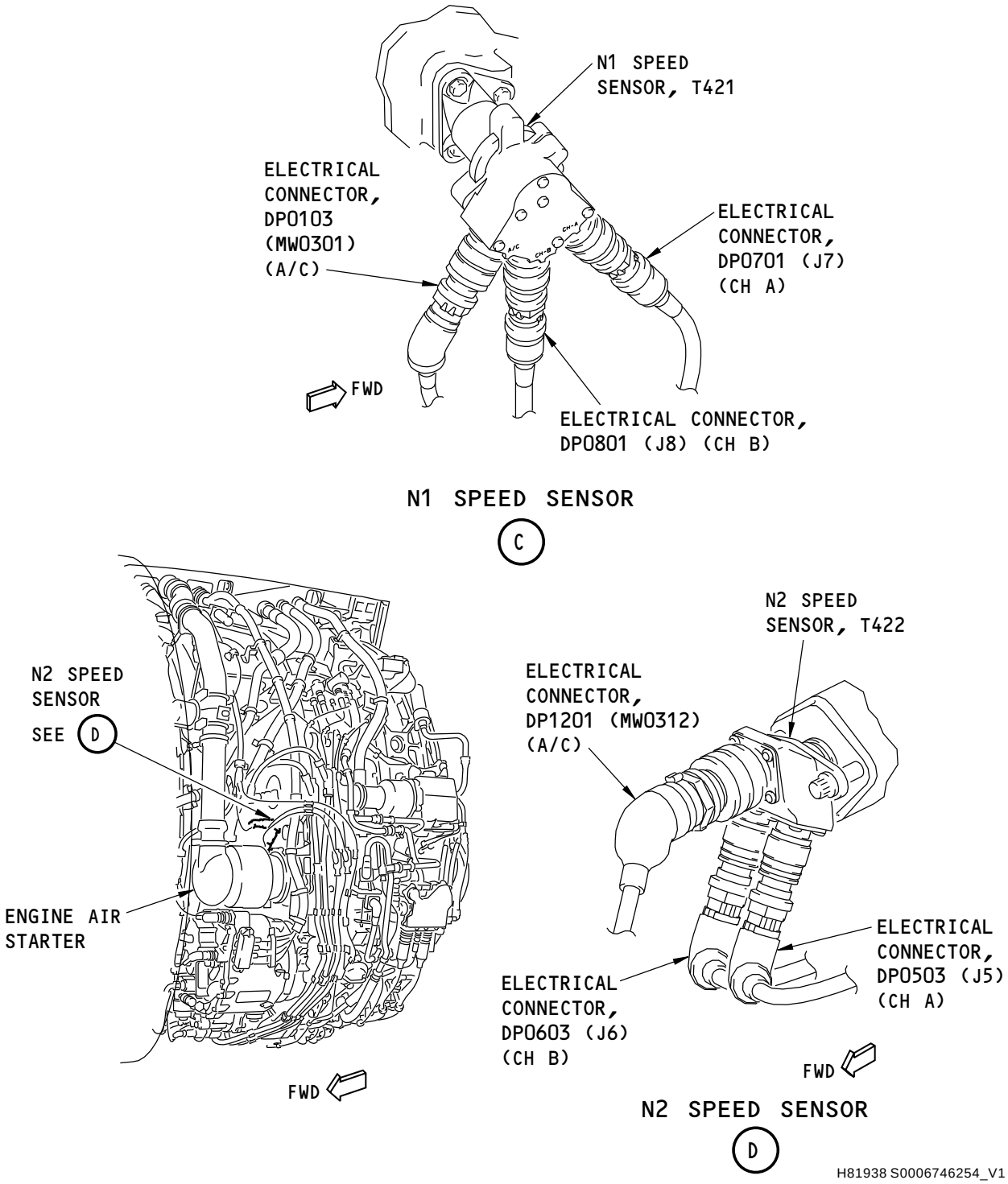
——— END OF TASK ———



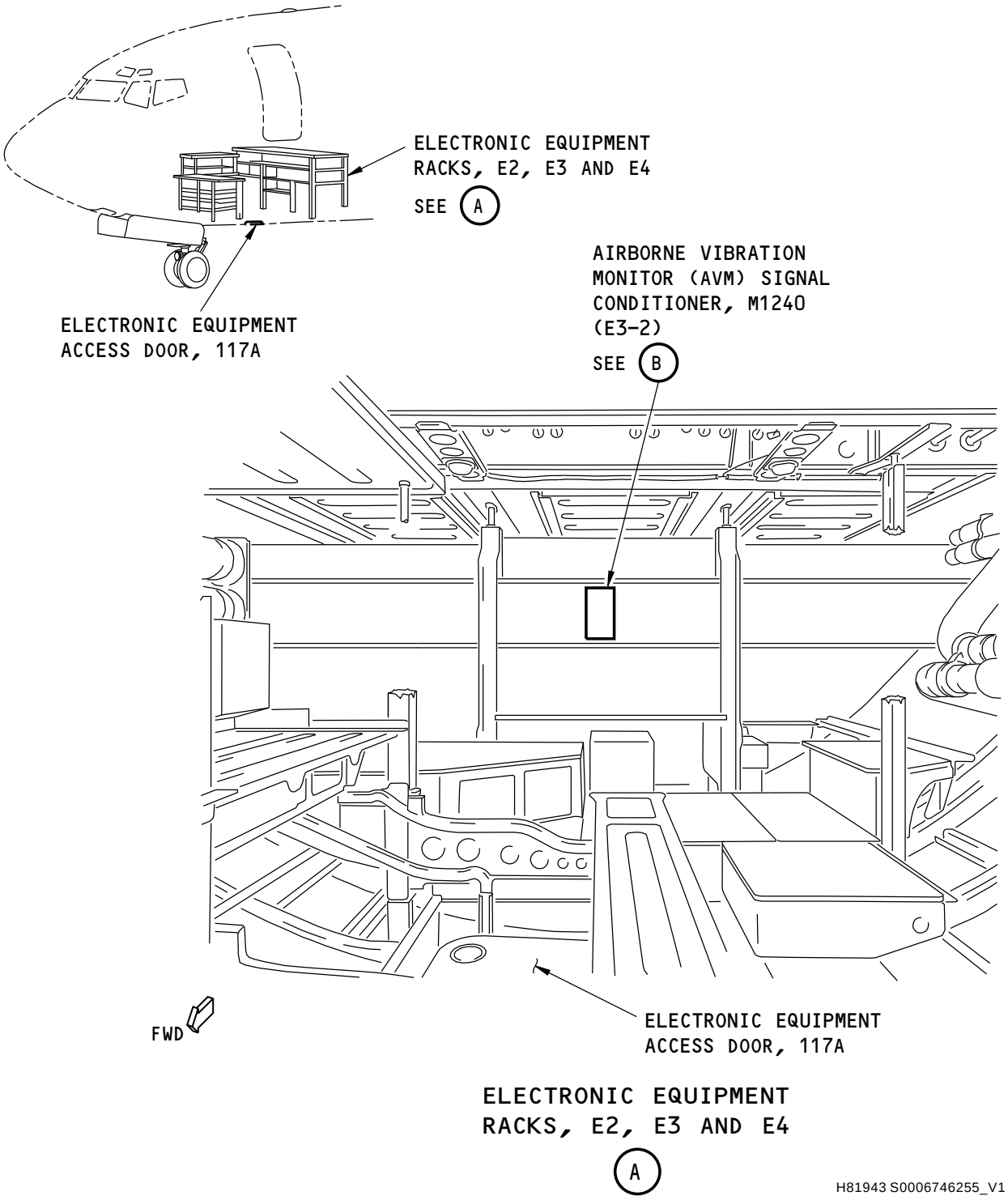
Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 1 of 6)



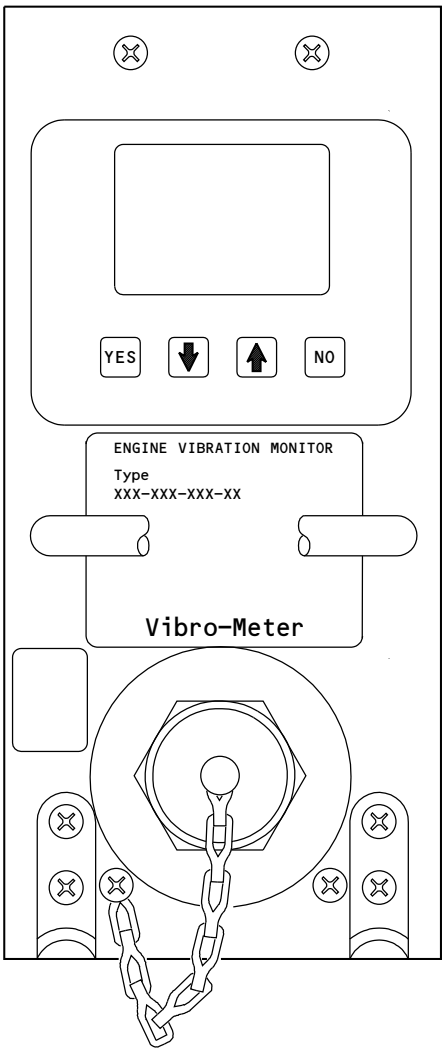
Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 2 of 6)



Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 3 of 6)



Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 4 of 6)

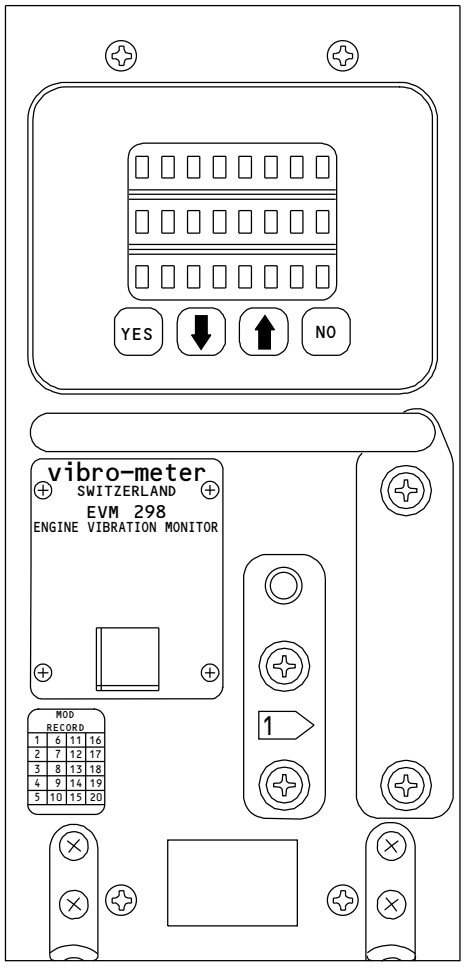


AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

H81961 S0006746258_V1

Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 5 of 6)



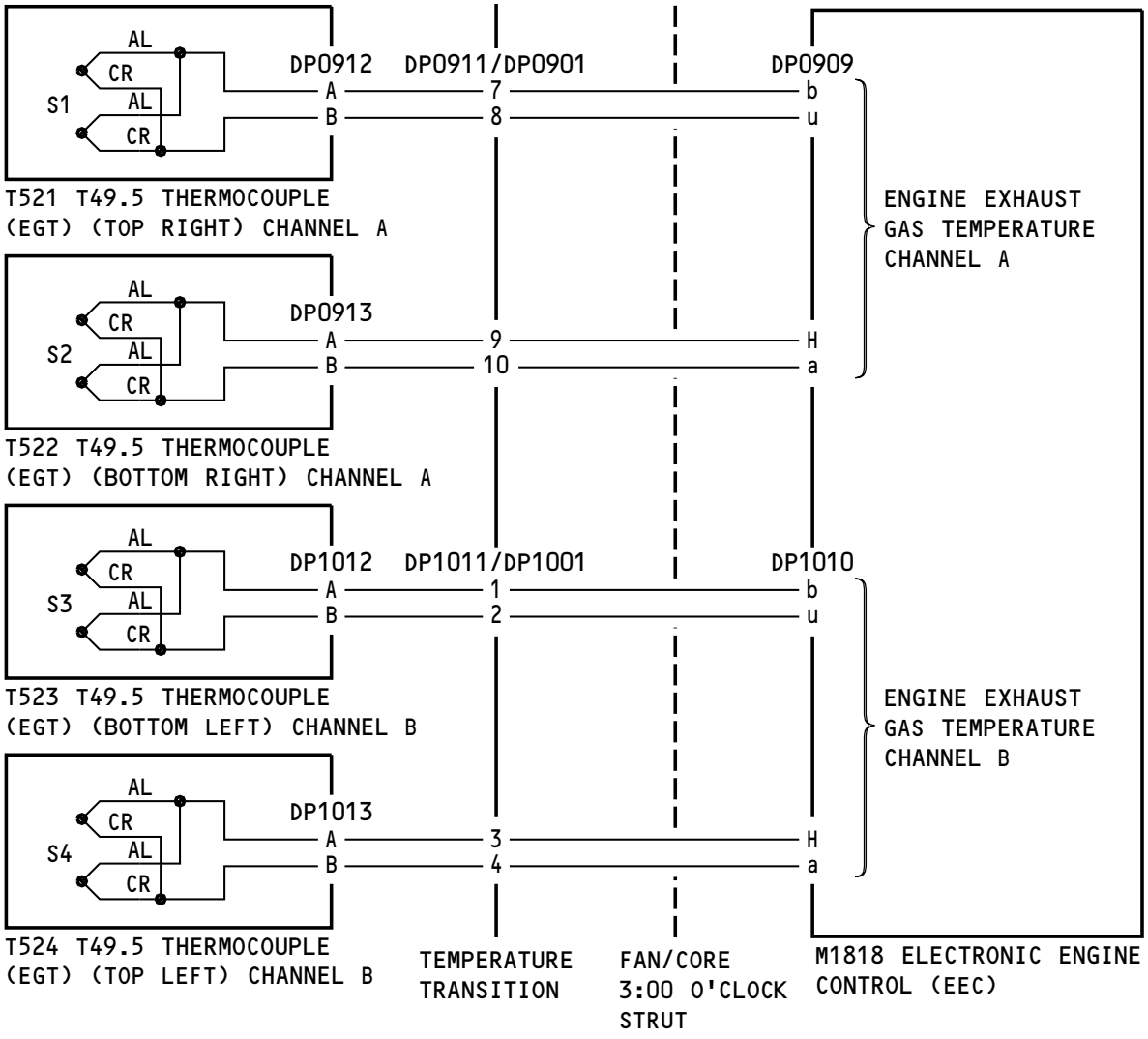
AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

1 CONNECTOR NOT INSTALLED ON ALL UNITS

M48986 S0006746264_V2

Engine Indicating System - Component Location
Figure 301/77-05-00-990-801-F00 (Sheet 6 of 6)

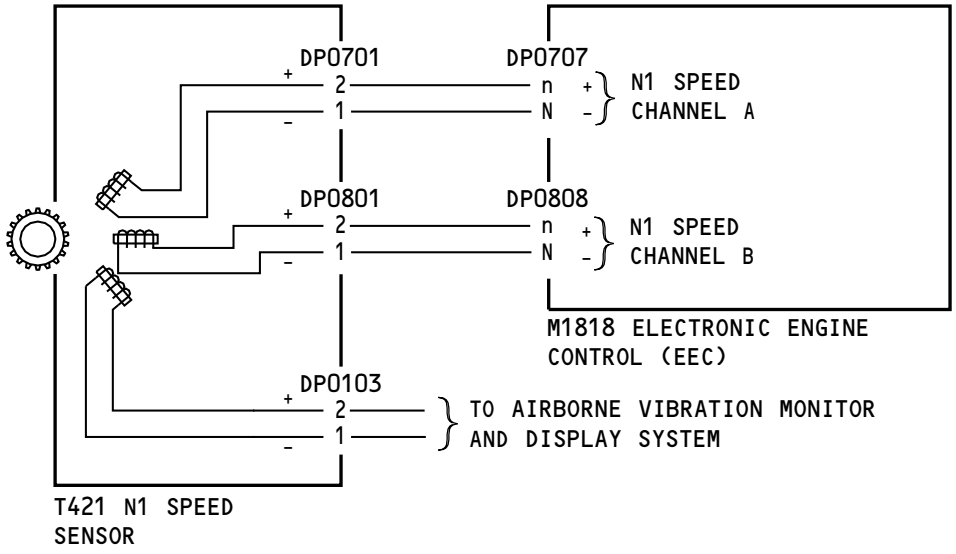


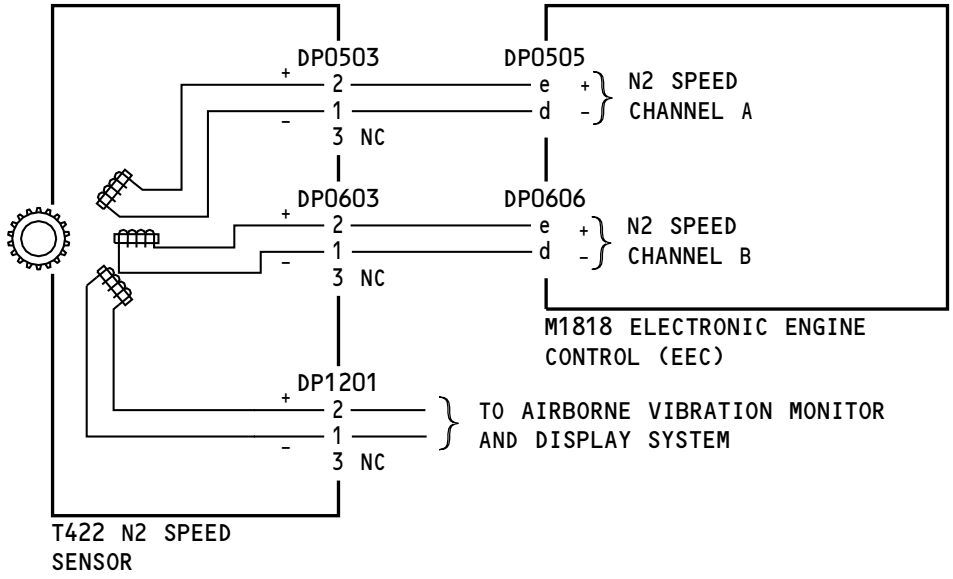
T49.5 PROBE SIMPLIFIED SCHEMATIC

NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H81971 S0006746265_V1

Engine Indicating System - Simplified Schematic
Figure 302/77-05-00-990-802-F00 (Sheet 1 of 5)

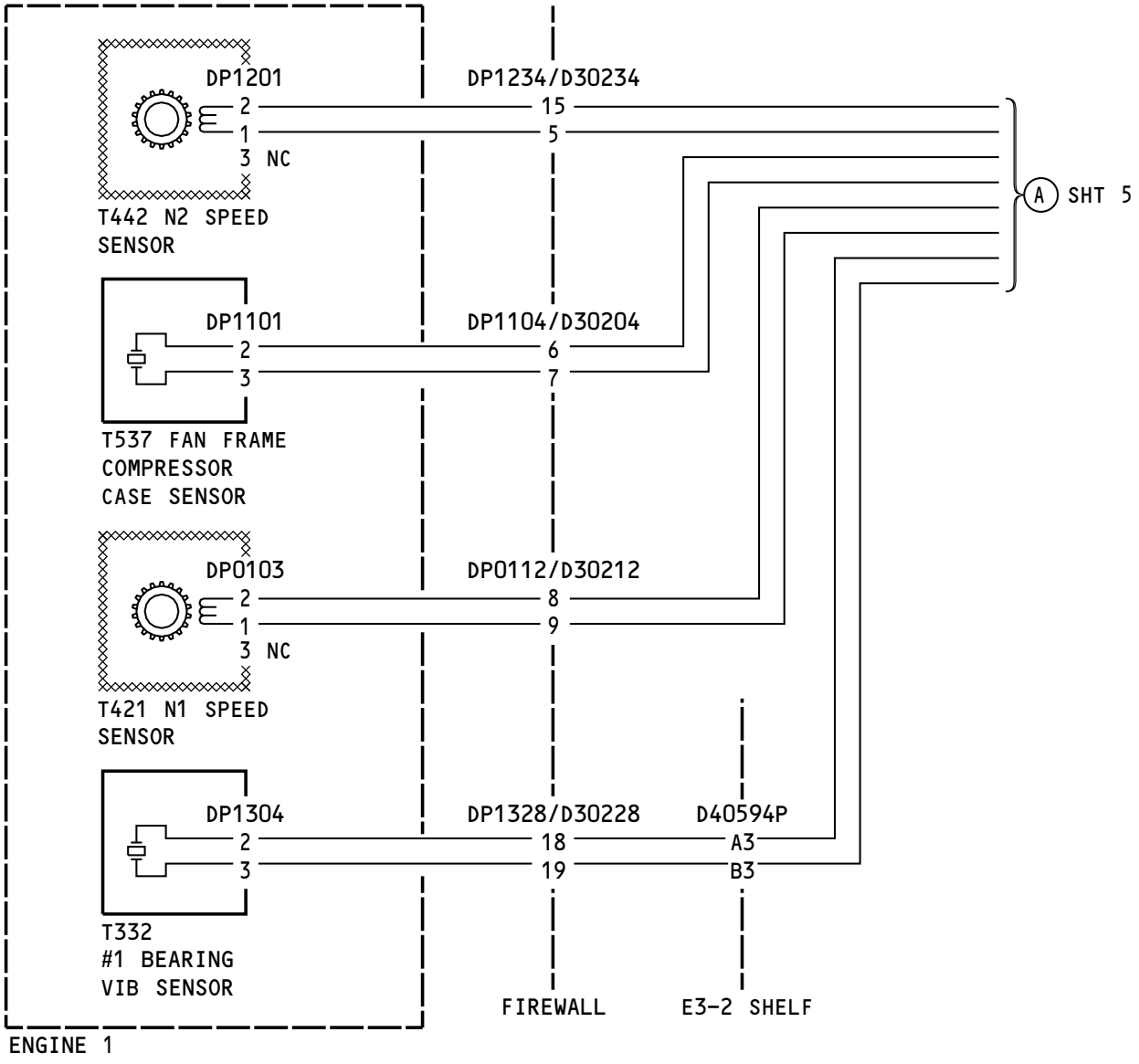




NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

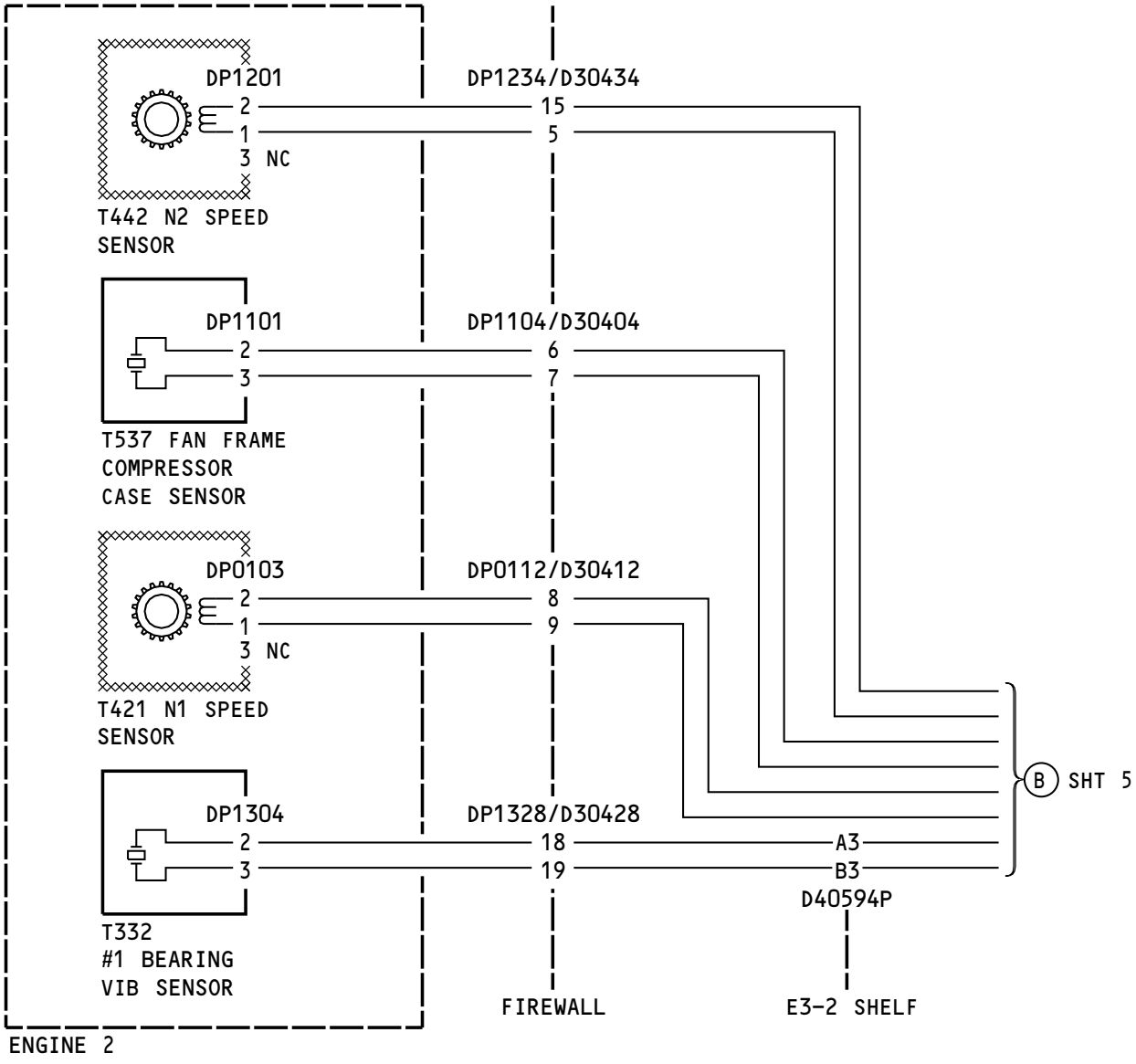
H81975 S0006746266_V1

Engine Indicating System - Simplified Schematic
Figure 302/77-05-00-990-802-F00 (Sheet 2 of 5)



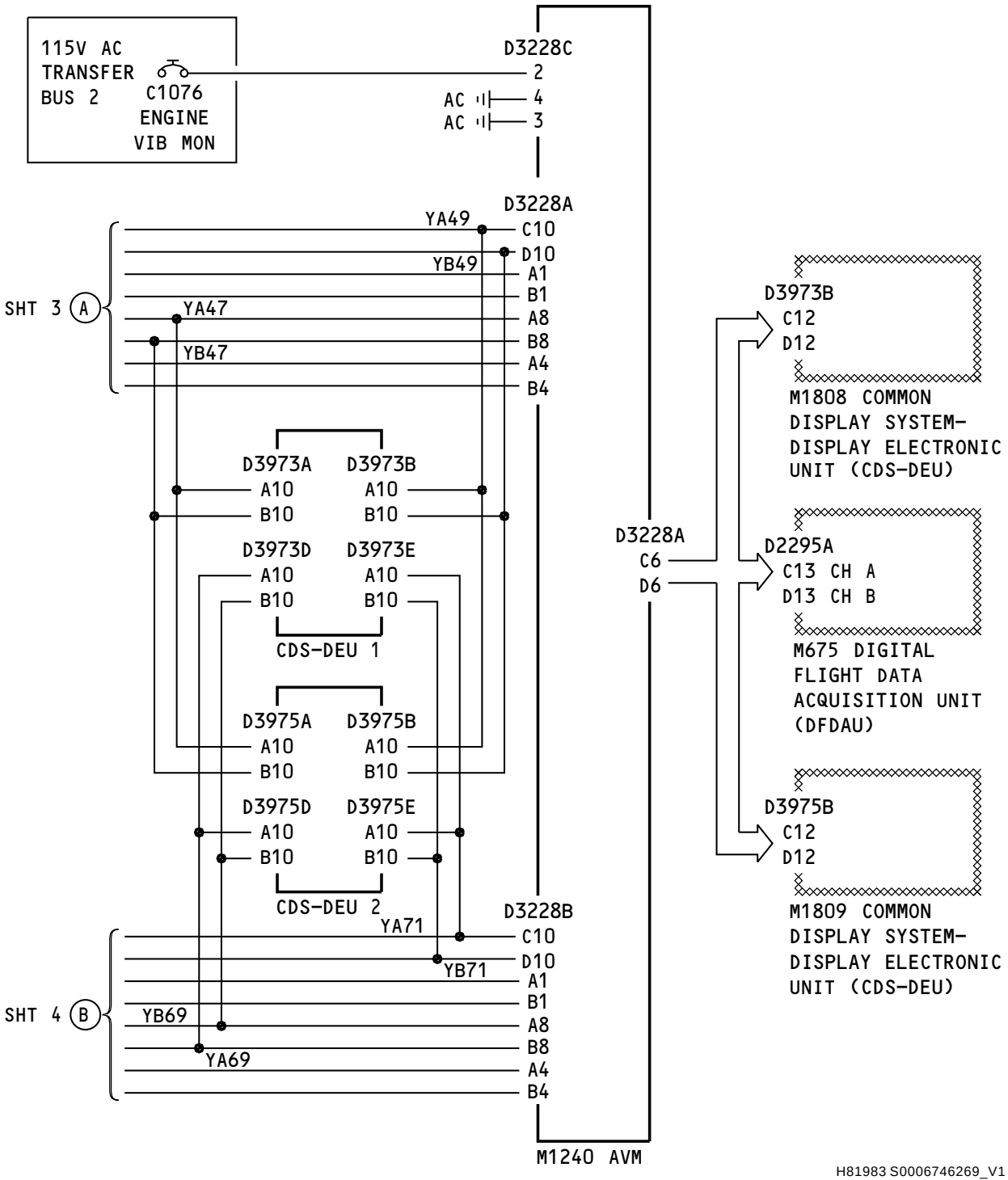
H81978 S0006746267_V1

Engine Indicating System - Simplified Schematic
Figure 302/77-05-00-990-802-F00 (Sheet 3 of 5)



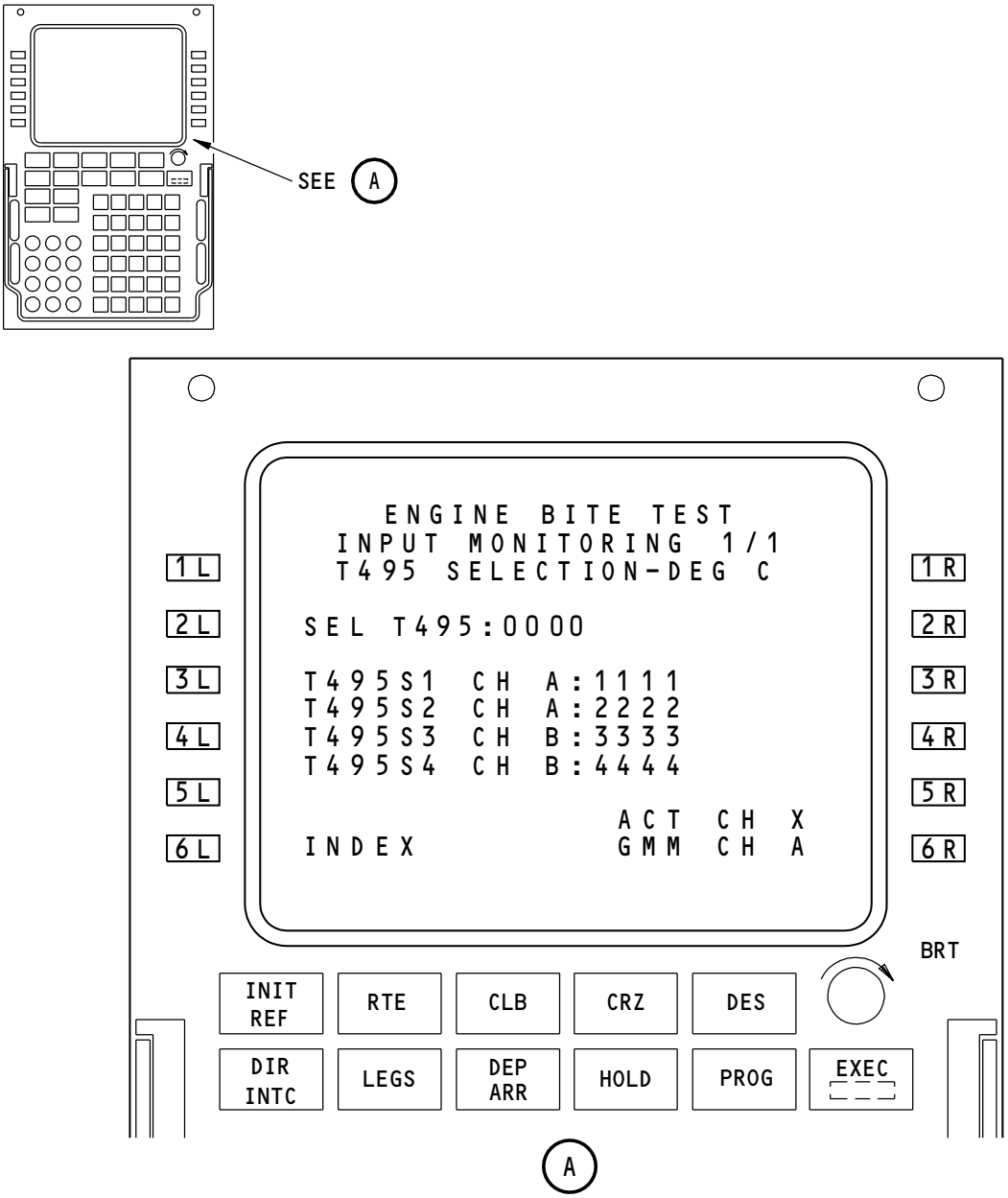
H81980 S0006746268_V1

Engine Indicating System - Simplified Schematic
Figure 302/77-05-00-990-802-F00 (Sheet 4 of 5)



H81983 S0006746269_V1

Engine Indicating System - Simplified Schematic
Figure 302/77-05-00-990-802-F00 (Sheet 5 of 5)



NOTE: 0000 IS THE WEIGHTED AVERAGE OF THE FOUR PROBES INPUTS THAT THE EEC OUTPUT TO THE AIRPLANE.
1111 IS THE OUTPUT SIGNAL FROM PROBE S1 (UPPER RIGHT, AFT LOOKING FORWARD)
2222 IS THE OUTPUT SIGNAL FROM PROBE S2 (LOWER RIGHT, AFT LOOKING FORWARD)
3333 IS THE OUTPUT SIGNAL FROM PROBE S3 (LOWER LEFT, AFT LOOKING FORWARD)
4444 IS THE OUTPUT SIGNAL FROM PROBE S4 (UPPER LEFT, AFT LOOKING FORWARD)

W37077 S0006746270_V1

T495 Input Monitoring
Figure 303/77-05-00-990-803-F00

801. N1 Signal is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-11171, 77-11172, 77-21171, 77-21172, 77-31171 and 77-31172.

(2) The maintenance messages 77-X117Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).

(a) If X=1, then do the Fault Isolation Procedure - Single Channel Fault for channel A.

(b) If X=2, then do the Fault Isolation Procedure - Single Channel Fault for channel B.

(c) If X=1 and 2 (two messages), or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.

(3) The EEC detects that the N1 signal is out of the valid range.

B. Possible Causes

(1) N1 speed sensor, T421

(2) EEC, M1818

(3) J7 (Ch A) or J8 (Ch B) wire harness.

C. Circuit Breakers

(1) For engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(2) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 301)

(3) (SSM 77-12-11)

(4) (WDM 73-22-11)

(5) (WDM 77-12-11)

E. Initial Evaluation

(1) Do these steps to find out if the fault is still active:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(c) Do this task: EEC BITE Procedure, 73-00 TASK 801.

1) Look for the maintenance message in Flight Leg 0.

(d) If maintenance message, 77-11171 (Ch A, Eng 1), 77-11172 (Ch A, Eng 2), 77-21171 (Ch B, Eng 1) or 77-21172 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.

(e) If maintenance message, 77-31171 (Ch A and B, Eng 1) or 77-31172 (Ch A and B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.

(f) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

c) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

(1) Do these steps to prepare for the procedure:

(a) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(b) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(2) Examine the electrical connector, DP0701 (Ch A) or DP0801 (Ch B), at the N1 sensor:

(a) See if the electrical connector, DP0701 (Ch A) or DP0801 (Ch B), is correctly connected to the N1 sensor, and continue.

(b) Disconnect the electrical connector, DP0701 (Ch A) or DP0801 (Ch B), from the N1 sensor.

(c) Visually examine the N1 sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the N1 sensor receptacle is damaged, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(3) Option 1 (Alternate):

Do these steps to do a check of the N1 sensor:

(a) Measure the resistance between these pins at the applicable N1 sensor receptacle, CH A or CH B:

RECEPTACLE CH A CH B	CONNECTOR	STUDS	
	PIN 1	PIN 2	45 TO 75 OHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(b) If the resistance is not in the specified range, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If the resistance is in the specified range, then continue.

(4) Option 2 (Preferred);

Do these steps to isolate the N1 sensor as the cause of the fault:

(a) Connect the electrical connector, DP0701 N1-A (Ch A), to the N1 sensor receptacle, CH B.

(b) Connect the electrical connector, DP0801 N1-B (Ch B), to the N1 sensor receptacle, CH A.

(c) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(d) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(e) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(f) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(g) Do this task: EEC BITE Procedure, 73-00 TASK 801.

(h) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(i) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(j) If the maintenance message does not show, then do these steps:

1) Re-connect the electrical connector, DP0701 N1-A (Ch A), to the N1 sensor receptacle, CH A.

2) Re-connect the electrical connector, DP0801 N1-B (Ch B), to the N1 sensor receptacle, CH B.

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

(k) If the maintenance message shows on the other channel, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

(l) If maintenance message continues on the same channel, then do these steps and continue:

1) Re-connect the electrical connector, DP0701 N1-A (Ch A), to the N1 sensor receptacle, CH A.

2) Re-connect the electrical connector, DP0801 N1-B (Ch B), to the N1 sensor receptacle, CH B.

(5) Examine the electrical connector, DP0707 (Ch A) or DP0808 (Ch B), at the EEC:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

(a) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(b) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(c) See if the electrical connector, DP0707 (Ch A) or DP0808 (Ch B), is correctly connected to the EEC, and continue.

(d) Disconnect the electrical connector, DP0707 (Ch A) or DP0808 (Ch B), from the EEC.

(e) Visually examine the EEC receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(f) If you did not find a problem, then continue.

(6) Measure the resistance between these pins to examine the wires between the applicable EEC connector, DP0707 (Ch A) or DP0808 (Ch B), on the wire harness through the N1 sensor:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

CONNECTOR DP0707 DP0808	CONNECTOR	STUDS	RESISTANCE
	PIN N	PIN n	45 TO 75 OHMS
	PIN N	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN n	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is in the specified range and the fault was found by the Initial Evaluation, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

(b) If the resistance is not in the specified range, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

G. Fault Isolation Procedure - Dual Channel Fault

(1) Do these steps to prepare for the procedure:

(a) For Engine 1;

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(b) For Engine 2;

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(2) Examine the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), at the N1 sensor:

(a) See if the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), are correctly connected to the N1 sensor, and continue.

(b) Disconnect the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), from the N1 sensor.

(c) Visually examine the N1 sensor receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If a N1 sensor receptacle is damaged, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(3) Measure the resistance between these pins at the N1 sensor receptacles, CH A and CH B:

RECEPTICAL CH A CH B	CONNECTOR	STUDS	RESISTANCE
	PIN 1	PIN 2	45 TO 75 OHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the N1 sensor, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified range, then continue.

CAUTION: MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE N1 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE N1 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. N1 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

(4) Connect the electrical connectors, DP0701 (Ch A) and DP0801 (Ch B), to the N1 sensor and continue.

(5) Examine the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), at the EEC:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

(a) See if the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), are correctly connected to the EEC.

(b) Disconnect the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), from the EEC.

(c) Visually examine the EEC receptacles and wire harness connectors (AMM TASK 70-70-01-200-801-F00).

1) If an EEC receptacle is damaged, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If a harness connector is damaged, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(6) Measure the resistance between these pins to examine the wires between the EEC connectors on the wire harnesses and the N1 sensor:

NOTE: The electrical connector, DP0707 (Ch A), is on the J7 wire harness. The electrical connector, DP0808 (Ch B), is on the J8 wire harness.

CONNECTOR DP0707 DP0808	CONNECTOR	STUDS	RESISTANCE
	PIN N	PIN n	45 TO 75 OHMS
	PIN N	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN n	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is in the specified range and the fault was found by the Initial Evaluation, then replace the EEC, M1818. These are the tasks:

- EEC Removal, AMM TASK 73-21-60-000-801-F00
- EEC Installation, AMM TASK 73-21-60-400-801-F00

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

(b) If the resistance is not in the specified range, then replace the wire harness, J7 (Ch A) or J8 (Ch B). These are the tasks:

- Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00
- Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00

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

H. Repair Confirmation

(1) Prepare for the procedure:

CAUTION: MAKE SURE THAT YOU CONNECT THE CHANNEL A ELECTRICAL CONNECTOR TO THE N1 SENSOR RECEPTACLE, CH A, AND THE CHANNEL B ELECTRICAL CONNECTOR TO THE N1 SENSOR RECEPTACLE, CH B. THE ELECTRICAL CONNECTORS ARE INTERCHANGEABLE. N1 SENSOR FAULTS AND OUTPUT DATA WILL SHOW ON THE WRONG CHANNELS.

(a) Make sure that the electrical connector, DP0701 N1-A (Ch A), is connected to the N1 sensor receptacle, CH A.

(b) Make sure that the electrical connector, DP0801 N1-B (Ch B), is connected to the N1 sensor receptacle, CH B.

(c) Make sure that the electrical connectors, DP0707 (Ch A) and DP0808 (Ch B), are connected at the EEC.

(d) For Engine 1;

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(e) For Engine 2;

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do these steps:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(b) Let the engine become stable at idle.

(c) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(d) Do this task: EEC BITE Procedure, 73-00 TASK 801.

1) If the maintenance message does not show, then you corrected the fault.

(3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

——— END OF TASK ———

802. N2 Signal is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-11181, 77-11182, 77-21181, 77-21182, 77-31181 and 77-31182.

(2) The maintenance messages 77-X118Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2).

(a) If X=1, then do the Fault Isolation Procedure for Channel A.

(b) If X=2, then do the Fault Isolation Procedure for Channel B.

(c) If X=1 and 2 (two messages), or X=3, do the Fault Isolation Procedure for channel A and B.

(3) The N2 signal is out of the valid range.

B. Possible Causes

(1) N2 speed sensor, T422

(2) EEC, M1818

(3) J5 (Ch A) or J6 (Ch B) wire harness.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(2) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 302)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-21)

(4) (WDM 73-22-11)

(5) (WDM 77-12-21)

E. Initial Evaluation

(1) Do these steps to find out if the fault is still active:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(c) Do this task: EEC BITE Procedure, 73-00 TASK 801.

1) Look for the maintenance message in Flight Leg 0.

(d) If maintenance messages, 77-11181 (Ch A, Eng 1), 77-11182, (Ch A, Eng 2) 77-21181 (Ch B, Eng 1), 77-21182 (Ch B, Eng 2), 77-31181 (Ch A and Ch B, Eng 1) or 77-31182 (Ch A and Ch B, Eng 2) show, then do the Fault Isolation Procedure for the applicable channel or channels.

(e) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

c) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

(1) Do these steps to prepare for the procedure:

(a) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(b) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	4	C00459	ENGINE 2 IGNITION RIGHT

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(c) Do this task: Open the Fan Cowl Panels, AMM TASK 71-11-02-010-801-F00.

(2) Examine the electrical connector, DP0503 (Ch A) or DP0603 (Ch B), at the N2 sensor:

(a) See if the electrical connector, DP0503 (Ch A) or DP0603 (Ch B), is correctly connected to the N2 sensor, and continue.

(b) Disconnect the electrical connectors, DP0503 (Ch A) or DP0603 (Ch B), from the N2 sensor.

(c) Visually examine the N2 sensor receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the N2 sensor receptacle is damaged, then replace the N2 sensor, T422.

These are the tasks:

N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00,

N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B).

These are the tasks:

Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00,

Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem or the fault continues, then continue.

(3) Measure the resistance between these pins at the applicable N2 sensor receptacle, CH A or CH B:

RECEPTACLE CH A CH B	CONNECTOR	STUDS	RESISTANCE
	PIN 1	PIN 2	45 TO 75 OHMS
	PIN 1	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN 2	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified range, then replace the N2 sensor, T422.

These are the tasks:

N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00,

N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00.

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

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(b) If the resistance is in the specified range, then continue.

(4) Connect the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), to the N2 sensor and continue.

(5) Examine the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), at the EEC:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

(a) See if the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), is correctly connected to the EEC, and continue.

(b) Disconnect the electrical connector, DP0505 (Ch A) or DP0606 (Ch B), from the EEC.

(c) Visually examine the EEC receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the EEC receptacle is damaged, then replace the EEC, M1818.

These are the tasks:

EEC Removal, AMM TASK 73-21-60-000-801-F00,

EEC Installation, AMM TASK 73-21-60-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the harness connector is damaged, then replace the wire harness, J5 (Ch A) or J6 (Ch B).

These are the tasks:

Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00,

Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(6) Measure the resistance between these pins to examine the wires between the EEC connectors, DP0505 (Ch A) or DP0606 (Ch B), on the wire harnesses and the N2 sensor:

NOTE: The electrical connector, DP0505 (Ch A), is on the J5 wire harness. The electrical connector, DP0606 (Ch B), is on the J6 wire harness.

CONNECTOR DP0505 DP0606	CONNECTOR	STUDS	RESISTANCE
	PIN e	PIN d	45 TO 75 OHMS
	PIN e	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN d	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is in the specified range and the fault was found by the Initial Evaluation, then replace the EEC, M1818.

These are the tasks:

EEC Removal, AMM TASK 73-21-60-000-801-F00,

EEC Installation, AMM TASK 73-21-60-400-801-F00.

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

(b) If the resistance is not in the specified range, then replace the wire harness, J5 (Ch A) or J6 (Ch B).

These are the tasks:

Fan Wiring Harness Removal, AMM TASK 73-21-06-000-801-F00,

Fan Wiring Harness Installation, AMM TASK 73-21-06-400-801-F00.

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

G. Repair Confirmation

(1) Prepare for the procedure:

(a) Make sure that the electrical connectors, DP0503 (Ch A) and DP0603 (Ch B), are correctly connected at the N2 sensor.

(b) Make sure that the electrical connectors, DP0505 (Ch A) and DP0606 (Ch B), are correctly connected at the EEC.

(c) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(d) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do these steps:

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(b) Let the engine become stable at idle.

(c) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(d) Do this task: EEC BITE Procedure, 73-00 TASK 801.

1) If the maintenance message does not show, then you corrected the fault.

(3) Do this task: Close the Fan Cowl Panels, AMM TASK 71-11-02-410-801-F00.

——— END OF TASK ———

803. N2 Speed Sensor Signal Disagrees - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-11131, 77-11132, 77-21131, 77-21132, 77-31131 and 77-31132.

(2) For the maintenance message 77-X113Y; where X = EEC Channel (1=Channel A, 2=Channel B, 3=Dual Channel), and Y = Engine Position (1=Eng 1, 2=Eng 2), do the applicable Fault Isolation:

(a) If X=1, then do the Fault Isolation Procedure - Single Channel Fault.

(b) If X=2, then do the Fault Isolation Procedure - Single Channel Fault.

(c) If X=1 and 2 (two messages) or X=3, then do the Fault Isolation Procedure - Dual Channel Fault.

(3) The sensed physical N2 speed is less than 2892 RPM (20%) and the absolute value of the difference between the speed sensed by channel A and channel B is greater than 144 RPM; or, the sensed physical N2 speed is equal to or greater than 2892 RPM (20%) and the absolute value of the difference between the speed sensed by channel A and channel B is greater than 120 RPM.

B. Possible Causes

(1) For the Single Channel maintenance messages:

(a) EEC, M1818

(b) N2 speed sensor, T422.

(2) For the Dual Channel maintenance messages:

(a) N2 speed sensor, T422

(b) EEC, M1818.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(2) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-21)

(4) (WDM 73-22-11)

(5) (WDM 77-12-21)

E. Initial Evaluation

(1) Do these steps to find out if the fault is still active, if a dual channel message was set, and if another related maintenance message was set:

NOTE: This fault is normally reported by channel A and channel B. If the fault is reported by only a single channel, then an additional fault in the EEC is present.

(a) For RECENT FAULTS, do this task: EEC BITE Procedure, 73-00 TASK 801.

1) If maintenance message number 77-11181, 77-11182, 77-21181, 77-21182, 77-31181 or 77-31182 shows, then, do this task: N2 Signal is Out of Range - Fault Isolation, 77-11 TASK 802.

(b) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

(c) If maintenance message 77-11131 (Ch A, Eng 1), 77-11132 (Ch A, Eng 2), 77-21131 (Ch B, Eng 1) or 77-21132 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure - Single Channel Fault for the applicable channel.

(d) If maintenance message 77-31131 (Ch A and B, Eng 1) or 77-31132 (Ch A and B, Eng 2) shows, then do the Fault Isolation Procedure - Dual Channel Fault.

(e) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

b) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

c) If you find no problems, then replace components as listed in the Possible Causes list above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure - Single Channel Fault

(1) To identify if the "N2 signal is out of range" fault or a dual channel fault is set, you must do the Initial Evaluation above.

(2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) Look for INTERNAL EEC FAULTs on the CDU.

(b) Do the Fault Isolation Procedure for the INTERNAL EEC FAULT that you found first.

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

2) If the dual channel fault shows or the problem continues, then do the Fault Isolation Procedure - Dual Channel Fault.

(c) If an INTERNAL EEC FAULT did not show during the EEC test, then do the Fault Isolation Procedure - Dual Channel Fault.

G. Fault Isolation Procedure - Dual Channel Fault

(1) To identify if the "N2 signal is out of range" fault is set, you must do the Initial Evaluation above.

(2) Replace the N2 speed sensor, T422 (the most likely LRU from the Possible Causes list).

These are the tasks:

N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00,

N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00.

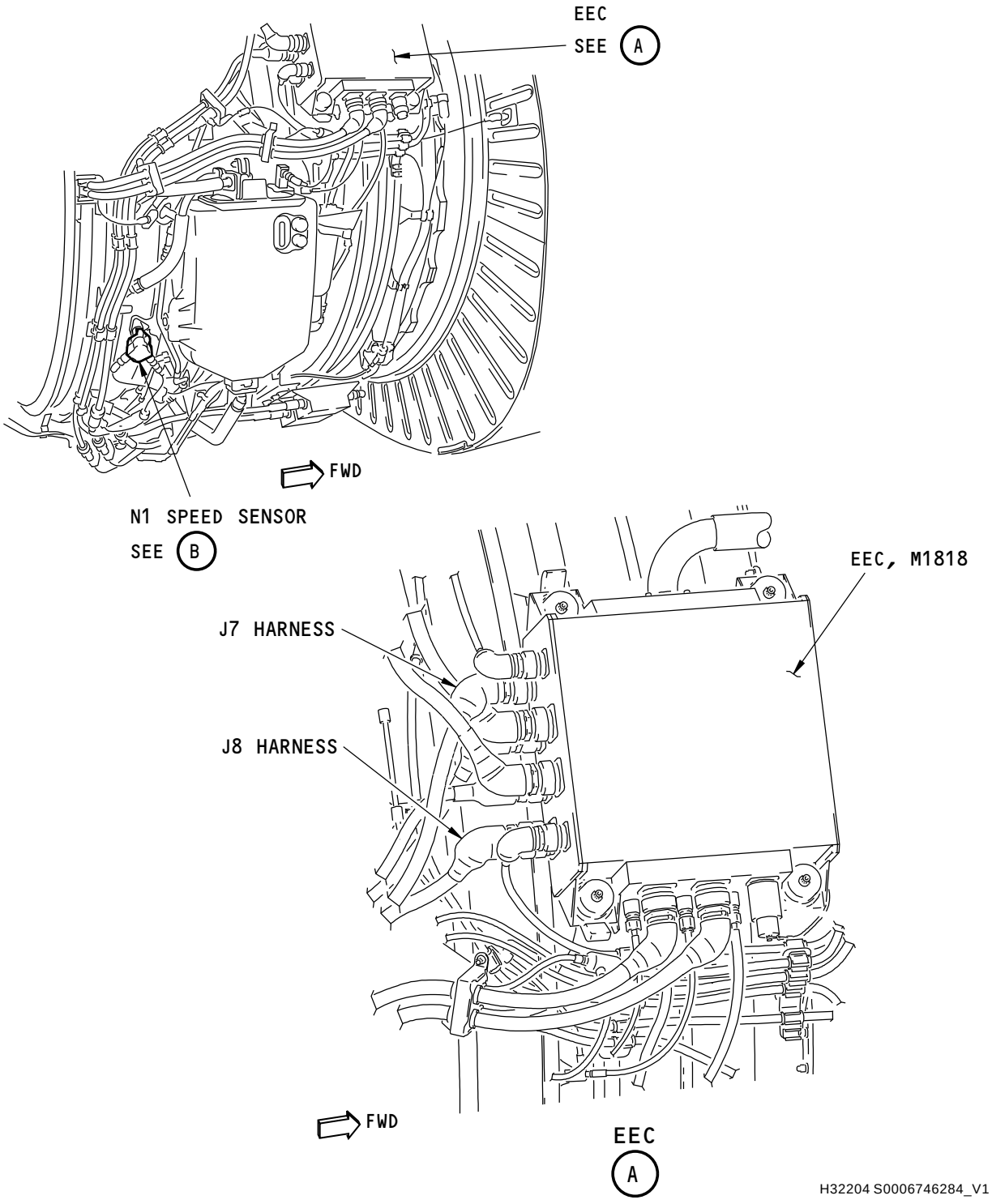
(a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

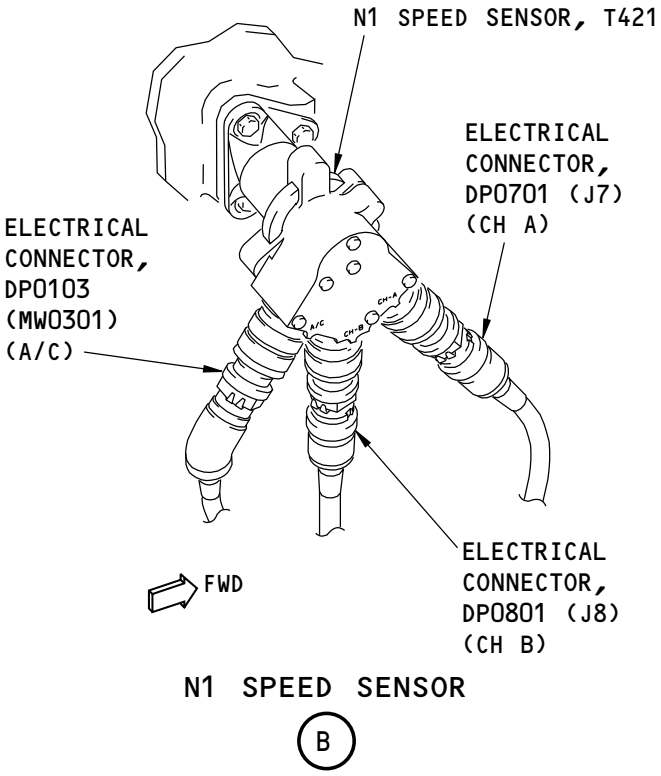
(1) Do this task: Test 12 - Actuators Test, AMM TASK 71-00-00-700-807-F00.

(a) If the maintenance message does not show, then you corrected the fault.

——— END OF TASK ———



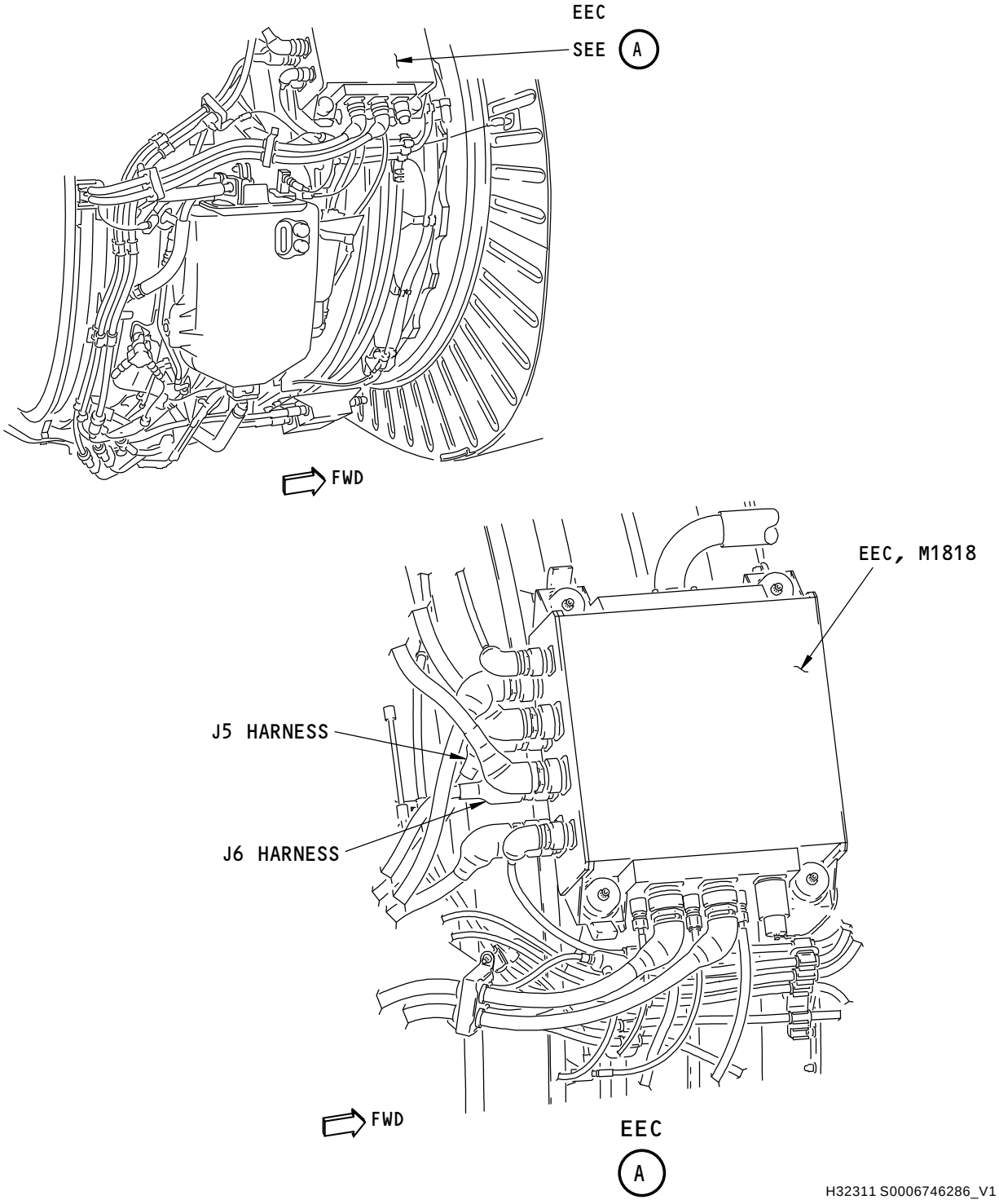
N1 Speed Sensor Component Location and Simplified Schematic
Figure 301/77-11-00-990-801-F00 (Sheet 1 of 2)



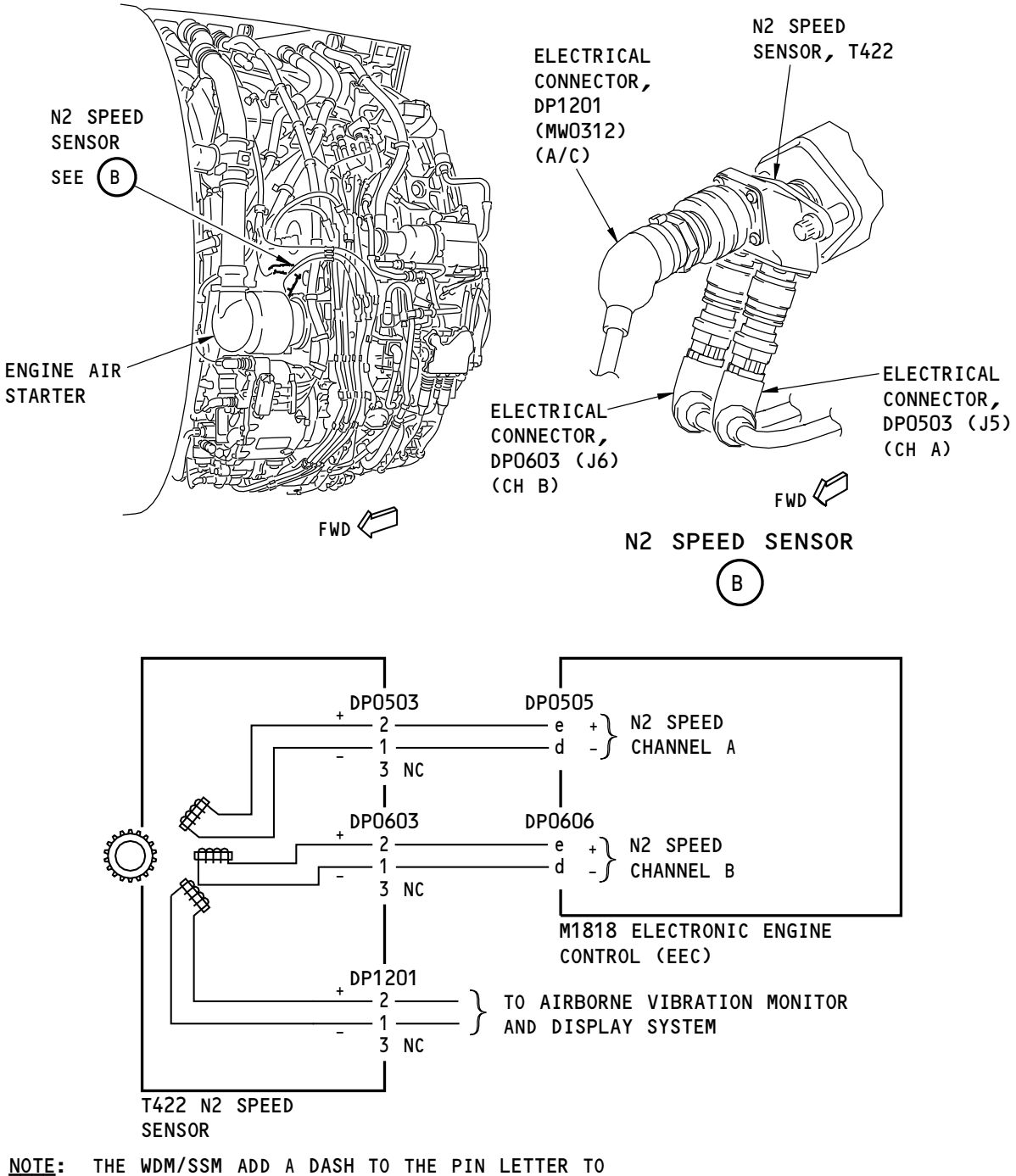
NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H32315 S0006746285_V1

N1 Speed Sensor Component Location and Simplified Schematic
Figure 301/77-11-00-990-801-F00 (Sheet 2 of 2)



N2 Speed Sensor Component Location and Simplified Schematic
Figure 302/77-11-00-990-802-F00 (Sheet 1 of 2)



NOTE: THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

H32464 S0006746287_V1

N2 Speed Sensor Component Location and Simplified Schematic
Figure 302/77-11-00-990-802-F00 (Sheet 2 of 2)

801. The Top Right EGT Signal (T495S1) Is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-10841 and 77-10842.

(2) For the maintenance message 77-1084Y; where Y = Engine Position (1=Eng 1, 2=Eng 2).

(3) This fault is reported only on channel A.

(4) This fault is reported when one of these conditions occur:

(a) The EEC senses an out of range T49.5 probe (Ch A) (Sector 1).

(b) The EEC senses that the T49.5 probe (Ch A) (Sector 1) signal shifted more than 200 degrees C from the average of the four T49.5 signals.

B. Possible Causes

(1) Bad electrical contact at connections or loose connections

(2) Top right (view in the forward direction) T49.5 probe, T521

(3) EEC, M1818

(4) J9 or CJ9 wire harness.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(2) For Engine 2:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 301)

(3) (SSM 77-21-11)

(4) (WDM 73-22-11)

(5) (WDM 77-21-11)

E. Initial Evaluation

(1) Do a check of the recent faults for maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 on the same engine as the maintenance message 77-10841 or 77-10842:

(a) If maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 shows, then do the Fault Isolation Procedure for this fault first.

NOTE: This is an internal fault of the EEC thermal cold junction (TCJ) signal which will cause this fault to be set even though the T49.5 sensor and wiring may be good.

(b) If maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 does not show on the CDU, then continue.

(2) Do the Input Monitoring of the T49.5 system (without engine operation):

NOTE: This check is recommended if the fault message 77-10841 or 77-10842 is an erratic fault, not active during the maintenance checks.

(a) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make a record of each T495 sector indication.

NOTE: Engine thermal condition can significantly impact the internal temperature distribution of the EGT sectors. The top sectors (T495S1 & T495S4) could be significantly higher than the bottom sectors (T495S2 & T495S3) unless elapsed time since last shutdown is four hours or more.

b) Compare T495S1 to T495S4.

<1> The difference between the two sectors should be less than 25 degrees C.

c) Compare T495S2 to T495S3.

<1> The difference between the two sectors should be less than 25 degrees C.

6) If a T49.5 parameter is within the limits above, then continue with the Initial Evaluation.

7) If a T49.5 parameter is not in the limits, then do these steps:

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

a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

b) For Engine 1:

<1> Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

c) For Engine 2:

<1> Open these circuit breakers and install safety tags:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

d) Disconnect all EGT harness connectors with the incorrect indication Figure 301.

e) Examine and clean the connectors, do this task, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00

f) Re-install all connectors.

g) For Engine 1:

<1> 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

h) For Engine 2:

<1> Remove the safety tags and close these circuit breakers:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

i) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

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

<1> Monitor the airplane on the subsequent flight.

(3) Do these steps to find out if the message is still active:

(a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(b) If maintenance message 77-10841 (Ch A, Eng 1) or 77-10842 (Ch A, Eng 2) shows, then do the Fault Isolation Procedure.

(c) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Experience shows that most erratic EGT fault messages can be caused by a bad electrical connection. The frequent solution is to disconnect the harness, internally clean the connectors and install the connectors. A loose connector or bent pins can also set the erratic fault.

<1> Do the input monitoring check of the EGT system (without engine operation).

b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

d) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

NOTE: The top right T49.5 probe is connected to the EEC channel A through the CJ9 and J9 harnesses.

(1) Do the Initial Evaluation to see if a related internal EEC fault was set.

(a) Do the input monitoring check of the EGT system (without engine operation) for erratic EGT faults.

(2) Do the Input Monitoring of the T49.5 system (with engine operation):

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make sure that the four T49.5 parameters are available.

NOTE: If an indication is not available, then the field will show question marks (?).

b) Make sure that the four T49.5 parameters are not out of range.

NOTE: If an indication is out of range, then the field will show dashes (-).

c) Make sure that the four T49.5 parameters do not fluctuate.

d) Make sure that the difference between the four T49.5 parameters is not more than 50 degrees C.

6) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

7) If a T49.5 parameter is out of range, do the EGT system inspection at the DP0909 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00):

a) Disconnect the J9 harness from the EEC

b) Do the J wiring harness + CJ wiring harness + T49.5 probe resistance check at the DP0909 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the EEC and J9 harness connectors, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

8) If a T49.5 parameter drift is more than 200 degrees C the calculated four (4) average indications, do the EGT system inspection at the CJ9 DP0911 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00)

a) Disconnect the J9 harness from the CJ9 harness

b) Do the CJ wiring harness + T49.5 probe resistance check at the CJ9 DP0911 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the CJ9 harness and J9 harness connectors and the CJ9 harness and T49.5 probe connectors Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

G. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connector, DP0912 (Ch A), is correctly connected to the T49.5 probe.

(b) Make sure that the electrical connectors, DP0911 and DP0901, are correctly connected to the junction box.

(c) Make sure that the electrical connector, DP0909 (Ch A), is correctly connected to the EEC.

(d) For Engine 2:

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

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the maintenance message does not show, you corrected the problem.

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

(3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

——— END OF TASK ———

802. The Bottom Right EGT Signal (T495S2) Is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-10851 and 77-10852.

(2) For the maintenance message 77-1085Y; where Y = Engine Position (1=Eng 1, 2=Eng 2).

(3) This fault is reported only on channel A.

(4) This fault is reported when one of these conditions occur:

(a) The EEC senses an out of range T49.5 probe (Ch A) (Sector 2).

(b) The EEC senses that the T49.5 probe (Ch A) (Sector 2) signal shifted more than 200 degrees C from the average of the four T49.5 signals.

B. Possible Causes

(1) Bad electrical contact at connections or loose connections

(2) Bottom right (view in the forward direction) T49.5 probe, T522

(3) EEC, M1818

(4) J9 or CJ9 wire harness.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(2) For Engine 2:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 301)

(3) (SSM 77-21-11)

(4) (WDM 73-22-11)

(5) (WDM 77-21-11)

E. Initial Evaluation

(1) Do a check of the recent faults for maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 on the same engine as maintenance message 77-10851 or 77-10852 (73-00 TASK 801):

(a) If maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 shows, then do the Fault Isolation Procedure for this fault first.

NOTE: This is an internal fault of the EEC thermal cold junction (TCJ) signal which will cause this fault to be set even though the T49.5 sensor and wiring may be good.

(b) If maintenance message 73-10121, 73-10122, 73-30121 or 73-30122 does not show on the CDU, then continue.

(2) Do the Input Monitoring of the T49.5 system (without engine operation):

NOTE: This check is recommended if the fault message 77-10841 or 77-10842 is an erratic fault, not active during the maintenance checks.

(a) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):
   a) MAINT
   b) ENGINE
   c) Applicable ENGINE X (X=1 or 2)
   d) INPUT MONITORING
   e) CONTINUE
   f) CONTROL TEMPERATURES
4) Push the NEXT PAGE key on the FMCS CDU.
   a) Push the T49.5 LSK.
5) Examine the T49.5 Input Monitoring screen (Figure 302).

   NOTE: The EEC channel that is in control will show first.
   a) Make a record of each T495 sector indication.

      NOTE: Engine thermal condition can significantly impact the internal temperature distribution of the EGT sectors. The top sectors (T495S1 & T495S4) could be significantly higher than the bottom sectors (T495S2 & T495S3) unless elapsed time since last shutdown is four hours or more.
   b) Compare T495S1 to T495S4.
      <1> The difference between the two sectors should be less than 25 degrees C.
   c) Compare T495S2 to T495S3.
      <1> The difference between the two sectors should be less than 25 degrees C.
6) If a T49.5 parameter is within the limits above, then continue with the Initial Evaluation.
7) If a T49.5 parameter is not in the limits above, then do these steps:

   WARNING: OBEY THE INSTRUCTIONS IN THIS PROCEDURE WHEN YOU OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT CAN OCCUR.
   a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.
   b) For Engine 1:
      <1> Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

   c) For Engine 2:

<1> Open these circuit breakers and install safety tags:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

d) Disconnect all EGT harness connectors with the incorrect indication Figure 301.

e) Examine and clean the connectors, do this task, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00

f) Re-install all connectors.

g) For Engine 1:

<1> 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

h) For Engine 2:

<1> Remove the safety tags and close these circuit breakers:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

i) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

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

<1> Monitor the airplane on the subsequent flight.

(3) Do these steps to find out if the fault is still active:

(a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(b) If maintenance message 77-10851 (Ch A, Eng 1) or 77-10852 (Ch A, Eng 2) shows, then do the Fault Isolation Procedure.

(c) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Experience shows that most erratic EGT fault messages can be caused by a bad electrical connection. The frequent solution is to disconnect the harness, internally clean the connectors and install the connectors. A loose connector or bent pins can also set the erratic fault.

<1> Do the input monitoring check of the EGT system (without engine operation).

b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

d) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

NOTE: The bottom right T49.5 probe is connected to the EEC channel A through the CJ9 and J9 harnesses.

(1) Do the Initial Evaluation to see if a related internal EEC fault was set.

(a) Do the input monitoring check of the EGT system (without engine operation) for erratic EGT faults.

(2) Do the Input Monitoring of the T49.5 system (with engine operation):

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make sure that the four T49.5 parameters are available.

NOTE: If an indication is not available, then the field will show question marks (?).

b) Make sure that the four T49.5 parameters are not out of range.

NOTE: If an indication is out of range, then the field will show dashes (-).

c) Make sure that the four T49.5 parameters do not fluctuate.

d) Make sure that the difference between the four T49.5 parameters is not more than 50 degrees C.

6) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

7) If a T49.5 parameter is out of range, do the EGT system inspection at the DP0909 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00):

a) Disconnect the J9 harness from the EEC

b) Do the J wiring harness + CJ wiring harness + T49.5 probe resistance check at the DP0909 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the EEC and J9 harness connectors, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

8) If a T49.5 parameter drift is more than 200 degrees C the calculated four (4) average indications, do the EGT system inspection at the CJ9 DP0911 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00)

a) Disconnect the J9 harness from the CJ9 harness

b) Do the CJ wiring harness + T49.5 probe resistance check at the CJ9 DP0911 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the CJ9 harness and J9 harness connectors and the CJ9 harness and T49.5 probe connectors Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

G. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connector, DP0913 (Ch A), is correctly connected to the T49.5 probe.

(b) Make sure that the electrical connectors, DP0911 and DP0901, are correctly connected to the junction box.

(c) Make sure that the electrical connector, DP0909 (Ch A), is correctly connected to the EEC.

(2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the maintenance message does not show, then you corrected the fault.

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

(3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

——— END OF TASK ———

803. The Bottom Left EGT Signal (T495S3) Is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-20861 and 77-20862.

(2) For the maintenance message 77-2086Y; where Y = Engine Position (1=Eng 1, 2=Eng 2).

(3) This fault is reported only on channel B.

(4) This fault is reported when one of these conditions occur:

(a) The EEC senses an out of range T49.5 probe (Ch B) (Sector 3).

(b) The EEC senses that the T49.5 probe (Ch B) (Sector 3) signal shifted more than 200 degrees C from the average of the four T49.5 signals.

B. Possible Causes

(1) Bad electrical contact at connections or loose connections

(2) Bottom left (view in the forward direction) T49.5 probe, T523

(3) EEC, M1818

(4) J10 or CJ10 wire harness.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(2) For Engine 2:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 301)

(3) (SSM 77-21-11)

(4) (WDM 73-22-11)

(5) (WDM 77-21-11)

E. Initial Evaluation

(1) Do a check of the recent faults for maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 on the same engine as maintenance message 77-20861 or 77-20862:

(a) If maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 shows, then do the Fault Isolation Procedure for this fault first.

NOTE: This is an internal fault of the EEC thermal cold junction (TCJ) signal which will cause this fault to be set even though the T49.5 sensor and wiring may be good.

(b) If maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 does not show on the CDU, then continue.

(2) Do the Input Monitoring of the T49.5 system (without engine operation):

NOTE: This check is recommended if the fault message 77-10841 or 77-10842 is an erratic fault, not active during the maintenance checks.

(a) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make a record of each T495 sector indication.

NOTE: Engine thermal condition can significantly impact the internal temperature distribution of the EGT sectors. The top sectors (T495S1 & T495S4) could be significantly higher than the bottom sectors (T495S2 & T495S3) unless elapsed time since last shutdown is four hours or more.

b) Make sure that the four T49.5 parameters are not out of range.

c) Compare T495S1 to T495S4.

<1> The difference between the two sectors should be less than 25 degrees C.

d) Compare T495S2 to T495S3.

<1> The difference between the two sectors should be less than 25 degrees C.

6) If a T49.5 parameter is within the limits above, then continue with the Initial Evaluation.

7) If a T49.5 parameter is not in the limits above, then do these steps.

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

a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

b) For Engine 1:

<1> Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

c) For Engine 2:

<1> Open these circuit breakers and install safety tags:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

d) Disconnect all EGT harness connectors with the incorrect indication Figure 301.

e) Examine and clean the connectors, do this task, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00

f) Re-install all connectors.

g) For Engine 1:

<1> 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

h) For Engine 2:

<1> Remove the safety tags and close these circuit breakers:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

i) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

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

<1> Monitor the airplane on the subsequent flight.

(3) Do these steps to find out if the fault is still active:

(a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(b) If maintenance message 77-20861 (Ch B, Eng 1) or 77-20862 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure.

(c) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Experience shows that most erratic EGT fault messages can be caused by a bad electrical connection. The frequent solution is to disconnect the harness, internally clean the connectors and install the connectors. A loose connector or bent pins can also set the erratic fault.

<1> Do the input monitoring check of the EGT system (without engine operation).

b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

d) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

NOTE: The bottom left T49.5 probe is connected to the EEC channel B through the CJ10 and J10 harnesses.

(1) Do the Initial Evaluation to see if a related internal EEC fault was set.

(a) Do the input monitoring check of the EGT system (without engine operation) for erratic EGT faults.

(2) Do the Input Monitoring of the T49.5 system (with engine operation):

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make sure that the four T49.5 parameters are available.

NOTE: If an indication is not available, then the field will show question marks (?).

b) Make sure that the four T49.5 parameters are not out of range.

NOTE: If an indication is out of range, then the field will show dashes (-).

c) Make sure that the four T49.5 parameters do not fluctuate.

d) Make sure that the difference between the four T49.5 parameters is not more than 50 degrees C.

6) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

7) If a T49.5 parameter is out of range, do the EGT system inspection at the DP1010 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00):

a) Disconnect the J10 harness from the EEC

b) Do the J wiring harness + CJ wiring harness + T49.5 probe resistance check at the DP1010 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the EEC and J10 harness connectors, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

8) If a T49.5 parameter drift is more than 200 degrees C the calculated four (4) average indications, do the EGT system inspection at the CJ10 DP1011 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00)

a) Disconnect the J10 harness from the CJ10 harness

b) Do the CJ wiring harness + T49.5 probe resistance check at the CJ10 DP1011 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the CJ10 harness and J10 harness connectors and the CJ10 harness and T49.5 probe connectors Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

G. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connector, DP1012 (Ch B), is correctly connected to the T49.5 probe.

(b) Make sure that the electrical connectors, DP1011 and DP1001, are correctly connected to the junction box.

(2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the maintenance message does not show, then you corrected the fault.

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

(3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

——— END OF TASK ———

804. The Top Left EGT Signal (T495S4) Is Out of Range - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) 77-20871 and 77-20872.

(2) For the maintenance message 77-2087Y; where Y = Engine Position (1=Eng 1, 2=Eng 2).

(3) This fault is reported only on channel B.

(4) This fault is reported when one of these conditions occur:

(a) The EEC senses an out of range T49.5 probe (Ch B) (Sector 4).

(b) The EEC senses that the T49.5 probe (Ch B) (Sector 4) signal shifted more than 200 degrees C from the average of the four T49.5 signals.

B. Possible Causes

(1) Bad electrical contact at connections or loose connections

(2) Top left (view in the forward direction) T49.5 probe, T524

(3) EEC, M1818

(4) J10 or CJ10 wire harness.

C. Circuit Breakers

(1) For Engine 1:

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

(2) For Engine 2:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 301)

(3) (SSM 77-21-11)

(4) (WDM 73-22-11)

(5) (WDM 77-21-11)

E. Initial Evaluation

(1) Do a check of the recent faults for maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 on the same engine as maintenance message 77-20871 or 77-20872:

(a) If maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 shows, then do the Fault Isolation Procedure for this fault first.

NOTE: This is an internal fault of the EEC thermal cold junction (TCJ) signal which will cause this fault to be set even though the T49.5 sensor and wiring may be good.

(b) If maintenance message 73-20121, 73-20122, 73-30121 or 73-30122 does not show on the CDU, then continue.

(2) Do the Input Monitoring of the T49.5 system (without engine operation):

NOTE: This check is recommended if the fault message 77-10841 or 77-10842 is an erratic fault, not active during the maintenance checks.

(a) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make a record of each T495 sector indication.

NOTE: Engine thermal condition can significantly impact the internal temperature distribution of the EGT sectors. The top sectors (T495S1 & T495S4) could be significantly higher than the bottom sectors (T495S2 & T495S3) unless elapsed time since last shutdown is four hours or more.

b) Compare T495S1 to T495S4.

<1> The difference between the two sectors should be less than 25 degrees C.

c) Compare T495S2 to T495S3.

<1> The difference between the two sectors should be less than 25 degrees C.

6) If a T49.5 parameter is within the limits above, then continue with the Initial Evaluation.

7) If a T49.5 parameter is not in the limits above, then do these steps:

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

a) Do this task: Open the Thrust Reverser (Selection), AMM TASK 78-31-00-010-801-F00.

b) For Engine 1:

<1> Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

c) For Engine 2:

<1> Open these circuit breakers and install safety tags:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

d) Disconnect all EGT harness connectors with the incorrect indication Figure 301.

e) Examine and clean the connectors, do this task, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00

f) Re-install all connectors.

g) For Engine 1:

<1> 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A

h) For Engine 2:

<1> Remove the safety tags and close these circuit breakers:

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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

i) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

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

<1> Monitor the airplane on the subsequent flight.

(3) Do these steps to find out if the fault is still active:

(a) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(b) If maintenance message 77-20871 (Ch B, Eng 1) or 77-20872 (Ch B, Eng 2) shows, then do the Fault Isolation Procedure.

(c) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.

2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.

3) If you will try to correct the fault, it is recommended that you do these steps:

a) Experience shows that most erratic EGT fault messages can be caused by a bad electrical connection. The frequent solution is to disconnect the harness, internally clean the connectors and install the connectors. A loose connector or bent pins can also set the erratic fault.

<1> Do the input monitoring check of the EGT system (without engine operation).

b) Do the visual checks of the electrical connectors in the applicable fault isolation procedure below.

c) Use the WDM references to identify intermediate electrical connections in the wire harness and do a visual check.

d) If you find no problems, then replace components as listed in the Possible Causes List above.

4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

NOTE: The top left T49.5 probe is connected to the EEC channel B through the CJ10 and J10 harnesses.

(1) Do the Initial Evaluation to see if a related internal EEC fault was set.

(a) Do the input monitoring check of the EGT system (without engine operation) for erratic EGT faults.

(2) Do the Input Monitoring of the T49.5 system (with engine operation):

(a) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

1) Let the engine become stable at idle.

(b) Do these steps to get access to the T49.5 Input Monitoring screen:

1) Push the INIT REF key to show the PERF INIT screen on the FMCS CDU.

2) Push the INDEX key to show the INIT/REF INDEX screen.

3) Push these line select keys (LSK):

a) MAINT

b) ENGINE

c) Applicable ENGINE X (X=1 or 2)

d) INPUT MONITORING

e) CONTINUE

f) CONTROL TEMPERATURES

4) Push the NEXT PAGE key on the FMCS CDU.

a) Push the T49.5 LSK.

5) Examine the T49.5 Input Monitoring screen (Figure 302).

NOTE: The EEC channel that is in control will show first.

a) Make sure that the four T49.5 parameters are available.

NOTE: If an indication is not available, then the field will show question marks (?).

b) Make sure that the four T49.5 parameters are not out of range.

NOTE: If an indication is out of range, then the field will show dashes (-).

c) Make sure that the four T49.5 parameters do not fluctuate.

d) Make sure that the difference between the four T49.5 parameters is not more than 50 degrees C.

6) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

7) If a T49.5 parameter is out of range, do the EGT system inspection at the DP1010 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00):

a) Disconnect the J10 harness from the EEC

b) Do the J wiring harness + CJ wiring harness + T49.5 probe resistance check at the DP1010 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the EEC and J10 harness connectors, Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

8) If a T49.5 parameter drift is more than 200 degrees C the calculated four (4) average indications, do the EGT system inspection at the CJ10 DP1011 connector (T49.5 Probe and EGT System Inspection, AMM TASK 77-21-01-200-801-F00)

a) Disconnect the J10 harness from the CJ10 harness

b) Do the CJ wiring harness + T49.5 probe resistance check at the CJ10 DP1011 connector.

c) If the electrical resistance is out of limits, do the corrective action

d) If the electrical resistance is within limits, clean the CJ10 harness and J10 harness connectors and the CJ10 harness and T49.5 probe connectors Standard Engine Wiring and Equipment Check, AMM TASK 70-70-01-200-801-F00.

e) Do the Repair Confirmation at the end of the task.

G. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) Make sure that the electrical connector, DP1013 (Ch B), is correctly connected to the T49.5 probe.

(b) Make sure that the electrical connectors, DP1011 and DP1001, are correctly connected to the junction box.

(c) Make sure that the electrical connector, DP1010 (Ch B), is correctly connected to the EEC.

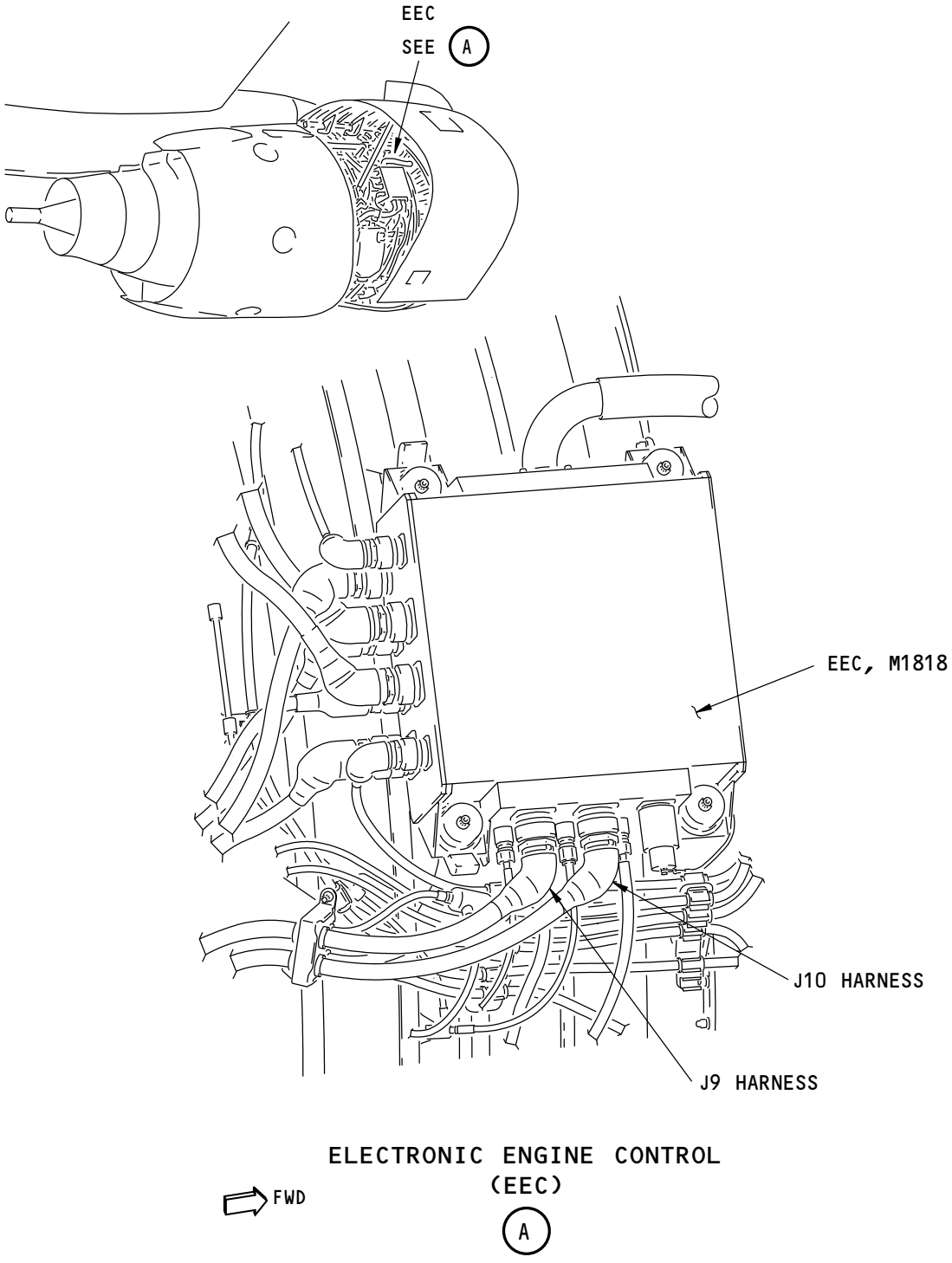
(2) Do this task: EEC TEST, AMM TASK 73-21-00-700-804-F00.

(a) If the maintenance message does not show, then you corrected the fault.

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

(3) Do this task: Close the Thrust Reverser (Selection), AMM TASK 78-31-00-010-804-F00.

——— END OF TASK ———



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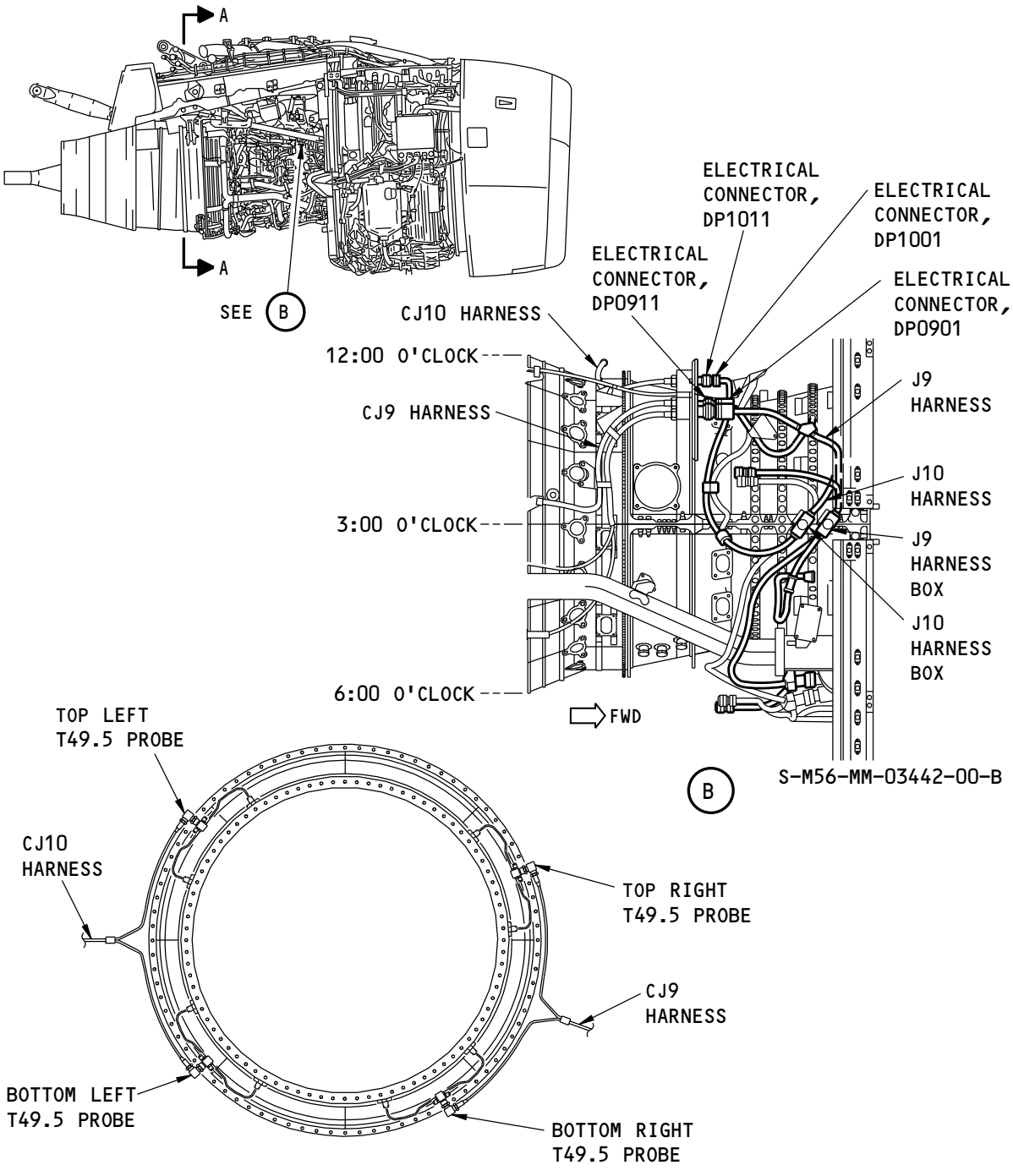
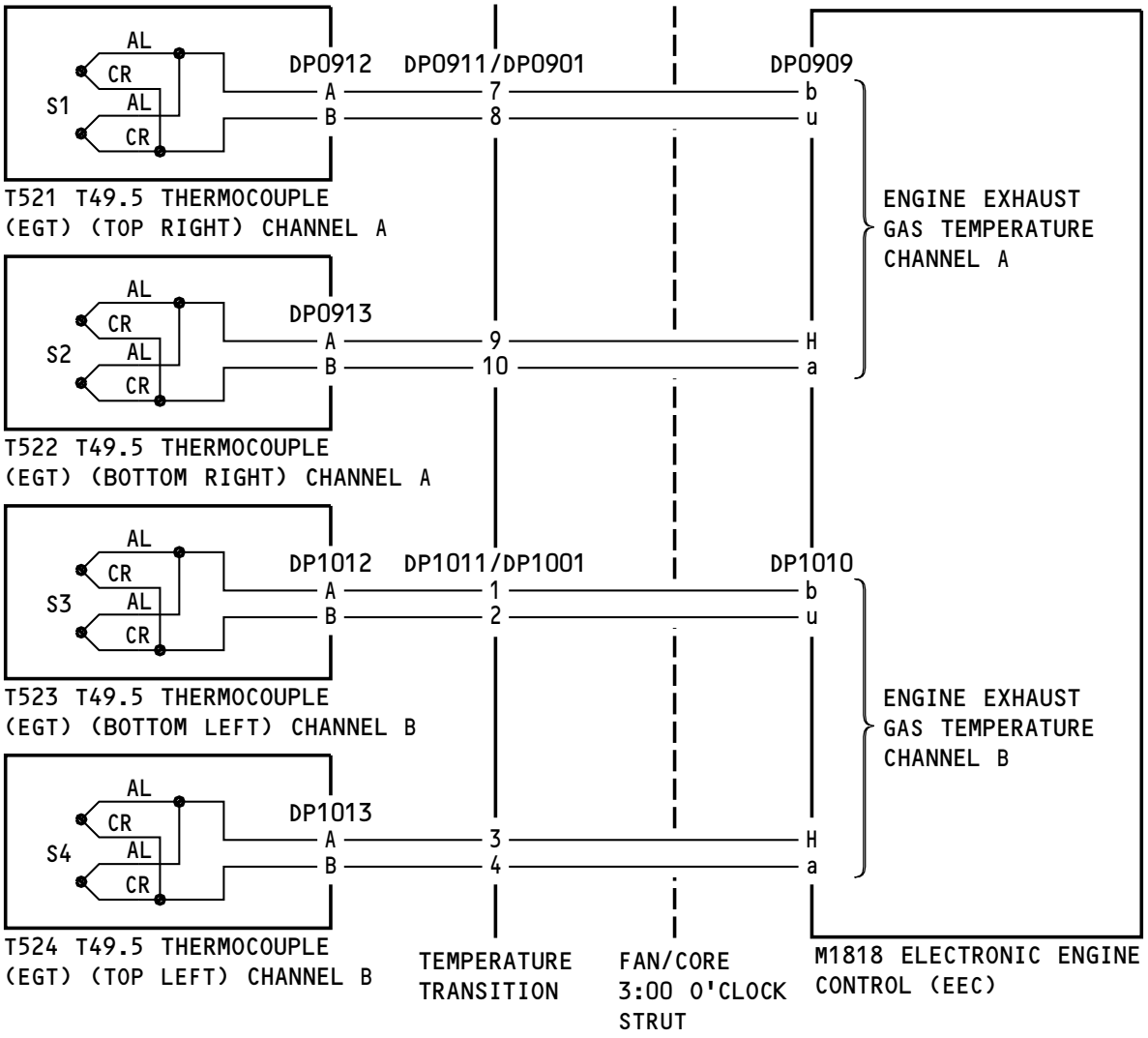
EGT System Component Location and Simplified Schematic
Figure 301/77-21-00-990-801-F00 (Sheet 1 of 3)



EGT System Component Location and Simplified Schematic
Figure 301/77-21-00-990-801-F00 (Sheet 2 of 3)



T49.5 PROBE SIMPLIFIED SCHEMATIC

1 THE WDM/SSM ADD A DASH TO THE PIN LETTER TO DENOTE A LOWER CASE PIN, SUCH AS A- = a.

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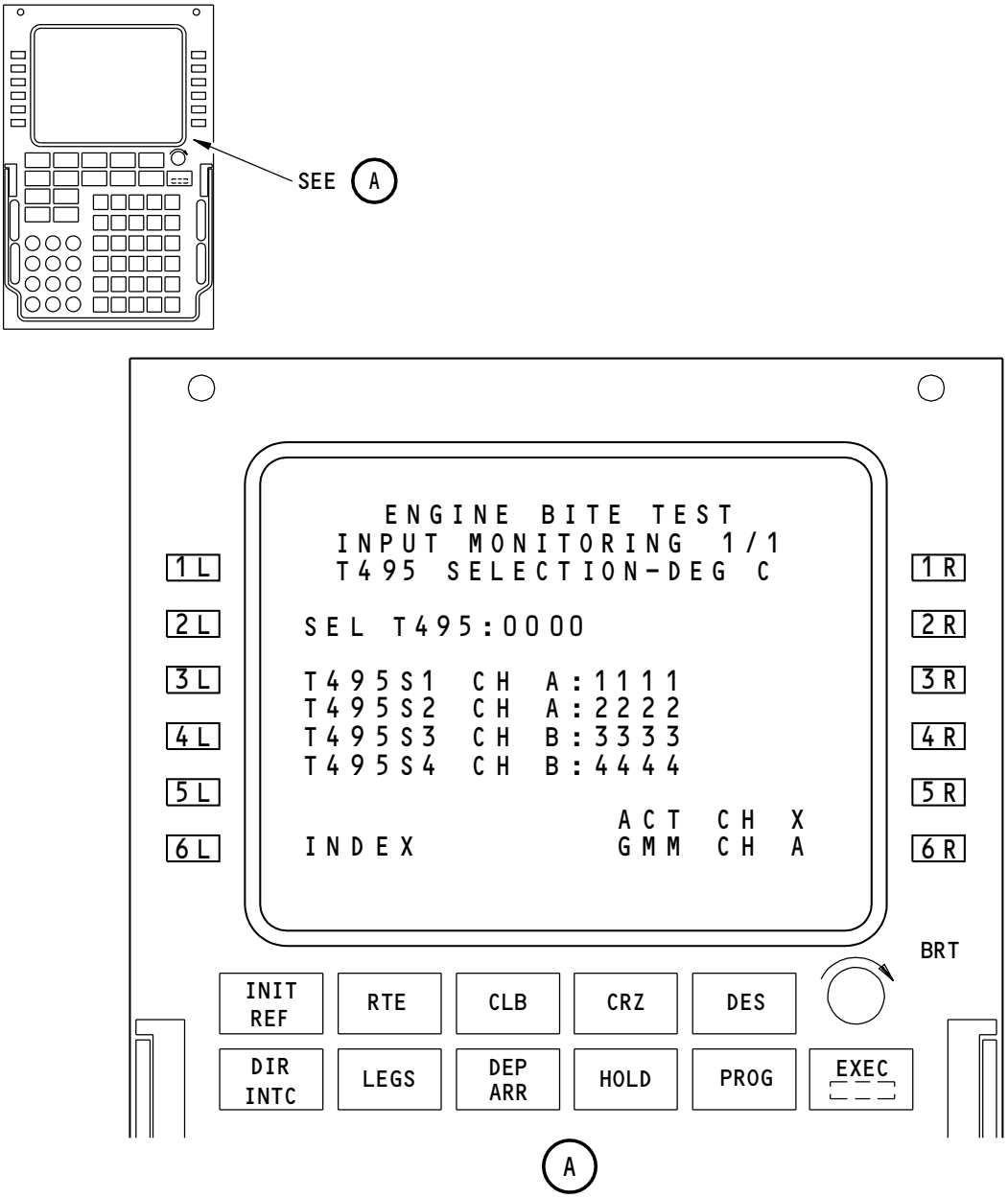
EGT System Component Location and Simplified Schematic
Figure 301/77-21-00-990-801-F00 (Sheet 3 of 3)



NOTE: 0000 IS THE WEIGHTED AVERAGE OF THE FOUR PROBES INPUTS THAT THE EEC OUTPUT TO THE AIRPLANE.
1111 IS THE OUTPUT SIGNAL FROM PROBE S1 (UPPER RIGHT, AFT LOOKING FORWARD)
2222 IS THE OUTPUT SIGNAL FROM PROBE S2 (LOWER RIGHT, AFT LOOKING FORWARD)
3333 IS THE OUTPUT SIGNAL FROM PROBE S3 (LOWER LEFT, AFT LOOKING FORWARD)
4444 IS THE OUTPUT SIGNAL FROM PROBE S4 (UPPER LEFT, AFT LOOKING FORWARD)

W37077 S0006746270_V1

T49.5 Input Monitoring
Figure 302/77-21-00-990-802-F00

801. AVM Signal Conditioner BITE Procedure

A. General

(1) This task contains the BITE test procedures for the applicable airborne vibration monitor (AVM) signal conditioner.

(2) The AVM signal conditioner shows the Built-In Test Equipment Maintenance Messages.

(3) The maintenance message will show on the display.

(4) This procedure uses the Built-In Test Equipment in the AVM signal conditioner.

(5) This procedure refers to the Built-In Test Equipment as the BITE.

B. BITE Procedure

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(2) If you want see the main menu items, do these steps to read the main menus on the front display of the AVM signal conditioner:

(a) Push and release one of the four buttons to show Self Test? on the front display of the AVM signal conditioner.

NOTE: If the display remains blank after one of the buttons are pushed, then replace the AVM.

(b) After Self Test?, push and release the NO button to show Fault History? on the front display of the AVM signal conditioner.

(c) After Fault History?, push and release the NO button to show Flight History? on the front display of the AVM signal conditioner.

(d) After Flight History?, push and release the NO button to show Balance? on the front display of the AVM signal conditioner.

(e) After Balance?, push and release the NO button to show Turn off Display? again on the front display of the AVM signal conditioner.

(f) After Turn off Display?, push and release the YES button to turn off the display.

(3) Do these steps to read the BITE maintenance messages:

(a) Push and release one of the four buttons to show Self Test? on the front display of the AVM signal conditioner.

NOTE: If the display remains blank after one of the buttons are pushed, then replace the AVM. The NO button is used to review all the main menus.

(b) Push and release the NO button to show Fault History? on the front display of the AVM signal conditioner.

NOTE: The BITE maintenance messages will not be erased unless the YES button is pushed while Clear Faults Memory? shows on the front of the AVM signal conditioner. The AVM signal conditioner can keep 32 BITE maintenance messages in the storage memory. The YES button is used to review each menu.

(c) After Fault History?, push and release the YES button to show XX Faults Display? on the front display of the AVM signal conditioner.

NOTE: The XX refers to the total number of faults in storage memory. If No Fault is displayed, there are no BITE maintenance messages to view. After No Fault, if the NO button is pushed, the front display will show Flight History?. If Flight History? is displayed, see the flight history steps below.

(d) After XX Faults Display?, push and release the YES button to show the most recent BITE maintenance message that was set.

NOTE: The UP or DOWN ARROW button can be used to review all the BITE maintenance messages. The most recent BITE maintenance message is displayed first, followed by the subsequent most recent BITE maintenance message.

1) Record the BITE maintenance message that you want.

(e) Push and release the DOWN ARROW button to show each of the remaining BITE maintenance messages.

1) Record each BITE maintenance message before you get the subsequent BITE maintenance message.

(f) If you do not want to continue, or if you want to keep the BITE maintenance messages, push and release the NO button to show Clear Faults Memory? on the front display of the AVM signal conditioner.

NOTE: After Clear Faults Memory?, push and release the NO button again to show the main menu.

(g) If you push and release the DOWN ARROW button after the last BITE maintenance message, the first BITE maintenance message will show on the front display of the AVM signal conditioner.

(h) Do one of the steps that follow to interrogate the AVM signal conditioner further:

1) If you want to see the BITE maintenance messages again after Flight History?, push and release the NO button four times.

2) If you want to see flight history after XX Faults Display?, push and release the NO button twice.

NOTE: Clear Faults Memory? and then, Flight History? will show on the front display of the AVM signal conditioner. If Flight History? is displayed, see the flight history steps below.

3) After Fault History?, push and release the NO button to show Flight History? on the front display of the AVM signal conditioner.

NOTE: If Flight History? is displayed, see the flight history steps below.

CAUTION: RECORD ALL OF THE BITE MAINTENANCE MESSAGES BEFORE YOU PUSH THE YES BUTTON AGAIN. YOU WILL ERASE ALL THE BITE MAINTENANCE MESSAGES WHEN YOU PUSH THE YES BUTTON WITH ERASE SYSTEM FAULTS? ON THE DISPLAY.

4) After XX Faults Display?, push and release the NO button to show Clear Faults Memory? on the front display of the AVM signal conditioner.

NOTE: After Clear Faults Memory?, if the NO button is pushed again the front display will show Flight History?. After Clear Faults Memory?, if the YES button is pushed the front display will show Faults Memory Cleared.

(i) If there are BITE maintenance messages, then refer to the table at the end of this task to find the fault isolation task for the applicable maintenance messages.

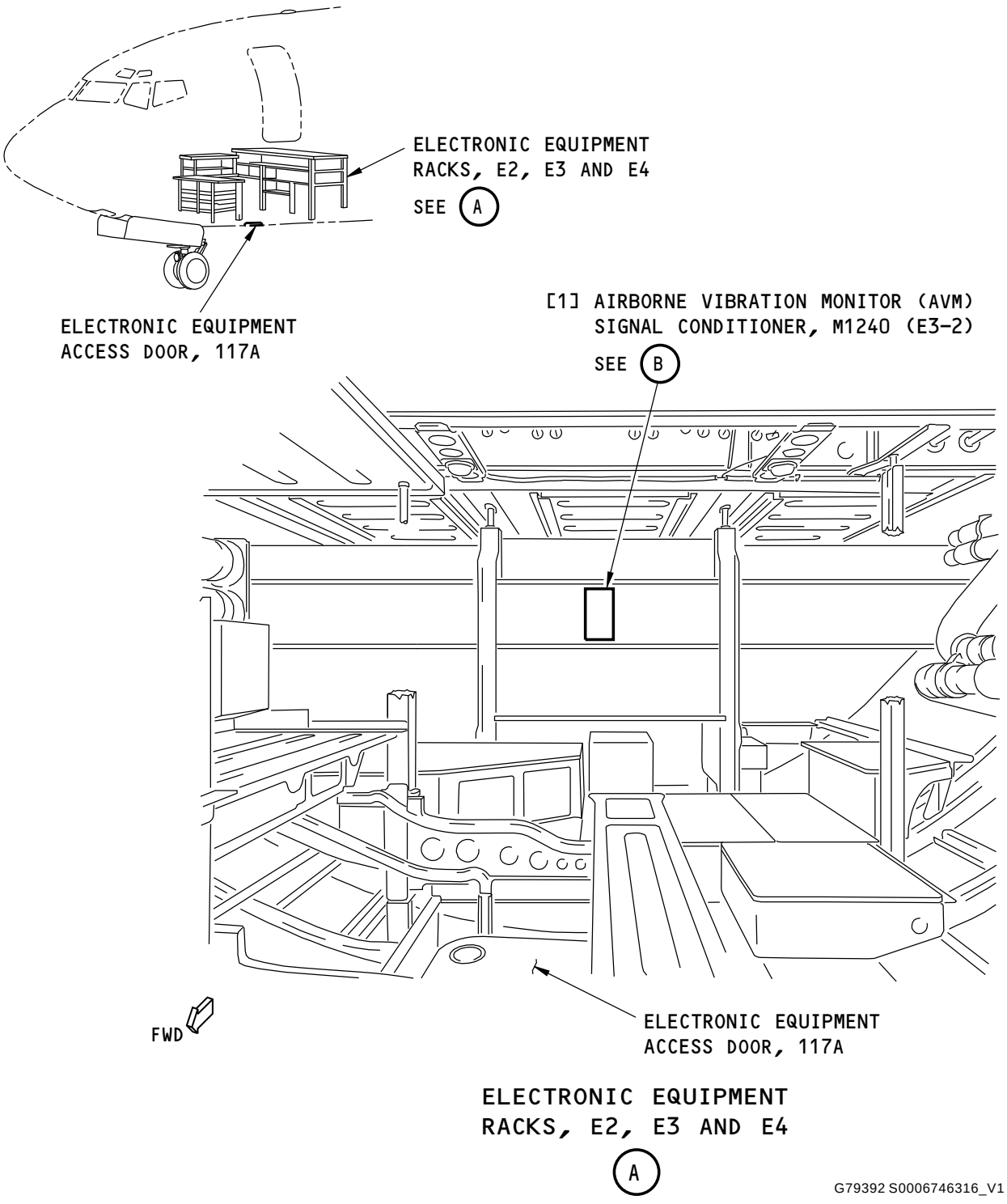
(4) Close this access panel:

Number	Name/Location
117A	Electronic Equipment Access Door

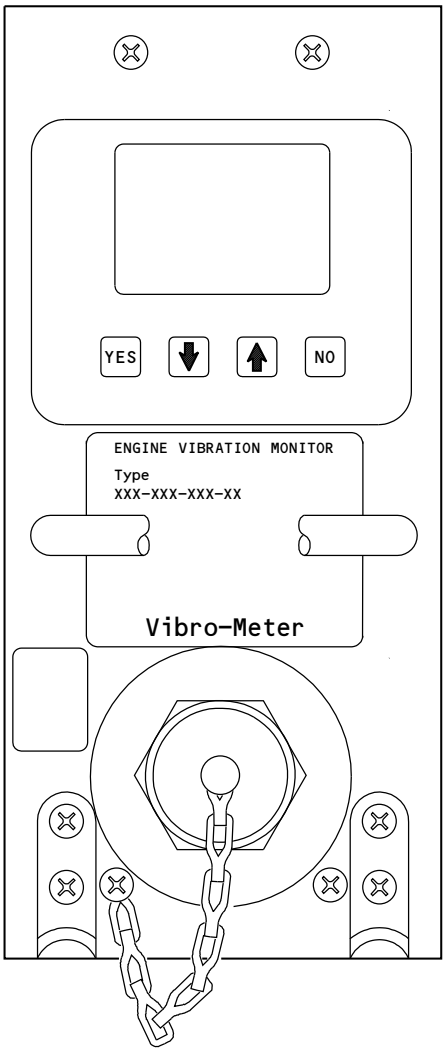
LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
AVM SIG COND	A9	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 00	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 01	77-31 TASK 807
AVM SIG COND	AVM Syst Fault 02	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 03	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 04	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 05	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 06	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 07	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 08	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 09	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 10	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 11	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 12	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 13	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 14	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 15	77-31 TASK 805
AVM SIG COND	AVM Syst Fault 17	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 18	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 19	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 20	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 21	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 22	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 23	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 24	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 25	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 26	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 27	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 28	77-31 TASK 805
AVM SIG COND	AVM Syst Fault 30	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 31	77-31 TASK 803

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
AVM SIG COND	AVM Syst Fault 32	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 33	77-31 TASK 806
AVM SIG COND	AVM Syst Fault 34	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 35	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 36	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 37	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 38	77-31 TASK 804
AVM SIG COND	AVM Syst Fault 39	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 40	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 41	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 42	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 43	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 44	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 45	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 46	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 48	77-31 TASK 803
AVM SIG COND	AVM Syst Fault 49	77-31 TASK 803
AVM SIG COND	B1	77-31 TASK 804
AVM SIG COND	B2	77-31 TASK 805
AVM SIG COND	B3	77-31 TASK 804
AVM SIG COND	B4	77-31 TASK 805
AVM SIG COND	E1N1TACH SEN/CABL FAULT-B1	77-31 TASK 804
AVM SIG COND	E1N2TACH SEN/CABL FAULT-B2	77-31 TASK 805
AVM SIG COND	E2N1TACH SEN/CABL FAULT-B3	77-31 TASK 804
AVM SIG COND	E2N2TACH SEN/CABL FAULT-B4	77-31 TASK 805
AVM SIG COND	N1 Tacho loss E1	77-31 TASK 804
AVM SIG COND	N1 Tacho loss E2	77-31 TASK 804
AVM SIG COND	N2 Tacho loss E1	77-31 TASK 805
AVM SIG COND	N2 Tacho loss E2	77-31 TASK 805
AVM SIG COND	NO BALANCE FUNCTION	77-31 TASK 803
AVM SIG COND	SELFTEST FAILED REPLACE	77-31 TASK 803

END OF TASK



Airborne Vibration Monitor (AVM) Signal Conditioner BITE Procedure
Figure 201/77-31-00-990-806-F00 (Sheet 1 of 3)

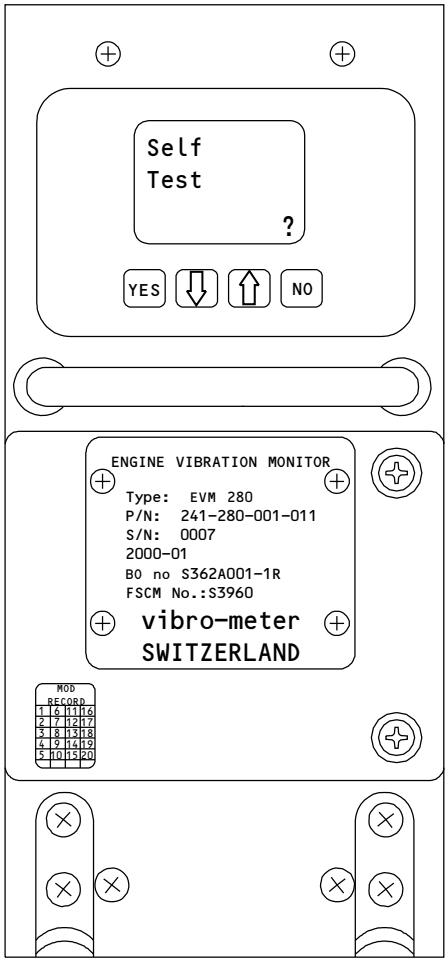


AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

G79468 S0006746320_V1

Airborne Vibration Monitor (AVM) Signal Conditioner BITE Procedure
Figure 201/77-31-00-990-806-F00 (Sheet 2 of 3)



AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

M49089 S0006746321_V1

Airborne Vibration Monitor (AVM) Signal Conditioner BITE Procedure
Figure 201/77-31-00-990-806-F00 (Sheet 3 of 3)

803. Internal AVM Fault - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) AVM Syst Fault 00, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48 and 49.

(b) This task is for these maintenance messages:

1) #4BRG Fault 0B, 1B, 2B, 3B, 4B, 5B, 6B, 7B, 8B, 9B, AB, 20, 50, 51, 52, 53.

2) 68K Fault 1, 2, 3.

3) DSPX Fault 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32.

(2) This task is for these maintenance messages:

(a) AVM Syst Fault 00, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 17, 18, 21, 22, 23, 24, 26, 30, 31, 34, 35, 36 and 37.

(3) The fault is caused by an internal airborne vibration monitor signal conditioner (AVM) problem. This fault is reported when the AVM has electrical power.

(a) The AEVM reports a problem for the #4 BRG, 68K or DSPX function.

B. Possible Causes

(1) AVM, M1240

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-12-21)

(5) (SSM 77-31-11)

(6) (WDM 77-12-11)

(7) (WDM 77-12-21)

(8) (WDM 77-31-11)

(9) (WDM 77-31-21)

E. Initial Evaluation

(1) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner - Self Test, AMM TASK 77-31-00-700-801-F00.

(a) If the maintenance message shows, then do the Fault Isolation Procedure below.

(b) If the maintenance message does not show on the FMCS CDU, then the Initial Evaluation has shown that the fault is not active at this time and you have an intermittent fault.

1) If you cannot find the fault at this time, then the Fault Isolation Procedure cannot isolate the fault.
2) For an intermittent fault you must use your judgment, your airline policies, and the Possible Causes list to make the decision if you will try to correct the fault.
3) If you will try to correct the fault, it is recommended that you do these steps:
   a) Do the visual checks of the electrical connectors in the system.
   b) If you find no problems, then replace components as listed in the Possible Causes list above.
4) Monitor the airplane on the subsequent flight.

F. Fault Isolation Procedure

(1) Replace the AVM, M1240.

These are the tasks:

Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00,

Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

G. Repair Confirmation

(1) If not already done, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner - Self Test, AMM TASK 77-31-00-700-801-F00.

(a) If the maintenance message does not show, then you corrected the fault.

——— END OF TASK ———

804. No N1 Speed Sensor Data - Fault Isolation

A. Description

(1) This task is for these maintenance messages:
   (a) AVM Syst Fault N1 Tacho loss E1
   (b) AVM Syst Fault N1 Tacho loss E2
   (c) For AVM Syst Fault 14, 15, 27, and 28, refer to this task (77-31 TASK 803).

(2) This task is for these maintenance messages:
   (a) AVM Syst Fault 14
   (b) AVM Syst Fault 27
   (c) AVM Syst Fault 25
   (d) AVM Syst Fault 38.

(3) The airborne vibration monitor signal conditioner (AVM) reports a fault for the N1 speed signal. This fault is reported when the AVM has electrical power.

B. Possible Causes

(1) N1 speed sensor, T421
(2) Engine vibration signal conditioner (AVM), M1240
(3) W5310 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-11)

(4) (SSM 77-31-11)

(5) (WDM 77-12-11)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure

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

(a) Do the corrective action for related N1 RPM INVALID maintenance messages that you find.

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

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

(b) If you do not find one of the messages, then continue.

(2) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(c) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(d) Get access to the E3-2 shelf in the EE bay.

(e) Remove the two display electronic units (DEU1 and DEU2). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.

(f) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(3) Measure the resistance between these pins to examine the wires between the AVM connector on the wire harness and the N1 sensor:

CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	CONNECTOR	STUDS	RESISTANCE
	PIN A8	PIN B8	45 TO 75 OHMS
	PIN A8	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN B8	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified limits, then repair the wiring between the AVM and the terminal block TB3102, studs, YA47 and YB47 (Engine 1), or YA69 and YB69 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) If the two DEUs are not installed, then, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(e) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(f) Record and erase all the BITE maintenance messages, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(3) Do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(a) If the maintenance message does not show, then you corrected the fault.

——— END OF TASK ———

805. No N2 Speed Sensor Data - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) AVM Syst Fault N2 Tacho loss E1

(b) AVM Syst Fault N2 Tacho loss E2

(c) For AVM Syst Fault 15 and 28, refer to this task (77-31 TASK 803).

(2) This task is for these maintenance messages:

(a) AVM Syst Fault 15

(b) AVM Syst Fault 28.

(3) The airborne vibration monitor signal conditioner (AVM) reports a fault for the N2 speed signal. This fault is reported when the AVM has electrical power.

B. Possible Causes

(1) N2 speed sensor, T422

(2) Engine vibration signal conditioner (AVM), M1240

(3) W5310 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-12-21)

(4) (SSM 77-31-11)

(5) (WDM 77-12-21)

(6) (WDM 77-31-11)

(7) (WDM 77-31-21)

E. Fault Isolation Procedure

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

(a) Do the corrective action for related N2 RPM INVALID maintenance messages that you find.

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

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

(b) If you do not find one of the messages, then continue.

(2) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(c) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(d) Get access to the E3-2 shelf in the EE bay.

(e) Remove the two display electronic units (DEU1 and DEU2). To remove them, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.

(f) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(3) Measure the resistance between these pins to examine the wires between the AVM connector on the wire harness and the N2 sensor:

CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	CONNECTOR	STUDS	RESISTANCE
	PIN C10	PIN D10	45 TO 75 OHMS
	PIN C10	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS
	PIN D10	CONNECTOR SHELL	GREATER THAN 20 MEGOHMS

(a) If the resistance is not in the specified limits, then repair the wiring between the AVM and the terminal block TB3102, studs, YA49 and YB49 (Engine 1), or YA71 and YB71 (Engine 2) (SWPM Ch 20).

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

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

(b) If the resistance is in the specified limits, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) If the two DEU's are not installed, then, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(d) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(e) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(f) Record and erase all the BITE maintenance messages, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(3) Do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(a) If the maintenance message does not show, then you corrected the fault.

——— END OF TASK ———

806. Vibration Sensor Signal Fault - Fault Isolation

A. Description

(1) This task is for these maintenance messages:

(a) AVM Syst Fault 19

(b) AVM Syst Fault 20

(c) AVM Syst Fault 32

(d) AVM Syst Fault 33.

(2) The airborne vibration monitor signal conditioner (AVM) reports a fault for the vibration sensor signal. This fault is reported when the AVM has electrical power.

B. Possible Causes

(1) Fan frame compressor case vibration sensor, T537

(2) No. 1 bearing vibration sensor, T532

(3) Engine vibration signal conditioner (AVM), M1240

(4) MW0311 wire harness

(5) MW0313 wire harness.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-31-11)

(4) (WDM 77-31-11)

(5) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) For Engine 1:

1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(c) For Engine 2:

1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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

(Continued)

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(d) Get access to the E3-2 shelf in the EE bay.

(2) Examine the electrical connector, D3228A (engine 1) or D3228B (engine 2), at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then replace the AVM, M1240.

These are the tasks:

Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00,

Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20)

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If you did not find a problem, then continue.

(3) Examine the electrical connector, DP1304, on the fan case aft of the oil tank, just above the engine nameplate:

(a) See if the electrical connector, DP1304, is correctly connected to the fan case disconnect, and continue.

(b) Disconnect the electrical connector, DP1304, from the fan case disconnect.

(c) Visually examine the fan case disconnect receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the fan case disconnect receptacle is damaged, then replace the No 1 bearing vibration sensor, T332. To replace the No 1 bearing vibration sensor, you must replace the engine.

These are the tasks:

Power Plant Removal, AMM TASK 71-00-02-000-801-F00,

Power Plant Installation, AMM TASK 71-00-02-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20).
   a) Do the Repair Confirmation at the end of this task.
   b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.
3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.
   a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(4) Do a continuity check between these pins of the wires between the AVM connector on the wire harness and the fan case disconnect:

CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	CONNECTOR D3228A (ENG 1) D3228B (ENG2)	CONNECTOR DP1304	CONTINUITY
	PIN A4	PIN 2	YES
	PIN B4	PIN 3	YES
	PIN A4	CONNECTOR SHELL	NO
	PIN B4	CONNECTOR SHELL	NO

(a) If the continuity is not correct, then do these steps:
   1) Repair the wiring between the AVM and the fan case disconnect (SWPM Ch 20).
   2) Do the Repair Confirmation at the end of this task.

(b) If the continuity is still not correct, then replace the No 1 bearing vibration sensor, T332. To replace the No 1 bearing vibration sensor, you must replace the engine.

These are the tasks:

Power Plant Removal, AMM TASK 71-00-02-000-801-F00,

Power Plant Installation, AMM TASK 71-00-02-400-801-F00.

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

(c) If the continuity is correct, then continue.

(5) Examine the electrical connector, DP1101, to the FFCCV sensor on the rear fan frame at the 3 o'clock strut:
   (a) See if the electrical connector, DP1101, is correctly connected to the FFCCV sensor.
   (b) Disconnect the electrical connector, DP1101, from the FFCCV sensor.
   (c) Visually examine the fan case disconnect receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).
      1) If the FFCCV sensor receptacle is damaged, then replace the FFCCV sensor, T537.

      These are the tasks:

      FFCC Vibration Sensor Removal, AMM TASK 77-31-04-000-801-F00,

      FFCC Vibration Sensor Installation, AMM TASK 77-31-04-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the wire harness connector is damaged, then replace the wire harness, MW0311.

These are the tasks:

3 O'clock Strut Harness Removal, AMM TASK 73-21-06-000-802-F00,

3 O'clock Strut Harness Installation, AMM TASK 73-21-06-400-802-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

3) If the connector was not correctly connected and no other problem was found, then re-connect the connector and do the Repair Confirmation at the end of this task.

a) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(d) If you did not find a problem, then continue.

(6) Do a continuity check between these pins of the wires between the AVM connector on the wire harness and the electrical connector, DP1101, to the fan frame compressor case vibration sensor pigtail:

CONNECTOR D3228A (ENG 1) D3228B (ENG 2)	CONNECTOR D3228A (ENG 1) D3228B (ENG2)	CONNECTOR DP11014	CONTINUITY
	PIN A1	PIN 2	YES
	PIN B1	PIN 3	YES
	PIN A1	CONNECTOR SHELL	NO
	PIN B1	CONNECTOR SHELL	NO

(a) If the continuity is not correct, then do these steps:

1) Repair the wire harness between the AVM and the fan frame compressor case vibration sensor (SWPM Ch 20).

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

(b) If the continuity is correct, then replace the FFCCV sensor, T537 (the most likely LRU from the Possible Causes list).

These are the tasks:

FFCC Vibration Sensor Removal, AMM TASK 77-31-04-000-801-F00,

FFCC Vibration Sensor Installation, AMM TASK 77-31-04-400-801-F00.

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

2) If the Repair Confirmation is not satisfactory, then replace the subsequent LRU from the Possible Causes list.

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

(a) If the AVM is not installed, then, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

(b) Re-connect the electrical connector, DP1101, to the FFCCV sensor.

(c) Re-connect the electrical connector, DP1304, to the fan case disconnect.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(e) For Engine 1:

1) 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
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
D	5	C01359	DISPLAY DEU 1 PRI

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	10	C01361	DISPLAY DEU 1 HOLDUP

(f) For Engine 2:

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

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI

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
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

(g) Record and erase all the BITE maintenance messages, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(2) Do this task: Start the Engine Procedure (Selection), AMM TASK 71-00-00-800-807-F00.

(a) Let the engine idle for a minimum of 2 minutes.

(b) Do this task: Stop the Engine Procedure (Usual Engine Stop), AMM TASK 71-00-00-700-819-F00.

(3) Do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(a) If the maintenance message does not show, then put the airplane back into service and monitor on subsequent flights.

1) Record the steps that you did to find and repair this fault.

——— END OF TASK ———

807. No Electrical Power Fault - Fault Isolation

A. Description

(1) This task is for this maintenance message:

(a) AVM Syst Fault 01.

(2) The airborne vibration monitor (AVM) signal conditioner reports a fault for no electrical power when there is a continuous, intermittent loss of electrical power to the AVM for a period of two seconds.

B. Possible Causes

(1) Engine vibration signal conditioner (AVM), M1240

(2) This circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(3) Wires and connectors between the circuit breaker and the AVM.

C. Circuit Breakers

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

D. Related Data

(1) Component Location (Figure 301)

(2) Simplified Schematic (Figure 302)

(3) (SSM 77-31-11)

(4) (WDM 77-31-11)

(5) (WDM 77-31-21)

E. Fault Isolation Procedure

(1) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Get access to the E3-2 shelf in the EE bay.

(2) Examine the electrical connector, D3228C, at the AVM:

(a) Do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00.

(b) Visually examine the AVM receptacle and wire harness connector (AMM TASK 70-70-01-200-801-F00).

1) If the AVM receptacle is damaged, then install a new AVM. To install it, do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If the wire harness connector is damaged, then repair the wire harness (SWPM Ch 20).

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

(c) If you do not find a problem, then continue.

(3) Do this check for 115 VAC at the AVM:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) Do a check for 115 VAC between these pins and ground.

D3228C	CONNECTOR	STUDS	EXPECTED RESULT
	PIN 2	PIN 4	115 VAC
	PIN 4	GROUND	115 VAC
	PIN 3	GROUND	115 VAC

1) If there is 115 VAC, then replace the AVM, M1240.

These are the tasks:

Airborne Vibration Monitor (AVM) Signal Conditioner Removal, AMM TASK 77-31-03-000-801-F00,

Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

b) If the Repair Confirmation is not satisfactory, then open the circuit breakers above and continue.

2) If there is not 115 VAC, then examine and repair the wires between the receptacle and the circuit breaker.

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

F. Repair Confirmation

(1) Do these steps to prepare for the procedure:

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

(b) If the AVM is not installed, then do this task: Airborne Vibration Monitor (AVM) Signal Conditioner Installation, AMM TASK 77-31-03-400-801-F00.

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	2	C01076	ENGINE VIB MON

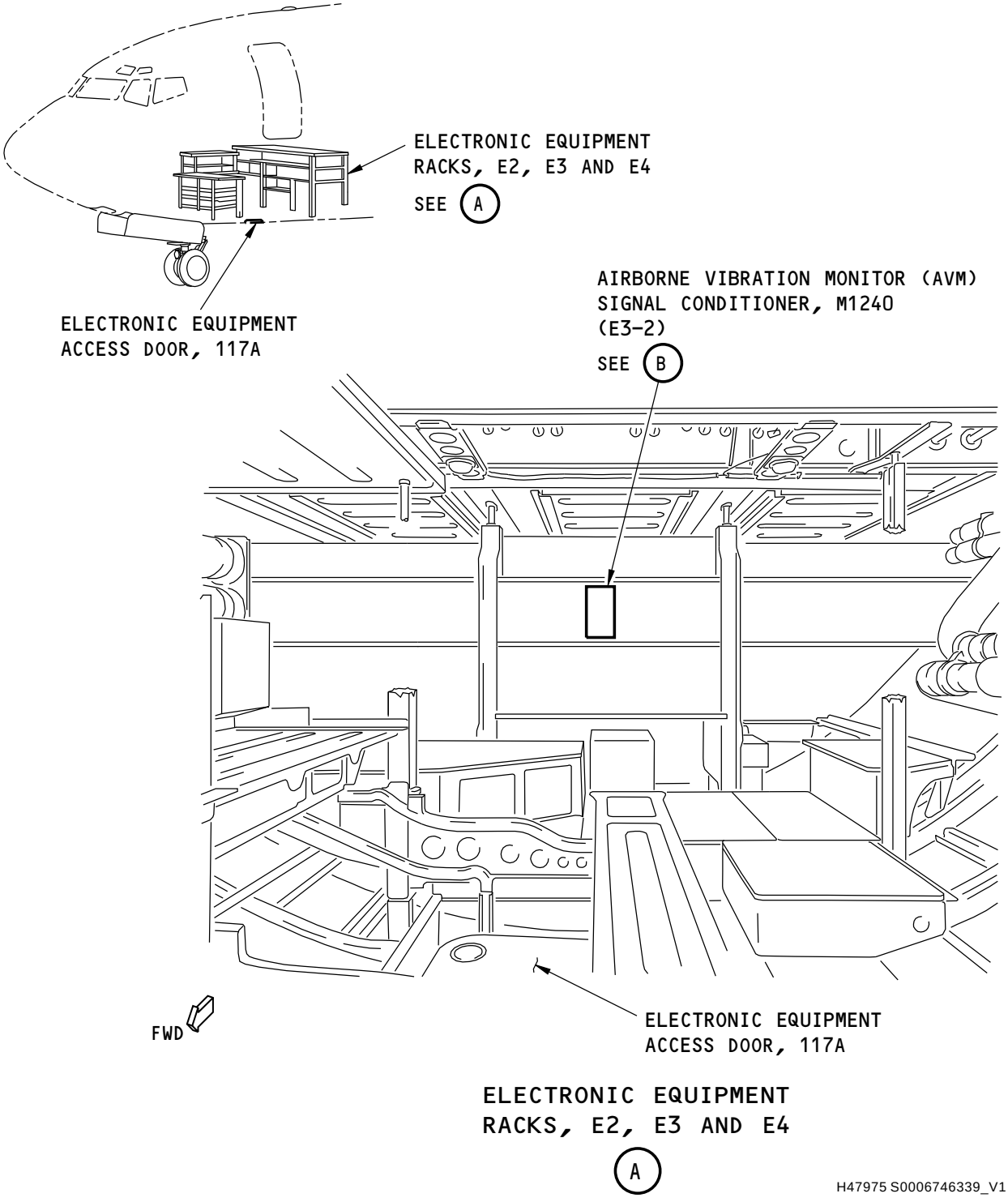
(d) Record and erase all the BITE maintenance messages. To do this, do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

(2) Do this task: AVM Signal Conditioner BITE Procedure, 77-31 TASK 801.

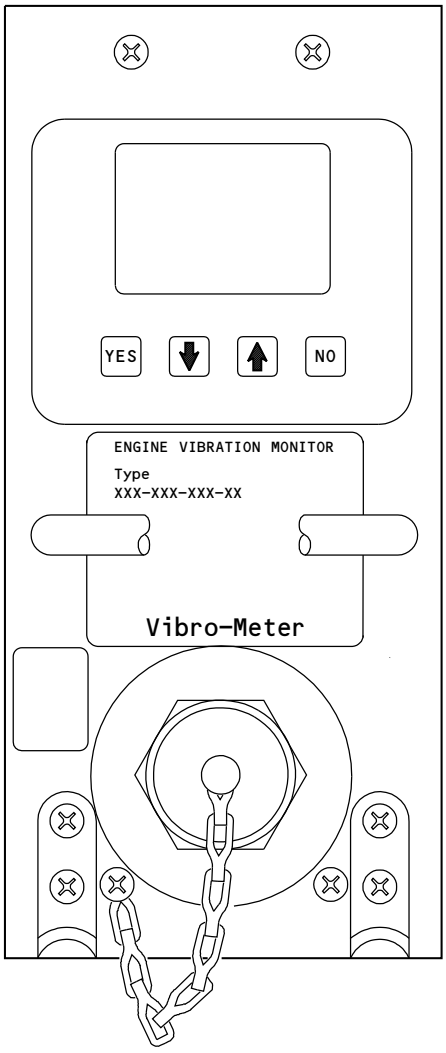
(a) If the maintenance message does not show, then you corrected the fault. Put the airplane back into service and monitor on subsequent flights.

1) Record the steps that you did to find and repair this fault.

——— END OF TASK ———



Engine Indicating - Component Location
Figure 301/77-31-00-990-804-F00 (Sheet 1 of 3)

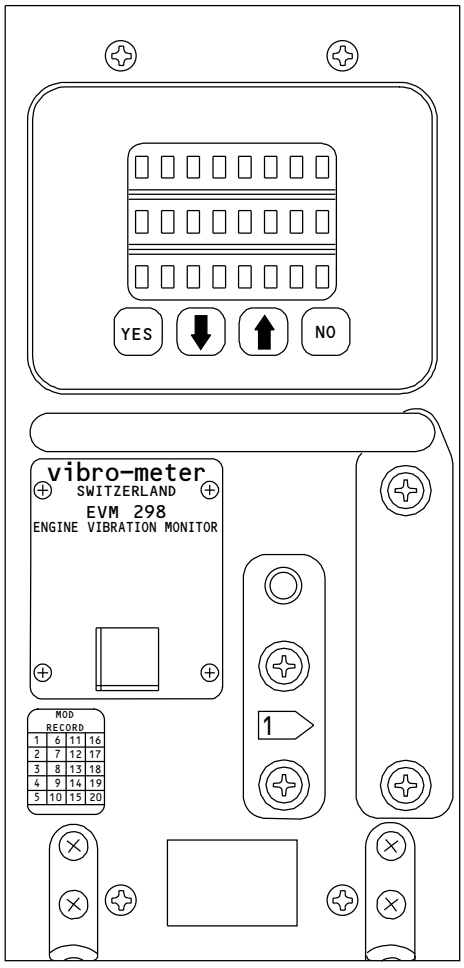


AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

H47985 S0006746342_V1

Engine Indicating - Component Location
Figure 301/77-31-00-990-804-F00 (Sheet 2 of 3)



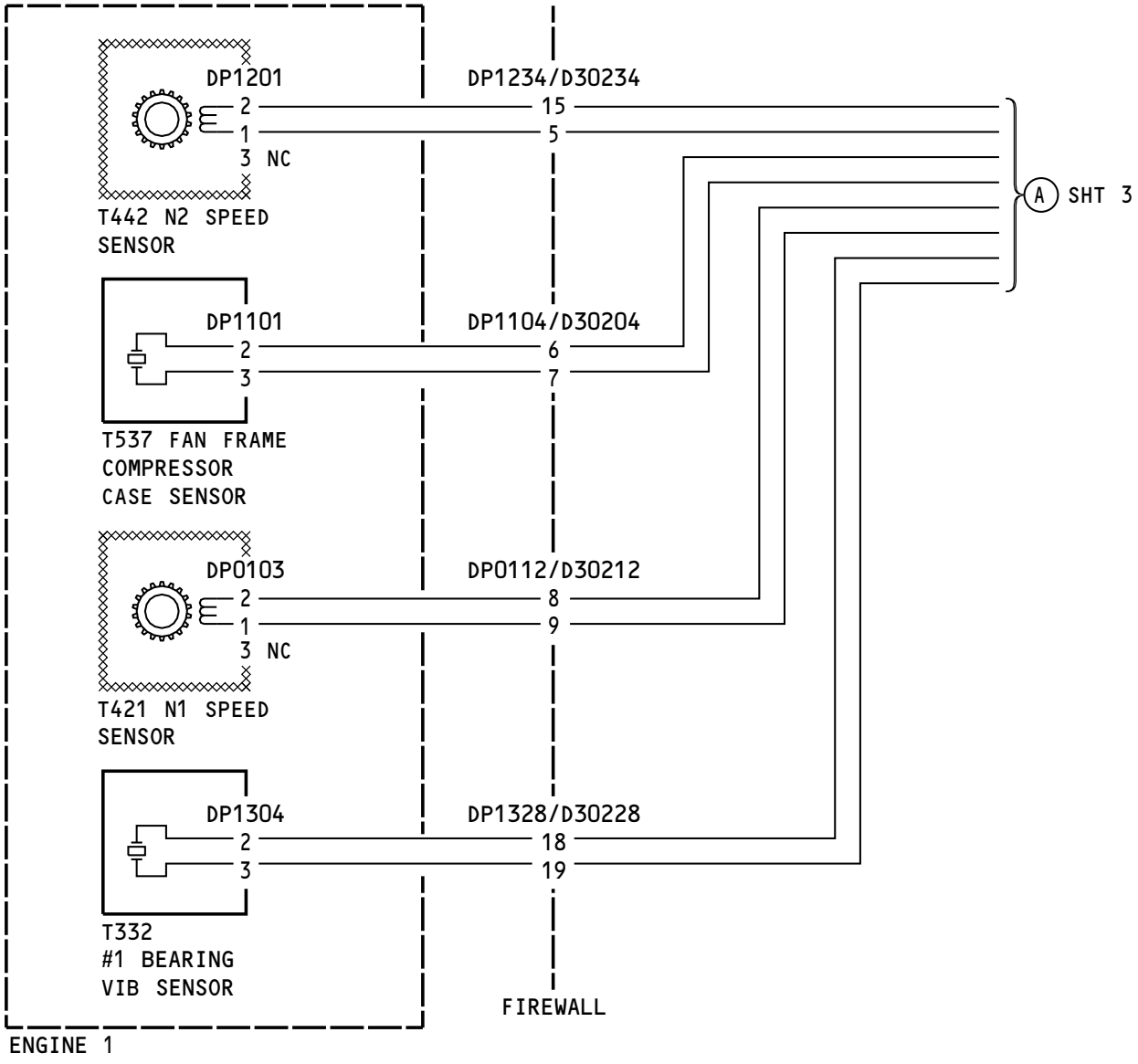
AIRBORNE VIBRATION MONITOR (AVM)
SIGNAL CONDITIONER, M1240

B

1 CONNECTOR NOT INSTALLED ON ALL UNITS

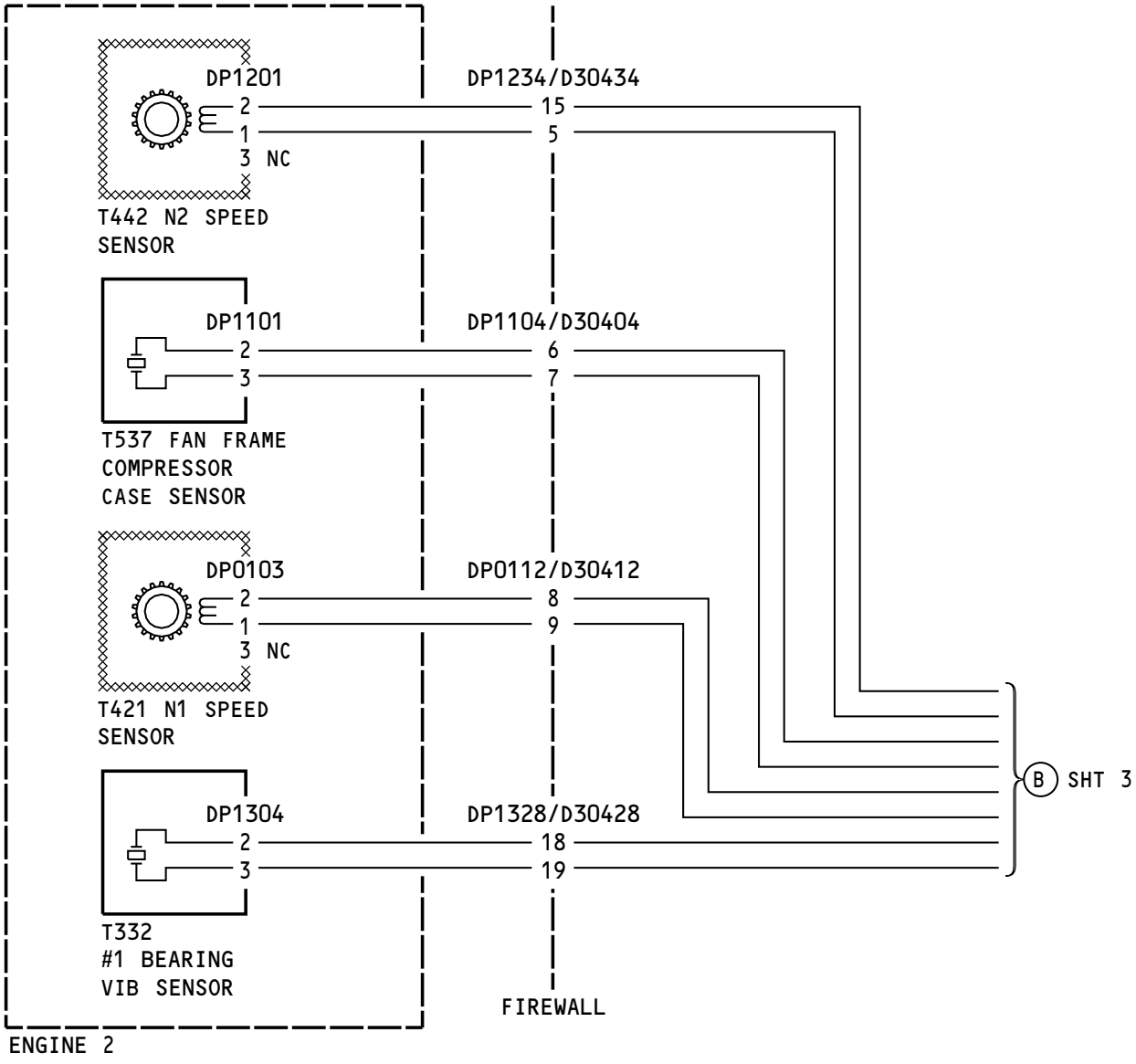
M48989 S0006746348_V2

Engine Indicating - Component Location
Figure 301/77-31-00-990-804-F00 (Sheet 3 of 3)



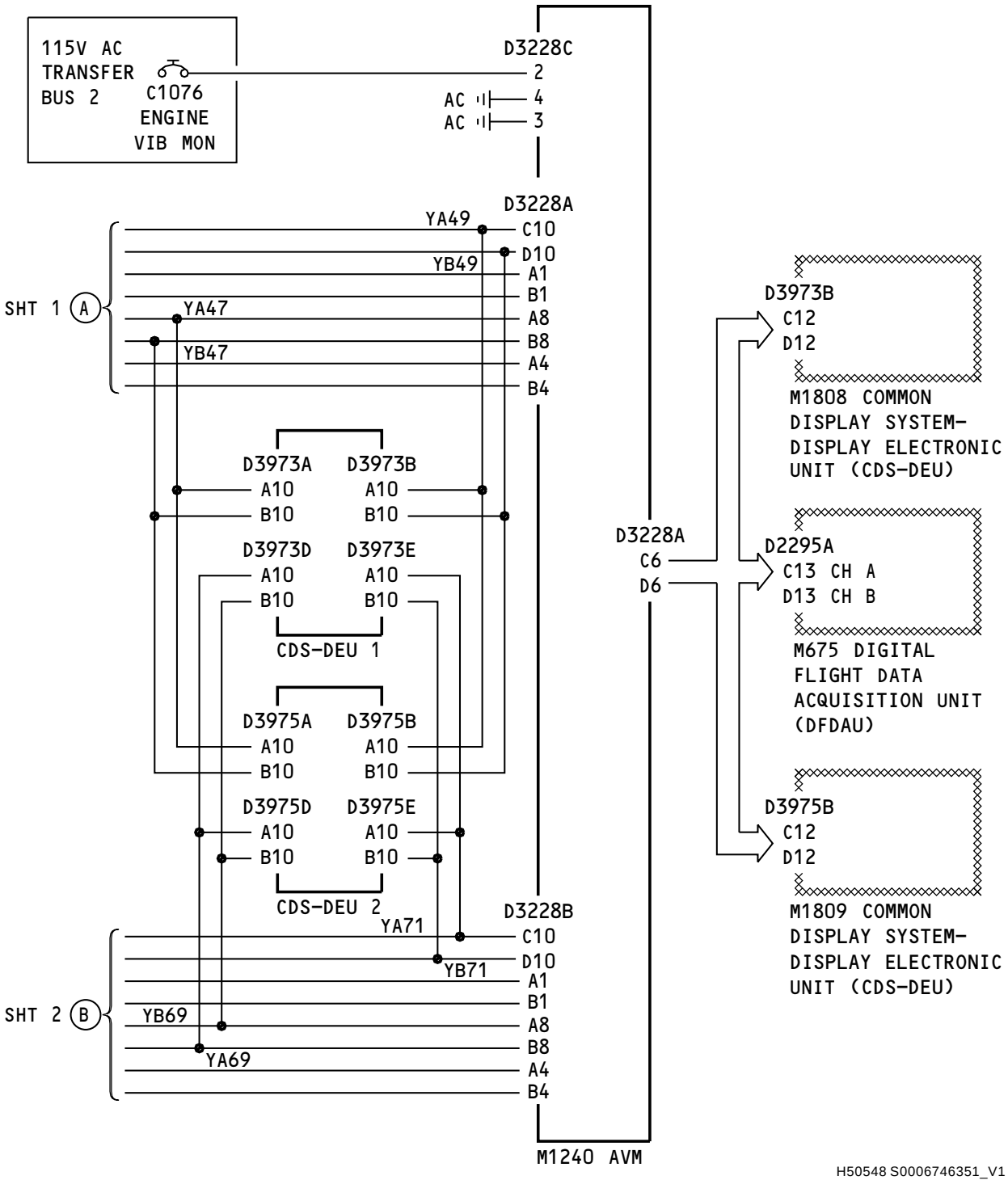
H50523 S0006746349_V1

Engine Indicating - System Schematic
Figure 302/77-31-00-990-805-F00 (Sheet 1 of 3)



H50525 S0006746350_V1

Engine Indicating - System Schematic
Figure 302/77-31-00-990-805-F00 (Sheet 2 of 3)



H50548 S0006746351_V1

Engine Indicating - System Schematic
Figure 302/77-31-00-990-805-F00 (Sheet 3 of 3)