SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - OMS

FMEA NO 05-6L -2206 -1 REV:10/30/87

ASSEMBLY :AFT LCA 1, 2, 3
P/N RI :MC477-0263-0002
P/N VENDOR:
QUANTITY :4
:FOUR
:(TWO PER ENGINE)

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO X OO DO X LS

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:
DES D SOVEREIGN
REL F DEFENSOR
QE J COURSEN

APPROVED BY:
DES
REL
QE

APPROVED BY (NASA):
SSM
REL
QE

ITEM:
DRIVER, HYBRID, TYPE III, LEFT AND RIGHT OMS ENGINE PRESSURE ISOLATION VALVE.

FUNCTION:
UPON A CREW INITIATED ARM/PRESSURE COMMAND, EACH HYBRID DRIVER CONDUCTS MAIN BUS POWER TO ENERGIZE THE ASSOCIATED SOLENOID COIL ACTUATED ENGINE PRESSURE ISOLATION VALVE OF THE LEFT AND/OR RIGHT OMS. 54V76A121AR (J11-D, G). 55V76A122AR (J6-KK). 56V76A123AR (J6-MM).

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, INADVERTENTLY OPENS.

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION.

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) LOSS OF REDUNDANCY. ASSOCIATED SOLENOID COIL CANNOT BE ENERGIZED.

(B) FIRST FAILURE HAS NO EFFECT. LOSS OF INTERFACE REDUNDANCY. REDUNDANT CIRCUIT WILL COMPLETE THE FUNCTION THROUGH THE UNAFFECTED SOLENOID COIL.

(C,D) FIRST FAILURE HAS NO EFFECT.

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF CONTROL OF ELECTRICAL POWER NECESSARY FOR THE OPERATION OF OMS ENGINE PRESSURE ISOLATION VALVE. A CLOSED CONDITION OF THE ENGINE PRESSURIZATION VALVE MAY RESULT IN INABILITY TO UTILIZE THE GN2 PRESSURANT AND INABILITY TO FIRE OMS ENGINE. REQUIRES THREE OTHER FAILURES (REDUNDANT HYBRID DRIVER FAILED TO CONDUCT, GN2 ACCUMULATOR LEAK, LOSS OF OTHER OMS ENGINE) BEFORE THE EFFECT IS MANIFESTED. LOSS OF OUTPUT OF ONE HYBRID DRIVER CANNOT BE DETECTED IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

DISPOSITION & RATIONALE:
(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER.

(B) GROUND TURNAROUND TEST
V43CE0.100 PNEUMATIC SYSTEM ELECTRICAL CONTROL VERIFICATION; PERFORMED EACH FLIGHT. REDUNDANCY VERIFICATION OF CONTROL CIRCUIT PER FIGURE V43CA0.070-5.

(E) OPERATIONAL USE
NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. FOR SECOND DRIVER FAILURE ON SAME VALVE, SAVE THE REMAINING ENGINE START (IN THE ACCUMULATOR) FOR THE DEORBIT BURN.