

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - OMS

FMEA NO 05-6L -2261 -2

REV: 10/30/87

ASSEMBLY : AFT LCA 1, 2, 3

P/N RI : JANTXVIN4246

P/N VENDOR:

QUANTITY : 8

: EIGHT

: (FOUR PER ENGINE)

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X
PHASE(S):	PL	LO X OO X DO X LS	

CRIT. FUNC: 1R

CRIT. HDW: 3

PREPARED BY:

DES D SOVEREIGN

REL F DEFENSOR

QE J COURSEN

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

APPROVED BY:

DES *D. S. L. Burrell*

REL *D. S. L. Burrell*

QE *D. S. L. Burrell*

APPROVED BY (NASA):

SSM *J. H. ...*

REL *J. H. ...*

QE *J. H. ...*

EPD&C SSM C.P. ... for W. Stays

ITEM:

DIODE, BLOCKING (LAMP), LEFT AND RIGHT OMS ENGINE CONTROL CIRCUITS. (MANUAL "ARM/PRESS-ARM" POSITION SWITCH DIODE).

FUNCTION:

PROVIDES INPUT FROM THE OMS ENGINE CONTROL SWITCH TO THE ENGINE CONTROL VALVE POWER HYBRID DRIVER AND INPUT TO THE ENGINE PRESSURIZATION ISOLATION VALVE HYBRID DRIVER. PROVIDES BLOCKING FROM THE "ARM" SWITCH POSITION TO THE ENGINE PRESSURIZATION ISOLATION VALVE DRIVER AND PROVIDES BLOCKING FROM THE "ARM/PRESS" SWITCH POSITION TO THE "ARM" POSITION SWITCH SCAN. 54V76A121CR (J3-94, 95, 107, 108). 55V76A122CR (J3-94, 95). 56V76A123CR (J3-94, 95).

FAILURE MODE:

SHORTS, INTERNAL SHORT, LOW BACK RESISTANCE.

CAUSE(S):

CONTAMINATION, THERMAL STRESS, MECHANICAL SHOCK, VIBRATION.

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY

(A) LOSS OF ISOLATION BETWEEN THE "ARM/PRESS" AND "ARM" CONTROL CIRCUITS.

(B) DEGRADATION OF INTERFACE FUNCTION. LOSS OF CAPABILITY TO UTILIZE THE "ARM/PRESS" AND "ARM" SEPARATELY IF THE ISOLATING DIODE BETWEEN "ARM/PRESS" AND "ARM" MODE CONTROL CIRCUIT FAILS SHORT.

(C, D) NO EFFECT.

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(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF ABILITY TO ISOLATE THE "ARM/PRESS" CONTROL CIRCUIT FROM THE "ARM" CONTROL CIRCUIT WHICH MAY RESULT IN OPENING OF ENGINE PRESSURIZATION ISOLATION VALVE WHEN THE "ARM" POSITION IS MANUALLY SELECTED. INABILITY TO FIRE ENGINE IN "ARM" POSITION WOULD RESULT IN INCREASED PNEUMATIC SYSTEM LEAK POTENTIAL. REQUIRES THREE OTHER FAILURES (LOSS OF GN2 TANK PRESSURE, FAILURE OF GN2 CHECK VALVE, FAILURE OF OTHER OMS ENGINE) BEFORE THE EFFECT IS MANIFESTED. FAILURE IS NOT READILY DETECTABLE ON BOARD 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 F, ITEM 3 - DIODE.

(B) GROUND TURNAROUND TEST
V43CEO.100 PNEUMATIC SYSTEM ELECTRICAL CONTROL VERIFICATION; PERFORMED EACH FLIGHT. REDUNDANCY VERIFICATION OF CONTROL CIRCUIT PER FIGURE V43CAO.070-5.

(E) OPERATIONAL USE
NO ACTION REQUIRED FOR FIRST FAILURE - NOT DETECTABLE.