

**SHUTTLE CRITICAL ITEMS LIST - ORBITER**

SUBSYSTEM : EPD&C - OMS FMEA NO 05-6L -2015 -1 REV:12/04/87

ASSEMBLY : AFT LCA 1,2,3 P/N RI : ME451-0009-1003 P/N VENDOR: QUANTITY : 8 : EIGHT : (TWO PER VALVE)	<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;"></td> <td style="width: 10%;">VEHICLE</td> <td style="width: 10%;">102</td> <td style="width: 10%;">103</td> <td style="width: 10%;">104</td> <td style="width: 30%;"></td> </tr> <tr> <td></td> <td>EFFECTIVITY:</td> <td>X</td> <td>X</td> <td>X</td> <td></td> </tr> <tr> <td></td> <td>PHASE(S):</td> <td>PL</td> <td>LO X CO</td> <td>DO X LS</td> <td></td> </tr> </table>		VEHICLE	102	103	104			EFFECTIVITY:	X	X	X			PHASE(S):	PL	LO X CO	DO X LS	
	VEHICLE	102	103	104															
	EFFECTIVITY:	X	X	X															
	PHASE(S):	PL	LO X CO	DO X LS															

PREPARED BY: DES D SOVEREIGN REL F DEFENSOR QE J COURSEN	REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS APPROVED BY: DES <u>D.S. R. Beeman</u> REL <u>William C. Han 12-5-87</u> QE <u>[Signature]</u>	APPROVED BY (NASA): SSM <u>[Signature]</u> REL <u>[Signature]</u> QE <u>[Signature]</u> EPDC SSM <u>[Signature]</u>
---	--	---

**ITEM:**  
 FUSE (3 AMP), LEFT AND RIGHT OMS ENGINE CONTROL VALVES 1 AND 2, DRIVER INPUT.

**FUNCTION:**  
 CONDUCTS DRIVER INPUT POWER AND PROVIDES PROTECTION FOR THE ASSOCIATED OMS ENGINE CONTROL VALVES 1 AND 2, DUAL SOLENOID COIL. 54V76A121F (J11-E, F, E', F'). 55V76A122F (J6-MM, NN). 56V76A123F (J6-NN, PP).  
 NOTE - ALPHABETIC CHARACTERS WITH A PRIME (') ARE LOWER CASE.

**FAILURE MODE:**  
 OPENS

**CAUSE(S):**  
 CHEMICAL DEGRADATION, VIBRATION, THERMAL STRESS, MECHANICAL SHOCK.

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

(A) LOSS OF POWER FOR ASSOCIATED COIL OF ENGINE CONTROL VALVE NO. 1 OR 2.

(B) FIRST FAILURE HAS NO EFFECT. THE ASSOCIATED COIL OF THE AFFECTED ENGINE CONTROL VALVE CAN COMPLETE THE FUNCTION.

(C) FIRST FAILURE HAS NO EFFECT. SECOND FAILURE - REDLINE ADDITIONAL PROPELLANT FOR RCS DEORBIT; NEXT PLS ENTRY IF PROPELLANT NOT AVAILABLE.

(D) FIRST FAILURE HAS NO EFFECT. NEXT SIMILAR FAILURE COULD SHUTDOWN ONE OMS ENGINE.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - OMS

FMEA NO 05-6L -2015 -1

REV:10/30/87

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO OPERATE THE OMS ENGINES FOR CRITICAL ASCENT/DESCENT MANEUVERS. REQUIRES TWO OTHER FAILURES (FUSE FAILS OPEN ON REDUNDANT COIL OF THE SAME CONTROL VALVE CIRCUIT, LOSS OF OTHER OMS ENGINE) AND INSUFFICIENT PROPELLANT RCS BACKUP DEORBIT BEFORE THE EFFECT IS MANIFESTED. BOTH SETS OF BI-PROPELLANT VALVES MUST BE OPENED TO OPERATE THE ENGINE. FUSE FAILED OPEN IS NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A-B) FOR DISPOSITION AND RATIONALE

REFER TO APPENDIX D, ITEM NO. 2 - FUSE, AXIAL LEAD CARTRIDGE.

(B) GROUND TURNAROUND TEST

V43CEC.100 PNEUMATIC SYSTEM ELECTRICAL CONTROL VERIFICATION; PERFORMED EACH FLIGHT. REDUNDANCY VERIFICATION OF CONTROL CIRCUIT PER FIGURE V43CAO.070-5.

(E) OPERATIONAL USE

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF REDUNDANT CIRCUIT FAILS, REDLINE ADDITIONAL PROPELLANT FOR RCS BACKUP DEORBIT, POSSIBLE MISSION IMPACT (DECREASED PROPELLANT AVAILABLE FROM OMS TO RCS THROUGH INTERCONNECT FOR ON-ORBIT OPERATIONS). NEXT PLS DEORBIT IF PROPELLANT FOR RCS BACKUP NOT AVAILABLE.