

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2204 -1 REV:11/04/87

ASSEMBLY : APT LCA 1, 2, & 3 CRIT. FUNC: 1R  
 P/N RI : MC477-0263-0002 CRIT. HDW: 3  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 6 EFFECTIVITY: X X X  
 : SIX PHASE(S): PL X LO X OO DO LS  
 : 2 PER PREVALVE 1, 2, & 3

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

PREPARED BY:	J BROWN	APPROVED BY:	<i>J. Brown</i>	APPROVED BY (NASA):	
DES		DES	<i>J. Brown</i>	EPDC SSM	<i>John... 12-5-87</i>
REL	F DEFENSOR	REL	<i>F. Defensor 12-5-87</i>	MPS SSM	<i>...</i>
QE	D MASAI	QE	<i>D. Masai 4/5/87</i>	EPDC REL	<i>...</i>
				MPS REL	<i>...</i>

ITEM:

CONTROLLER, HYBRID DRIVER (HDC), TYPE III, LH2 PREVALVE 1, 2, & 3, CONTROL POWER FOR CLOSE SOLENOID.

FUNCTION:

PROVIDES GPC AND MANUAL CONTROL OF POWER TO CLOSE SOLENOID FOR EACH LH2 PREVALVE 1, 2, & 3. HDC IS IN SERIES WITH A RPC. NOTE - HDC IDENTIFIED BY LCA INPUT PINS. 54V76A121AR-J3(41), (45); 55V76A122AR-J3(41), (45); 56V76A123AR-J3(41), (45).

FAILURE MODE:

LOSS OF OUTPUT, FAILS OPEN, FAILS TO CONDUCT

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL STRESS.

EFFECT(S) ON:

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

(A) LOSS OF ONE OF TWO POWER PATHS TO CLOSE SOLENOID.

(B,C,D) NO EFFECT - FIRST FAILURE.

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - LOSS OF SECOND POWER PATH TO CLOSE SOLENOID. THIRD FAILURE - SSME SHUTDOWN WITH UNCONTAINED DAMAGE REQUIRING LH2 PROPELLANT SUPPLY ISOLATION) DUE TO INABILITY TO CLOSE LH2 PREVALVE. FAILS B SCREEN BECAUSE REDUNDANT POWER PATH MASKS FAILURE.

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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 CONTROLLER.

(B) GROUND TURNAROUND TEST

MDM COMMAND REDUNDANCY, V41AEO.18CH, L; 200H, L; 220H, L EVERY FLIGHT.

(E) OPERATIONAL USE

FLIGHT - NO CREW ACTION CAN BE TAKEN

GROUND - IF A MAJOR LEAK IS DETECTED, CLOSE PREVALVES (FV4, 5, 6), LH2  
17-INCH DISCONNECT (PD2), LH2 4-INCH RECIRC DISCONNECT (PD3), LH2  
RECIRC VALVES (FV14-16); DRAIN MANIFOLD.

05-6J-316