

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2204 -2 REV: 11/04/87

ASSEMBLY : AFT 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:	DES	J BROWN	APPROVED BY:	DES	<i>[Signature]</i>	APPROVED BY (NASA):	EPDC SSM	<i>[Signature]</i>
REL	F	DEFENSOR	REL	<i>[Signature]</i>	12-5-87	EPDC REL	<i>[Signature]</i>	<i>[Signature]</i>
QE	D	MASAI	QE	<i>[Signature]</i>	11/5/87	MPS REL	<i>[Signature]</i>	<i>[Signature]</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:

INADVERTENT OUTPUT, CONDUCTS PREMATURELY, INTERNAL SHORTS.

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) DEGRADATION OF REDUNDANCY AGAINST PREMATURE CLOSE SOLENOID POWER.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - SERIES RPC FAILS ON, BISTABLE FEATURE MAINTAINS PREVALVE IN OPEN POSITION. THIRD FAILURE - PREMATURE DEACTUATION OF OPEN SOLENOID) RESULTING IN PREMATURE LH2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN SERIES/PARALLEL CONFIGURATION MASKS FAILURE. NOTE - BISTABLE FEATURE NOT DEMONSTRATED BY TEST (CERTIFIED BY ANALYSIS). A FULL FLOW DETENT VERIFICATION TEST IS SCHEDULED FOR GFY 1988.

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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.180G; 200G; 220G EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

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