

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2075 -2 REV:11/04/87

ASSEMBLY	: AFT LCA-1, 2, & 3	CRIT. FUNC:	1R
P/N RI	: MC477-0261-0002	CRIT. HDW:	3
P/N VENDOR:		VEHICLE	102 103 104
QUANTITY	: 3	EFFECTIVITY:	X X X
	: THREE	PHASE(S):	PL X LO X OO DO LS
	: 1 PER PREVALVE 1, 2, & 3.		

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

PREPARED BY:	J BROWN	APPROVED BY:	<i>[Signature]</i>	APPROVED BY (NASA):	<i>[Signature]</i>
DES		DES		EPDC SSM	<i>[Signature]</i>
REL	F DEFENSOR	REL	<i>[Signature]</i>	MPS SSM	<i>[Signature]</i>
QE	D MASAI	QE	<i>[Signature]</i>	EPDC REL	<i>[Signature]</i>
				MPS REL	<i>[Signature]</i>
				QE	<i>[Signature]</i>

ITEM:
CONTROLLER, HYBRID DRIVER (HDC), TYPE I, LO2 PREVALVE 1, 2, & 3, CONTROL POWER FOR CLOSE SOLENOID.

FUNCTION:
CONDUCTS MDM CLOSE COMMAND TO TYPE III HDC. LEFT OVER FROM PREVIOUS CIRCUIT CONFIGURATION, COULD BE REPLACED BY A WIRE AND DIODE.
54V76A121AR (J1-36), 55V76A122AR(J1-36), 56V76A123AR(J1-36).

FAILURE MODE:
INADVERTENT OUTPUT, FAILS ON, CONDUCTS PREMATURELY.

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

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) FIRST FAILURE - NO EFFECT.

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(E) POSSIBLE LOSS OF VEHICLE AND CREW AFTER THE FOURTH FAILURE (SECOND FAILURE - SERIES REMOTE POWER CONTROLLER FAILS ON, MAINSTAGE COMMAND INHIBITS HDC III OUTPUT. THIRD FAILURE - MAINSTAGE COMMAND FAILS OFF RESULTING IN PREMATURE POWER TO CLOSE SOLENOID, ENERGIZED OPEN SOLENOID MAINTAINS PREVALVE IN OPEN POSITION. FOURTH FAILURE - PREMATURE DEACTUATION OF OPEN SOLENOID) RESULTING IN PREMATURE LO2 PREVALVE CLOSURE WHILE ENGINE IS RUNNING. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN DUE TO SERIES/PARALLEL CIRCUIT REDUNDANCY. NOTE - BISTABLE FEATURE NOT DEMONSTRATED BY TEST (CERTIFIED BY ANALYSIS). A FULL FLOW DETENT VERIFICATION TEST IS SCHEDULED FOR GFY 1988.

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.380K; 400K; 420K EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.