SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2208 -2 REV:11/04/87

ASSEMBLY :AFT PCA-4, 5, 6
P/N RI :JANTX1N1204RA
P/N VENDOR:
QUANTITY :3
:THREE
:1 PER PREVALVE 1, 2, 3

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL X LO X OO DO LS

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

PREPARED BY:		APPROVED BY:		APPROVED BY (NASA):	
DES	J BROWN	DES		EPDC SSM	
				MPS SSM	
REL	F DEFENSOR	REL	Melvin Clayton 12-5-87	EPDC REL	
				MPS REL	
QE	D MASAI	QE	12/4/87	QE	

ITEM:
DIODE, CROSSOVER (12 AMP), LH2 PREVALVE 1, 2, & 3 CLOSE SOLENOID POWER.

FUNCTION:
PREVENTS INADVERTENT MDM COMMAND OR PREMATURE HDC I OUTPUT FROM ACTUATING CLOSE SOLENOID PREMATURELY. DIODE ISOLATES REDUNDANT POWER WHICH ENERGIZES THE CLOSE SOLENOID FOR THE LH2 PREVALVES. ISOLATES REDUNDANT POWER BETWEEN RPC OUTPUTS. 54V76A134A4CR27, 55V76A135A4CR27, 56V76A136A4CR27.

FAILURE MODE:
SHORT, INTERNAL SHORT, CURRENT LEAKAGE, FAILS TO CONDUCT.

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

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

(A) DEGRADATION OF REDUNDANCY AGAINST INADVERTENT CLOSING OF LH2 PREVALVE.

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

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE (SECOND FAILURE - PREMATURE CLOSE-COMMAND B OR HDC I OUTPUT ACTUATING THE CLOSE SOLENOID, 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 BECAUSE NO INSTRUMENTAION IS AVAILABLE TO DETECT THIS FAILURE. 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 F, ITEM NO. 2 - DIODE, POWER-STUD MOUNTED.

(B) GROUND TURNAROUND TEST
MDM COMMAND REDUNDANCY, V41AE0.180I, 200I, 220I EVERY FLIGHT

(E) OPERATIONAL USE
NO CREW ACTION CAN BE TAKEN.