SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2344 -1 REV:11/04/87

ASSEMBLY :AFT PCA-5, 6
P/N RI :MC477-0263-0002
P/N VENDOR:
QUANTITY :4
:FOUR
:2 PER LH2/LO2 17" DISCONNECT LATCH

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102 X	103 X	104 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	12-5-87	EPDC REL	
				MPS REL	
QE	D MASAI	QE		QE	

ITEM:
CONTROLLER, HYBRID DRIVER (HDC), TYPE III, LH2/LO2 17-INCH FEEDLINE DISCONNECT VALVE LATCH LOCK SOLENOID CONTROL AND POWER.

FUNCTION:
CONDUCTS POWER TO THE LOCK SOLENOID IN EACH REDUNDANT CIRCUIT FOR THE LH2/LO2 FEED DISCONNECT VALVE LATCH LOCK SOLENOID. THE HDC IS IN SERIES WITH A RPC AND DIODE IN EACH CIRCUIT. 56V76A136AR4, AR6; 56V76A135AR3, AR5.

FAILURE MODE:
LOSS OF OUTPUT, FAILS OPEN, FAILS TO CONDUCT.

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) LOSS OF ONE OF TWO POWER PATHS TO LATCH LOCK SOLENOID.

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

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(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (SECOND FAILURE - LOSS OF SECOND POWER PATH TO LATCH LOCK SOLENOID, BISTABLE FEATURE MAINTAINS DISCONNECT LATCH IN LOCK POSITION. THIRD FAILURE - PREMATURE ACTUATION OF UNLOCK SOLENOID ROTATING LATCH TO THE UNLOCK POSITION. FOURTH FAILURE - FLAPPER FAILS TO THE CLOSED POSITION) RESULTING IN PREMATURE DISCONNECT VALVE CLOSURE WHILE ENGINES ARE RUNNING. SURGE PRESSURE FROM VALVE CLOSURE MAY CAUSE DAMAGE OR RUPTURE TO THE MPS AND/OR ET SYSTEM, DEPENDING ON THE RATE OF CLOSURE. SHUTDOWN OF ALL THREE SSMEs SIMULTANEOUSLY. UNCONTAINED ENGINE DAMAGE DUE TO STARVATION CUTOFF. FAILS B SCREEN BECAUSE PARALLEL POWER PATH MASKS FAILURE.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A-D) DISPOSITION AND RATIONALE:
REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER CONTROLLER.

(B) GROUND TURNAROUND TEST
COMPLETE ELECTRICAL VERIFICATION, V41ABC.155C, E; 165C, E EVERY FLIGHT

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