

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP.

FMEA NO 05-6J -2345 -2

REV: 11/04/87

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

	VEHICLE	102	103	104
EFFECTIVITY:		X	X	X
PHASE(S):		PL X LO X OO	DO	LS

CRIT. FUNC: 1R

CRIT. HDW: 3

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

PREPARED BY:	DES	J BROWN	APPROVED BY:	DES	<i>J. Brown</i>	APPROVED BY (NASA):	EPDC SSM	<i>J. Brown</i>
REL	F DEFENSOR	REL	<i>Paul Michael Ch. Hore</i>	11-5-87	EPDC REL	<i>J. Brown</i>	MPS SSM	<i>J. Brown</i>
QE	D MASAI	QE	<i>Im. B. D.</i>	11/4/87	MPS REL	<i>J. Brown</i>	QE	<i>J. Brown</i>

ITEM:

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

FUNCTION:

CONDUCTS POWER TO THE UNLOCK SOLENOID IN EACH REDUNDANT CIRCUIT FOR THE LH2/LO2 FEED DISCONNECT VALVE LATCH UNLOCK SOLENOID. THE HDC IS IN SERIES WITH A RPC AND DIODE IN EACH CIRCUIT. 55V76A135AR4, AR6; 56V76A136AR5, AR3.

FAILURE MODE:

INADVERTENT OUTPUT, CONDUCTS PREMATURELY, INTERNAL SHORTS

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 LATCH UNLOCK SOLENOID POWER.

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

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP.

FMEA NO 05-6J -2345 -2

REV:11/04/87

(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER FOURTH FAILURE (SECOND FAILURE-SERIES RPC FAILS ON RESULTING IN PREMATURE POWER TO LATCH UNLOCK SOLENOID. THIRD FAILURE - PREMATURE DEACTUATION OF LATCH LOCK SOLENOID. FOURTH FAILURE -FLAPPER PREMATURELY CLOSES) 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 DUE TO SERIES CIRCUIT CONFIGURATION.

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, V4LABO.155G, I; 165G, I EVERY FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.