

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - ELECT. FWR GENER/FMEA NO 05-6MA-2207 -2 REV:07/28/87

ASSEMBLY : MID PCA NO. 1, 2 & 3  
 P/N RI : V070-760085-001, V070-760080-004  
 P/N VENDOR: MC477-0261-0002  
 QUANTITY : 6  
 : SIX, 2/EACH FC  
 : STOP CIRCUIT.

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

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

PREPARED BY:	APPROVED BY:	APPROVED BY (NASA):
DES A BAIZ <sup>6.4</sup>	DES <u>R.V. Brown</u>	SSM <u>Justin W. Blanche</u>
REL J BEEKMAN	REL <u>M. D. Ch. Dec. 2-26-88</u>	REL <u>John W. ... 3/9/88</u>
QE DNM	QE <u>...</u>	QE <u>...</u>

26 EPD&C Rev. 1-11-88  
 EPD&C SSM W. C. Stage 3/1/88

ITEM:  
 CONTROLLER, HYBRID DRIVER HDC TYPE I, FUEL CELL NO. 1, 2 & 3 STOP CONTROL.

FUNCTION:  
 PROVIDES FOR REMOTE CONTROL OF POWER APPLICATION FROM ESS BUS TO STOP A FCP UPON STOP COMMAND FROM THE FUEL CELL POWER PLANT (FCP) START/STOP CONTROL SWITCH. 40V76A25AR10, 40V76A25AR11, 40V76A26AR9, 40V76A26AR10, 40V76A27AR9, 40V76A27AR10.

FAILURE MODE:  
 INADVERTENT OUTPUT, SHORTS INTERNALLY, CONDUCTS PREMATURELY.

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

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

(A) LOSS OF REDUNDANCY - ONE OF THE TWO HDC'S IN SERIES IS ENABLED INADVERTENTLY.

(B,C,D) NO EFFECT - REDUNDANT HDC PREVENTS ISSUANCE OF FCP STOP COMMAND.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE VIA THE FOLLOWING SCENARIO - 1) ONE OF THE HDC'S FAILS ON 2) SECOND HDC IN SAME FCP CIRCUIT FAILS ON (FC STOPS). 3) SECOND FCP FAILS (HAZARD POTENTIAL - AFTER SECOND FCP FAILURE DURING ASCENT WHEN VEHICLE POWER EXCEEDS A SINGLE FCP POWER OUTPUT). 4) THIRD FCP FAILS. SCREEN "B" FAILS BECAUSE THE OUTPUT OF EACH OF THE SERIES DRIVERS IS NOT MONITORED.

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

(A-D) DISPOSITION AND RATIONALE  
 REFER TO APPENDIX B, ITEM #1 - HYBRID DRIVER

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(B) GROUND TURNAROUND TEST

FCP STOP CONTROL IS VERIFIED DURING EACH TURNAROUND.

(E) OPERATIONAL USE

NO CREW ACTION AFTER FAILURE.