

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS FMEA NO 05-6KF-2208 -1 REV: 11/03/87

ASSEMBLY : FWD MCA 1,2,3		CRIT. FUNC: 1R
P/N RI : MC477-0261-0002		CRIT. HDW: 2
P/N VENDOR:	VEHICLE 102 103 104	
QUANTITY : 8	EFFECTIVITY: X X X	
: EIGHT	PHASE(S): PL X LO X OO X DO X LS X	
:		

PREPARED BY:		REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
DES D SOVEREIGN	APPROVED BY: <i>R. Burns</i>	APPROVED BY (NASA)
REL J BEEKMAN	REL <i>Monica Chatter 11-14-87</i>	SSM
QE	QE <i>[Signature]</i>	QE <i>[Signature]</i>

ITEM: HYBRID DRIVER CONTROLLER (HDC) TYPE I - FORWARD RCS FUEL AND OXIDIZER MANIFOLD 1, 2, 3, AND 4 ISOLATION VALVE (EVENT INDICATOR CIRCUIT).

FUNCTION: UPON RECEIVING PROPER STIMULI FROM THE ASSOCIATED SET OF FUEL AND OXIDIZER MANIFOLD ISOLATION VALVE 1, 2, 3, AND 4 POSITION SWITCHES, THE DRIVER CONDUCTS AND ENERGIZES THE CONNECTED EVENT INDICATOR AND ASSOCIATED RELAY INHIBIT CIRCUITRY.  
 81V76A111AR1,2. 82V76A112AR1,2. 83V76A113AR3,4,5,6.

FAILURE MODE: LOSS OF OUTPUT, FAILS TO CONDUCT, INADVERTENTLY OPENS.

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

EFFECT(S) ON:  
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE  
 (A) LOSS OF "TALKBACK" INDICATION AND RELAY INHIBIT LOGIC INPUT.  
 (B) THE ASSOCIATED VALVE DRIVE CIRCUIT IS ENERGIZED CONTINUOUSLY WHEN THE MANUAL SWITCH IS IN THE "OPEN" OR "CLOSE" POSITION.  
 (C,D) NO EFFECT.  
 (E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO CONTINUOUS DRIVE MOTOR OPERATION IN CONJUNCTION WITH A BELLOWS LEAK LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES 1 OTHER FAILURE (BELLOWS LEAK) BEFORE EFFECT IS MANIFESTED. A BELLOWS LEAK IS UNDETECTABLE EXCEPT BY PERFORMING A SNIFF CHECK OF THE VALVE'S ACTUATOR ON THE GROUND.

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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.

(B) GROUND TURNAROUND TEST

COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND. THE TESTING CONSISTS OF CYCLING VALVE MANUAL SWITCHES AND/OR SENDING GENERAL PURPOSE COMPUTER (GPC) COMMANDS TO CYCLE VALVES OR HEATERS WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE

REMOVE POWER FROM RELAY BY PLACING MANUAL SWITCH IN GPC (GENERAL PURPOSE COMPUTER) POSITION.