

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2261F -1

REV: 11/03/87

ASSEMBLY : AFT MCA 1,3
 P/N RI : JANTXVIN4246
 P/N VENDOR:
 QUANTITY : 16
 : SIXTEEN
 :

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

CRIT. FUNC: 1R
 CRIT. HDW: 3

PREPARED BY:
 DES D SOVEREIGN
 REL J BEEKMAN
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 APPROVED BY: APPROVED BY (NASA):
 DES *[Signature]* SSM *[Signature]*
 REL *[Signature]* 11-14-87 REL *[Signature]*
 QE *[Signature]* 11/14/87 QE *[Signature]*
 EPD/C SSM *[Signature]*

ITEM:

BLOCKING DIODE - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER CROSSFEED ISOLATION VALVES 1/2 AND 3/4/5 (MANUAL CLOSE/OPEN INHIBIT).

FUNCTION:

PROVIDES BLOCKING BETWEEN DUAL STIMULI (FROM MANUAL SWITCH CLOSE CIRCUIT AND OPEN LIMIT SWITCHES) TO HYBRID RELAY INHIBIT LOGIC INPUTS FOR THE CONTROL OF 3 PHASE AC VOLTAGE TO THE FUEL AND OXIDIZER CROSSFEED VALVES 1/2 AND 3/4/5 DRIVE MOTORS.

OV-102 - 54V76A114A1CR18, 30, 34, 35. 54V76A114A5CR2, 3, 17, 19.
 56V76A116A1CR15, 16, 17, 18, 32, 33, 36, 37.
 OV-103 & SUBS - 54V76A114A4CR2, 3, 19, 20. 54V76A114A1CR25, 35, 38, 39.
 56V76A116A1CR21, 22, 23, 24, 36, 37, 40, 41.

FAILURE MODE:

OPEN, FAILS TO CONDUCT, HIGH RESISTANCE

CAUSE(S):

THERMAL STRESS, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OR DEGRADATION OF ABILITY TO ENERGIZE THE AFFECTED VALVE DRIVE RELAY INHIBIT LOGIC CIRCUITRY.

(B) THE AFFECTED LOGIC INPUT CANNOT INHIBIT THE VALVE DRIVE "OPEN" CIRCUITRY.

(C, D) NO EFFECT.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2261F -1

REV: 11/03/87

(E) FUNCTION CRITICALITY EFFECT - VALVE WILL CHATTER OFF THE CLOSE STOP. POSSIBLE LOSS OF CREW/VEHICLE DUE TO CONTINUOUS MOTOR OPERATION IN CONJUNCTION WITH A BELLOWS LEAK LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES TWO OTHER FAILURES ("CLOSE INHIBIT" DIODE SHORTS, 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.

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. 3 - DIODE.

(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

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF CONTINUOUS POWER SITUATION EXISTS, REMOVE POWER FROM RELAY BY PLACING MANUAL SWITCH IN GPC POSITION.