

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2255 -1

REV: 11/03/87

ASSEMBLY : AFT MCA 1,2,3  
 P/N RI : JANTXV1N4246  
 P/N VENDOR:  
 QUANTITY : 16  
 : SIXTEEN  
 :

	VEHICLE	102	103	104
CRIT. FUNC:				1R
CRIT. HDW:				2
EFFECTIVITY:		X	X	X
PHASE(S):	PL	LO	X CO	X DO X LS

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

PREPARED BY:  
 DES D SOVEREIGN  
 REL J BEEKMAN  
 QE

APPROVED BY:  
 DES D. J. R. Bueker  
 REL M. J. ... for 11-14-87  
 QE J. B. ...

APPROVED BY (NASA):  
 SSM [Signature]  
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 ERDIC [Signature]  
 FALL 11-14-87

ITEM:

BLOCKING DIODE - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLDS -  
 1,2,3,4 ISOLATION VALVE CONTROL CIRCUIT (LIMIT SWITCH).

FUNCTION:

PROVIDES BLOCKING BETWEEN DUAL STIMULI (FROM VALVE LIMIT SWITCHES AND  
 MANUAL SWITCHES) TO HYBRID RELAY LOGIC INHIBIT INPUTS FOR THE CONTROL OF  
 THE FUEL AND OXIDIZER MANIFOLDS 1,2,3,4 ISOLATION VALVE CONTROL CIRCUITS.  
 OV-102 - 54V76A114A2CR3,4,25,58. 55V76A115A2CR27,63,67,68.  
 56V76A116A1CR93,95,97. 56V76A116A5CR25,26,31,38,39.  
 OV-103 & SUBS - 54V76A114A1CR19,20. 54V76A114A2CR4,43. 55V76A115A1CR10.  
 55V76A115A2CR3,15,19. 56V76A116A1CR17,19,97,109. 56V76A116A2CR2,43.  
 56V76A116A3CR23,36.

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) THE ASSOCIATED VALVE DRIVE CIRCUIT IS ENERGIZED CONTINUOUSLY WHEN THE  
 MANUAL SWITCH IS IN THE "OPEN" OR "CLOSE" POSITION.

(B) CONTINUOUS POWER WILL BE APPLIED TO THE AFFECTED MANIFOLD ISOLATION  
 VALVE DRIVE MOTOR.

(C,D) NO EFFECT

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(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO VALVE CONTINUOUS POWER IN CONJUNCTION WITH A BELLOWS LEAK LEADING TO VALVE RUPTURE AND PROPELLANT RELEASE. REQUIRES ONE 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.

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

REMOVE POWER FROM RELAY BY PLACING MANUAL SWITCH IN GPC POSITION.