

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2255F -2

REV: 11/03/87

ASSEMBLY : AFT MCA 1,2,3

P/N RI : JANTXVIN4246

P/N VENDOR:

QUANTITY : 8

: EIGHT

:

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

CRIT. FUNC: 1R

CRIT. HDW: 3

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

PREPARED BY:

DES D SOVEREIGN

REL J BEEKMAN

QE

APPROVED BY:

DES *P. - R. B...*

REL *Michael Chapman 11-14-87*

QE *P.P. Little*

APPROVED BY (NASA):

SSM *[Signature]*

REL *[Signature]*

QE *[Signature]*

*EPD&C SSM Sovereign J. B. Beekman  
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ITEM:

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

- CV-102 - 54V76A114A2CR14,69. 55V76A115A2CR59,65,69.
- 56V76A116A5CR19,30,42,43.
- OV-103 & SUBS - 54V76A114A2CR14,29. 55V76A115A2CR25,28.
- 56V76A116A2CR12,28. 56V76A116A3CR22,37.

FAILURE MODE:

SHORT, INTERNAL SHORT, LOW BACK RESISTANCE

CAUSE(S):

CONTAMINATION, THERMAL STRESS

EFFECT(S) ON:

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

(A) LOSS OF INTERLOGIC ISOLATION CAPABILITY.

(B) VALVE "OPEN" LIMIT SWITCH OUTPUT IS NOT ISOLATED FROM THE MANUAL SWITCH "CLOSE" COMMAND CIRCUIT. NO EFFECT - THE "CLOSE" RELAY IS INHIBITED WHEN THE MANUAL SWITCH IS IN THE "OPEN" POSITION.

(C,D) NO EFFECT.

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