

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2255E -2

REV: 11/03/87

ASSEMBLY : AFT MCA 1,2,3

P/N RI : JANTXV1N4246

F/N VENDOR:

QUANTITY : 8

: EIGHT

:

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:

DES *D.S. Q. B...*

REL *M. E. O. H...*

QE *A. H. J. ...*

APPROVED BY (NASM):

SSM *[Signature]*

REL *[Signature]*

QE *[Signature]*

EPD&C (b) (6) (c) (7) (D) (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

ITEM:

BLOCKING DIODE - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLDS 1,2,3,4 ISOLATION VALVE CONTROL CIRCUIT (MANUAL OPEN/CLOSE INHIBIT).

FUNCTION:

PROVIDES BLOCKING BETWEEN DUAL STIMULI (FROM MANUAL SWITCH "OPEN" CIRCUIT AND "CLOSE" 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.

OV-102 - 54V76A114A2CR13,17. 55V76A115A2CR40,66.

56V76A116A1CR107,109,111. 56V76A116A5CR27.

OV-103 & SUBS - 54V76A114A1CR2,3. 55V76A115A1CR2,A2CR10.

56V76A116A1CR1,3,107,120.

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 OR DEGRADATION OF STIMULI ISOLATION CAPABILITY.

(B) LOSS OF ISOLATION BETWEEN THE VALVE "CLOSE" LIMIT SWITCH CIRCUIT AND MANUAL SWITCH "OPEN" COMMAND CIRCUIT - NO EFFECT, SINCE "OPEN" RELAYS ARE INHIBITED WHEN THE MANUAL SWITCH IS IN THE "CLOSE" POSITION. ALSO SWITCH IS NORMALLY IN THE "OPEN" POSITION THROUGHOUT FLIGHT - TRANSFER TO "CLOSE" WOULD OCCUR WHEN ISOLATION IS REQUIRED.

(C,D) NO EFFECT.

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(E) FUNCTIONAL 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 THREE OTHER FAILURES (SYSTEM LEAK - REASON TO CLOSE VALVE, MANUAL CLOSE/OPEN INHIBIT DIODE OPENS, BELLOWS LEAK) BEFORE THE 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.