SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - AFT-RCS FMEA NO 05-6KA-2253 -1 REV:11/03/87

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

CRIT. FUNC: 1R
CRIT. HDW: 2

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL X LO X OO X DO X LS X

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

PREPARED BY:
DES D SOVEREIGN
REL J BEEKMAN
QE

APPROVED BY:
DES
REL
QE

APPROVED BY (NASA):
SSM
REL
QE

ITEM:
BLOCKING DIODE (1 AMP) - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER TANK ISOLATION VALVES 1/2 CONTROL CIRCUITS (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 3 PHASE AC VOLTAGE TO THE FUEL AND OXIDIZER TANK ISOLATION VALVE 1/2 DRIVE MOTORS.
OV-102 - 56V76A116A1CR5,6,45,46,49,50,51,71,73,74,101,102, 105,106. 56V76A116A2CR77,78.
OV-103 & SUBS - 56V76A116A1CR44,45,50,51,54,55,58,76,78,79,113,114, 117,118. 56V76A116A2CR51. 56V76A116A3CR49.

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 IN THE SELECTED (OPEN OR CLOSE) MANUAL SWITCH POSITION.

(B) "OPEN" SIDE - CONTINUOUS POWER WILL BE APPLIED TO THE AFFECTED ISOLATION VALVE COIL. "CLOSE" SIDE - NO EFFECT, REQUIRES SECOND RELAY TO BE ENERGIZED BEFORE CONTINUOUS POWER IS APPLIED TO VALVE COIL.

(D) NO EFFECT.

(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 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.

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 (GENERAL PURPOSE COMPUTER) POSITION.