SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - AFT-RCS FMEA NO 05-6KA-2084 -1 REV:11/03/87

ASSEMBLY :AFT MCA 1,2
P/N RI :RWR80S1211FR
P/N VENDOR:
QUANTITY :8
:EIGHT
:

ABORT, RTLS,TAL
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:		APPROVED BY:		APPROVED BY (NASA):
DES	D SOVEREIGN	DES		SSM
REL	J BEEKMAN	REL		REL
QE		QE		QE

ITEM:
CURRENT LIMIT RESISTOR (1.2 KILO OHM, 2 WATT) - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER TANK ISOLATION VALVES 3/4/5 A AND B, LOGIC AND MEASUREMENT CIRCUIT POWER.

FUNCTION:
EACH RESISTOR CONDUCTS CIRCUIT POWER AND PROVIDES CURRENT LIMITING TO THE ASSOCIATED FUEL AND OXIDIZER TANK ISOLATION VALVES 3/4/5 A AND B POSITION SWITCHES. UNIQUE TO INTACT ABORT.

OV-102	- 54V76A114A3R4,5,6,7.	55V76A115A3R3,4,5,6.
OV-103 & SUBS	- 54V76A114A3R8,10,12,14.	55V76A115A3R17,19,21,23.

FAILURE MODE:
OPEN, ELEMENT OPENS, HIGH RESISTANCE.

CAUSE(S):
STRUCTURAL FAILURE, VIBRATION AND MECHANICAL SHOCK.

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE

(A) LOSS OF VOLTAGE TO THE AFFECTED CIRCUITS.

(B) LOSS OF FUNCTION IN THE AFFECTED INTERFACE CIRCUIT. CONTINUOUS POWER WILL BE APPLIED IN THE MANUAL SWITCH POSITION

(C) NO EFFECT

(D) NO EFFECT FOR NOMINAL MISSION - CRITICALITY INCREASED TO 1/1 DURING RTLS AND TAL ABORT. VALVE UTILIZED BY MCA OPTIMIZATION SOFTWARE IN "LANDING HEAVY" CONDITION. WILL ALSO RESULT IN CONTROL PROBLEMS DURING ENTRY. RESULTS IN LOSS OF 12 AFT RCS THRUSTERS BEING USED DURING THE OMS DUMP.

(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.

ISPOSITION & RATIONALE:
(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE REFER TO APPENDIX E, ITEM NO. 3 - WIRE WOUND RESISTOR.

(B) GROUND TURNAROUND TEST
COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNARCUND. 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.