

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2083 -1 REV: 11/03/87

ASSEMBLY : AFT MCA 3	ABORT,	CRIT. FUNC:	1R
F/N RI : RWR80S1211FR	RTLS, TAL	CRIT. HDW:	2
F/N VENDOR:	VEHICLE	102	103 104
QUANTITY : 6	EFFECTIVITY:	X	X X
: SIX	PHASE(S) :	PL X LO X OO X DO X LS X	

PREPARED BY:	DES	D SOVEREIGN	APPROVED BY:	DES	D. S. Brown	REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
REL	J BEEKMAN	REL	REL	REL	REL	APPROVED BY (NASA):
QE		QE	QE	QE	QE	SSM

Handwritten notes and signatures are present in the approval section.

ITEM:

CURRENT LIMIT RESISTOR (1.2 KILO OHM, 2 WATT) - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER TANK ISOLATION VALVES 1/2 LOGIC AND MEASUREMENT CIRCUIT POWER.

FUNCTION:

THE RESISTORS CONDUCT CIRCUIT POWER AND PROVIDE CURRENT LIMITING TO THE FUEL AND OXIDIZER TANK ISOLATION VALVES 1/2, POSITION SWITCHES FOR INHIBIT LOGIC AND POSITION INDICATION MEASUREMENTS. UNIQUE TO INTACT ABORT.

OV-102 - 56V76A116A3R7,8,9. 56V76A116A4R7,8,9.
 OV-103 & SUBS - 56V76A116A4R13,14,15,16,17,18.

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. LOSS OF POSITION INDICATION.

(C) NO EFFECT

(D) NO EFFECT FOR NOMINAL MISSION - CRITICALITY INCREASED TO 1/1 DURING RTLS AND TAL ABORT. GENERAL PURPOSE COMPUTER (GPC) COMMAND 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.

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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 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 E, ITEM NO. 3 - WIRE WOUND RESISTOR.

(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.