

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2208 -1 REV: 11/03/87

ASSEMBLY : AFT MCA 1,2,3				CRIT. FUNC: 12
P/N RI : MC477-0261-0002				CRIT. HDW: 2
P/N VENDOR:	VEHICLE	102	103	104
QUANTITY : 16	EFFECTIVITY:	X	X	X
: SIXTEEN	PHASE(S):	PL X	LC X	CO X DO X LS X
:				

PREPARED BY:		REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
DES D SOVEREIGN	APPROVED BY:	APPROVED BY (NASA):
REL J BEEKMAN	DES <u>D. F. Quinn</u>	SSM <u>[Signature]</u>
QE	REL <u>Michael C. [Signature] 11-14-87</u>	REL <u>[Signature] 11-14-87</u>
	QE <u>[Signature] 11/17/87</u>	QE <u>[Signature] 11-14-87</u>

EPD&C 1000 Functional [Signature]

ITEM:

HYBRID DRIVER CONTROLLER (HDC) TYPE I - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLD 1,2,3, AND 4 ISOLATION VALVE (EVENT INDICATOR CIRCUIT).

FUNCTION:

UPON RECEIVING PROPER STIMULI FROM THE ASSOCIATED SET OF FUEL AND OXIDIZER MANIFOLD ISOLATION VALVE 1,2,3,4 POSITION SWITCHES, THE DRIVER CONDUCTS AND ENERGIZES THE CONNECTED EVENT INDICATOR.

54V76A114AR 6 THROUGH 9. 55V76A115AR 7 THROUGH 10. 56V76A116AR 5 THROUGH 12.

FAILURE MODE:

LOSS OF OUTPUT, FAILS TO CONDUCT, INADVERTENTLY OPENS.

CAUSE(S):

PIECE PART FAILURE, MECHANICAL OR THERMAL SHOCK, VIBRATION.

EFFECT(S) ON:

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

(A) LOSS OF "TALKBACK" INDICATION AND RELAY INHIBIT LOGIC INPUT.

(B) THE ASSOCIATED VALVE DRIVE CIRCUIT IS ENERGIZED CONTINUOUSLY WHEN THE MANUAL SWITCH IS IN THE "OPEN" OR "CLOSE" POSITION.

(C,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 ONE 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.

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DISPOSITION & RATIONALE:

(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE REFER TO APPENDIX B, ITEM NO. 1 -
HYBRID DRIVER

(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 POSITION.