

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2207 -2

REV: 12/03/8

ASSEMBLY : AFT MCA 2,3
 P/N RI : MC477-0261-0002
 P/N VENDOR:
 QUANTITY : 4
 : FOUR
 :

	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-PAS:
 APPROVED BY:
 DES P. Z. Brown
 REL John C. ... 12-3-87
 QE ...

APPROVED BY (NASA)
 SSM
 REL ...
 QE ...
 EPD/C SSM ...
 744 W.C. 574615

ITEM:

HYBRID DRIVER CONTROLLER (HDC) TYPE I - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER TANK ISOLATION VALVE 3/4/5 A AND B EVENT INDICATOR CLOSE DRIVERS.

FUNCTION:

UPON RECEIVING STIMULI FROM TWO, VALVE "CLOSED" POSITION SWITCHES AND A SERIES HYBRID DRIVER, THE ASSOCIATED DRIVER CONDUCTS AND ENERGIZES THE CONNECTED EVENT INDICATOR AND RELAY INHIBIT LOGIC INPUT CIRCUITS. 55V76A115AR11,13, 54V76A114AR10,12.

FAILURE MODE:

INADVERTENT OUTPUT, SHORT, INADVERTENTLY CONDUCTS.

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, MECHANICAL OR THERMAL SHOCK, VIBRATION.

EFFECT(S) ON:

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

(A) NO EFFECT FIRST FAILURE. REQUIRES POWER AND CONTROL SIGNAL FROM A UPSTREAM SERIES DRIVER TO OPERATE.

(B) NO EFFECT - A SECOND RELATED FAILURE WOULD INHIBIT THE VALVE CLOSING CAPABILITY. REQUIRES CREW ACTION TO CORRECT THE CONDITION.

(C, D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO DEPLETION OF RCS TANK PROPELLANT NEEDED FOR ENTRY OPERATIONS RESULTING FROM AN UNCONTROLLABLE THRUSTER LEAK. REQUIRES 3 OTHER FAILURES (ASSOCIATED HYBRID DRIVER, MANIFOLD VALVE, THRUSTER LEAK) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN-FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

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SUBSYSTEM : EPD&C - APT-RCS

FMEA NO 05-6KA-2207 -2

REV: 12/03/81

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 TEST 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 VALVE FAILS TO CLOSE, AVOID CROSSFEED/INTERCONNECT TO AFFECTED LEG. LOSS OF INTERCONNECT CAPABILITY MAY RESULT IN MISSION MODIFICATION.