

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2032 -2

REV: 11/03/87

ASSEMBLY : PANEL 07
 P/N RI : ME452-0102-7210
 P/N VENDOR:
 QUANTITY : 2
 : TWO
 :

	VEHICLE	102	103	104
CRIT. FUNC:				1R
CRIT. HDW:				3
EFFECTIVITY:		X	X	X
PHASE(S):		PL X LO X	OO X DO X	LS X

PREPARED BY:
 DES D SOVEREIGN
 REL J BECKMAN
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 APPROVED BY:
 DES D. J. R. Bunn
 REL Michael G. Horne, 11-16-87
 QE [Signature]
 APPROVED BY (NASA)
 SSM [Signature]
 REL [Signature]
 QE [Signature]

ITEM:

MOMENTARY TOGGLE SWITCH (2P3T) HERMETIC SEAL - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE MANUAL CONTROL.

FUNCTION:

PROVIDES THE CREW WITH THE CAPABILITY TO SELECT GENERAL PURPOSE COMPUTER (GPC) OR MANUAL (OPEN, CLOSE) CONTROL OF THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVES. 33V73A7S26,31.

FAILURE MODE:

SHORT, INTERNAL SHORTS.

CAUSE(S):

PIECE PART STRUCTURAL FAILURE, MECHANICAL SHOCK, VIBRATION, FRACTURED ROLLER RETAINER (LOOSE ROLLER AND SPRING).

EFFECT(S) ON:

- (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
- (A) INTERNAL CONTACT SHORTING MAY ENERGIZE SOME SERIES ELEMENTS IN THE CIRCUIT. HOWEVER, IT WOULD REQUIRE ADDITIONAL FAILURES FOR CONTINUOUS SOLENOID POWERING.
- (B) LOSS OF CAPABILITY TO REPOSITION VALVE THROUGH SWITCH OPERATION.
- (C, D) NO EFFECT
- (E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO VALVE OVERHEATING AND FUEL DECOMPOSITION BY CONTINUOUS SOLENOID COIL POWERING AND LEADING TO VALVE RUPTURE AND FUEL RELEASE. REQUIRES 2 OTHER FAILURES (SWITCH "OPEN POSITION" DIODE OPENED, "OPEN" TYPE III DRIVER FAILED "ON") BEFORE EFFECT IS MANIFESTED. THE FAILURE STRING COULD BE UNDETECTABLE AFTER THE FIRST FAILURE DUE TO LACK OF MEASUREMENT INDICATIONS FOR THE TYPE III AND TYPE IV HYBRID DRIVERS.

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SITATION & RATIONALE:

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

(D) FOR DISPOSITION AND RATIONALE REFER TO APPENDIX A, ITEM NO. 1 -
GLE SWITCH.

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
VALVE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

OPERATIONAL USE

ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF HYBRID DRIVER FAILS ON,
MINIMIZE RISK OF CONTINUOUS POWER SITUATION BY PULLING APPROPRIATE
CIRCUIT BREAKER. CIRCUIT BREAKERS WILL BE RESET WHEN VALVE IS TO BE
RETESTED.