

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - FWD-RCS

FMEA NO 05-6KF-2156 -1

REV: 11/03/87

ASSEMBLY : PANEL 08
 P/N RI : MC432-0222-0029
 P/N VENDOR:
 QUANTITY : 1
 : ONE
 :

	VEHICLE	102	103	104
EFFECTIVITY:		X	X	X
PHASE(S):	PL	LO X	CO X	DO X LS

CRIT. FUNC: 12
 CRIT. HDW: 3

PREPARED BY:
 DES D SOVEREIGN
 REL J BEEKMAN
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 APPROVED BY:
 DES *D.S. Beekman* APPROVED BY (NASA)
 REL *John A. ... (11-16-87)* SSM
 QE *[Signature]* REL *[Signature]*
 EPD&C SSM *[Signature]*

ITEM:

EVENT INDICATOR - FORWARD RCS FUEL AND OXIDIZER MANIFOLD S ISOLATION VALVE.

FUNCTION:

PROVIDES A VISUAL POSITION INDICATION OF THE FUEL AND OXIDIZER MANIFOLD ISOLATION VALVE SHOWING OPEN, CLOSED OR STRIPES (NULL). 33V73A80S20.

FAILURE MODE:

SHORT TO GROUND

CAUSE(S):

CONTAMINATION, VIBRATION, THERMAL SHOCK.

EFFECT(S) ON:

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

(A) LOSS OR DEGRADATION OF "TALKBACK" INDICATION FOR VALVE POSITION.

(B) LOSS OR DEGRADATION OF ISOLATION VALVE SOLENOID POWER INHIBIT LOGIC INPUT. NO EFFECT - OTHER COMPONENTS IN THE SOLENOID CIRCUIT MUST CONDUCT BEFORE THE CIRCUIT IS ENERGIZED.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO VALVE OVERHEATING LEADING TO FUEL DECOMPOSITION AND VALVE RUPTURE. REQUIRES TWO ADDITIONAL FAILURES (SWITCH SHORT, TYPE IV DRIVER FAILS 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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DISPOSITION & RATIONALE:

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

(A-D) FOR DISPOSITION AND RATIONALE REFER TO APPENDIX G, ITEM NO. 1 -
EVENT INDICATOR.

(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

NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF HYBRID DRIVER FAILS ON,
MINIMIZE RISK OF CONTINUOUS POWER SITUATION BY PULLING APPROPRIATE
CIRCUIT BREAKERS. CIRCUIT BREAKERS WILL BE RESET WHEN VALVE IS TO BE
MOVED.