

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2156 -1

REV: 11/03/87

ASSEMBLY : PANEL 07  
 P/N RI : MC432-0222-0029  
 P/N VENDOR:  
 QUANTITY : 2  
 : TWC  
 :

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

PREPARED BY:  
 DES D SOVEREIGN  
 REL J BEEKMAN  
 QE

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS  
 APPROVED BY:  
 DES D. F. R. Bunn APPROVED BY (NASA):  
 REL M. J. Carter 11-14-87 REL [Signature]  
 QE [Signature] QE [Signature]  
 EPD&C DESM [Signature]  
 FUEL C. STABER

ITEM:

EVENT INDICATOR - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE.

FUNCTION:

PROVIDES A VISUAL POSITION INDICATION OF THE FUEL AND OXIDIZER MANIFOLD 5 ISOLATION VALVE SHOWING OPEN, CLOSED OR STREPES (NULL). 33V73A7DS 17,22.

FAILURE MODE:

SHORT TO GROUND

CAUSE(S):

PIECE PART STRUCTURAL FAILURE.

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 AND PROPELLANT DECOMPOSITION BY CONTINUOUS SOLENOID COIL POWERING LEADING TO VALVE RUPTURE AND FUEL RELEASE. REQUIRES 2 OTHER 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) FOP 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 BREAKER. CIRCUIT BREAKERS WILL BE RESET WHEN VALVE IS TO BE  
MOVED.