

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2155 -1 REV: 11/03/87

ASSEMBLY : PANEL 07 CRIT. FUNC: 1R  
 P/N RI : MC432-0222-0029 CRIT. HDW: 2  
 P/N VENDOR: VEHICLE 102 103 104  
 QUANTITY : 8 EFFECTIVITY: X X X  
 : EIGHT PHASE(S): PL X LO X OO X DO X LS X  
 :

REUNDANCY SCREEN: A-PASS B-FAIL C-PASS  
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):  
 DES D SOVEREIGN DES *[Signature]* SSM  
 REL J BEEKMAN REL *[Signature]* 11-10-87  
 QE *[Signature]* 11-17-87 QE *[Signature]* 11-16-87  
 EPD/C SSM *[Signature]*

ITEM:  
 EVENT INDICATOR - LEFT AND RIGHT AFT RCS FUEL AND OXIDIZER MANIFOLD —  
 1,2,3,4 ISOLATION VALVE.

FUNCTION:  
 PROVIDES A VISUAL POSITION INDICATION OF THE FUEL AND OXIDIZER MANIFOLDS  
 1,2,3,4 ISOLATION VALVES SHOWING OPEN, CLOSED OR STRIPES (NULL). LEFT  
 AND RIGHT AFT RCS PODS.  
 33V73A7DS13,14,15,16,18,19,20,21.

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 "CLOSE" OR "OPEN" RELAY  
 INHIBIT LOGIC INPUT WHILE THE MANUAL SWITCH IS IN THE "CLOSE" OR "OPEN"  
 POSITION. ALLOWS THE ASSOCIATED VALVE DRIVE TO BE ENERGIZED  
 CONTINUOUSLY.  
 (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 1 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.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

UBSYSTEM :EPD&C - AFT-RCS

FMEA NO 05-6KA-2155 -1

REV:11/03/87

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

REMOVE POWER FROM RELAY BY PLACING MANUAL SWITCH IN GPC POSITION.