

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS

FMEA NO 05-6KA-2026 -2

REV: 11/03/87

ASSEMBLY : PANEL 07
 P/N RI : ME452-0102-7206
 P/N VENDOR:
 QUANTITY : 4
 : FOUR
 :

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

CRIT. FUNC: 1R
 CRIT. HDW: 2

PREPARED BY:
 DES D SOVEREIGN
 REL J BEERMAN
 QE

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
 APPROVED BY:
 DES *D. S. R. Buss*
 REL *Michael C. Han 11-14-87*
 QE *[Signature]*
 APPROVED BY (NASA):
 SSM *[Signature]*
 REL *[Signature]*
 QE *[Signature]*
 EPD&C SSM *[Signature]*
 for W.C. STAGG

ITEM:

TOGGLE SWITCH (2P3T) HERMETIC SEAL - LEFT AND RIGHT AFT RCS HELIUM ISOLATION VALVE A AND B COMMAND CIRCUITS.

FUNCTION:

PROVIDES THE CREW WITH CAPABILITY TO INDIVIDUALLY SELECT "GPC" (GENERAL PURPOSE COMPUTER) FOR CONTROL OR TO MANUALLY "OPEN" OR "CLOSE" THE HELIUM ISOLATION VALVES A AND B IN THE EVENT THAT A PRESSURIZATION TANK REQUIRES ISOLATION.

33V73A7S10, 11, 13, 14.

NOTE - CURRENT SUBSYSTEM CONFIGURATION IS TO OPERATE WITH BOTH "A" AND "B" LEGS OPEN DURING LIFTOFF AND DEORBIT PHASES. NOMINAL OPERATION ON-ORBIT IS ON ONE LEG ONLY.

FAILURE MODE:

INADVERTENT OPERATION, SHORT, INADVERTENTLY CLOSES (ONE OR MORE CONTACT SETS).

CAUSE(S):

CONTAMINATION, MECHANICAL SHOCK, VIBRATION, BROKEN ROLLER RETAINER.

EFFECT(S) ON:

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

(A) THE ASSOCIATED DRIVERS ARE COMMANDED "ON" AND IN TURN PERMIT DOWN-STREAM REMOTE POWER CONTROLLERS TO CONDUCT.

(B) SINGLE CONTACT SET SHORTING CAN CAUSE A VALVE TO OPEN. MULTIPLE CONTACT SET SHORTING COULD CAUSE A VALVE TO CLOSE.

(C) NO EFFECT.

(D) NO EFFECT, FIRST FAILURE - SECOND FAILURE WITH LIMITED HELIUM SUPPLIES RESULTS IN LOSS OF CREW/VEHICLE. BLOW DOWN EXISTS FOR EXTERNAL TANK SEPARATION.

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(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LACK OF PRESSURIZATION TO PERFORM NOMINAL ENTRY. ONE OTHER FAILURE ("B" LEG REGULATOR CLOSES) IS REQUIRED BEFORE TANK PRESSURIZATION FUNCTION IS LOST AND A NOMINAL ENTRY CANNOT BE PERFORMED.

DISPOSITION & RATIONALE:

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

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

(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

USE REDUNDANT LEG. IF REDUNDANT LEG FAILS, REDLINE ENTRY RCS USAGE IN GOOD POD. POSSIBLE MISSION MODIFICATION OR EARLY MISSION TERMINATION DUE TO LOSS OF USABLE RCS PROPELLANT. DEORBIT USING RCS CROSSFEED.