

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - MAIN PROP. FMEA NO 05-6J -2198 -3 REV: 11/04/87

ASSEMBLY : D & C PANEL R4
 P/N RI : ME452-0102-7354
 P/N VENDOR:
 QUANTITY : 3
 : THREE
 : 1 PER PREVALVE 1, 2, & 3.

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

CRIT. FUNC: 1
 CRIT. HDW: 1

PREPARED BY: DES J BROWN
 REL F DEFENSOR
 QE D MASAI

REDUNDANCY SCREEN: A- B- C-
 APPROVED BY: DES *[Signature]*
 APPROVED BY (NASA):
 EPDC SSM *[Signature]*
 MPS SSM *[Signature]*
 EPDC REL *[Signature]*
 MPS REL *[Signature]*
 QE *[Signature]*

ITEM:
 TOGGLE SWITCH, 3 POLE/3 POSITION, CENTER LEVER LOCK, LH2 PREVALVES 1, 2, & 3 MANUAL CONTROL POWER.

FUNCTION:
 PROVIDES MANUAL CONTROL OF LH2 PREVALVE. SOFTWARE CONTRCLS NORMAL PREVALVE FUNCTIONS. 32V73A4S14, 15, 16.

FAILURE MODE:
 FAILS CLOSED, INTERNAL PIECE PART FAILURE, CLOSE POSITION CONTACTS FAIL CLOSED, POLE-TO-POLE SHORT

CAUSE(S):
 PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, THERMAL SHOCK

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A, B) ROLLER/SPRING BRIDGES TWO CLOSE CONTACTS PROVIDING TWO INADVERTENT CLOSE COMMANDS AND TWO OPEN INHIBITS, BISTABLE FEATURE MAINTAINS PREVALVE IN OPEN POSITION. MAINSTAGE COMMANDS WILL PREVENT VALVE CLOSURE UNTIL MECO + 1.0 SECOND.

(C, D) POSSIBLE LOSS OF CREW/VEHICLE DUE TO UNCONTAINED ENGINE DAMAGE RESULTING FROM LO2 RICH SHUTDOWN TRANSIENT CAUSED BY LH2 PREVALVE CLOSURE. LO2 RICH SHUTDOWN CAUSES HIGHER THAN NORMAL TEMPERATURES AND RESULTS IN BURNING AND SEVERE EROSION OF ENGINE COMPONENTS. NOTE - BISTABLE FEATURE NOT DEMONSTRATED BY TEST (CERTIFIED BY ANALYSIS). A FULL FLOW DETENT VERIFICATION TEST IS SCHEDULED FOR GFY 1988.

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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 A, ITEM NO. 1 - TOGGLE SWITCH.

(B) GROUND TURNAROUND TEST

COPPER PATH VERIFICATION, V4LAB0.040A, 050A, 060A EVERY FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION CAN BE TAKEN.

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