

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - SMK DET/FIRE SUP FMEA NO 05-6VF-2027 -3 REV:01/29/85

ASSEMBLY : PANEL L1A1 CRIT. FUNC: 1R
 P/N RI : ME452-0102-7302 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY : 1 EFFECTIVITY: X X X
 : ONE PER VEHICLE PHASE(S): PL X LO X OO X DO X LS X
 :

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES *JWB* J BROWN DES *JWB* SSM *JWB*
 REL M HOVE REL *M. Hove* REL *J. Brown*
 QE J COURSEN QE *J. Courson* QE *J. Brown*
 Rel *Wm D. Edwards 2/1/85*

ITEM:
 SWITCH, TOGGLE, SMOKE DETECTOR SENSOR RESET.

FUNCTION:
 PROVIDES A COMMON MANUAL RESET OF ALL SMOKE DETECTOR SENSORS. EACH OF THE THREE POLES SEPARATELY CONNECT A MN-DC-BUS TO THE INDIVIDUAL SENSORS FOR RESET OF REDUNDANT SMOKE DETECTORS WITHIN A GIVEN AREA. 31V73A1A1 S7.

FAILURE MODE:
 FAILS CLOSED (ONE OR ALL POLES).

CAUSE(S):
 PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION, PROCESSING ANOMALY.

EFFECT(S) ON:
 (A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
 (A) CONTINUOUS "RESET" COMMAND TO TWO OR MORE SMOKE DETECTORS.
 (B) HARDWARE ALARMS ARE INHIBITED ON ASSOCIATED SMOKE DETECTORS. SOFTWARE GENERATED SMOKE ALARMS ARE NOT AFFECTED AND WILL PROVIDE ALARMS IN CASE OF A FIRE.
 (C,D) NO EFFECT - FIRST FAILURE.
 (E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE BASED UPON THE FOLLOWING SCENARIO:

- 1) RESET FAILED ON (CONTINUOUS).
- 2) LOSS OF ONE SMOKE SENSOR CONCENTRATION OUTPUT.
- 3) LOSS OF REDUNDANT SMOKE SENSOR CONCENTRATION OUTPUT.

LOSS OF ALL SMOKE DETECTION ALARMS COULD RESULT IN AN UNDETECTED FIRE. SCREEN "B" FAILS BECAUSE THERE IS NO INSTRUMENTATION IN THE RESET CIRCUIT.

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DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

(B) GROUND TURNAROUND TEST

SMOKE DETECTION CIRCUIT TESTS PERFORMED PRIOR TO EACH FLIGHT.

(E) OPERATIONAL USE

NO CREW ACTION REQUIRED AFTER FIRST FAILURE.