

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - SMK DET/FIRE SUP FMEA NO 05-6VF-2251 -1 REV: 01/29/88

ASSEMBLY : PANEL L1A1 CRIT. FUNC: 1R
P/N RI : JANTXV1N4246 CRIT. HDW: 3
P/N VENDOR: VEHICLE 102 103 104
QUANTITY : 9 EFFECTIVITY: X X X
: ONE PER SMOKE DETECTOR PHASE(S): PL X LO X OO X DO X LS X
: NINE PER VEHICLE

PREPARED BY: DES J BROWN APPROVED BY: DES [Signature] REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
REL M HOVE REL [Signature] APPROVED BY (NASA): SSM [Signature]
QE J COURSEN QE [Signature] REL [Signature] 3/1/88
QE [Signature] 3/1/88
Rel Com D. Subodan 7/1/88

ITEM:
DIODE, ISOLATION, SMOKE DETECTION TONE - C&W.

FUNCTION:
CIRCUIT ISOLATION BETWEEN INDIVIDUAL SMOKE DETECTORS AND THE AUDIO TONE ALARM OF THE C&W ELECTRONIC UNIT. ALLOWS EACH DETECTOR TO INDIVIDUALLY SIGNAL C&W WITHOUT INTERFERING WITH OTHER SMOKE DETECTOR ALARM SIGNALS.
31V73A1A1 ALCR1, CR2, CR3, CR4, CR5, CR8, CR9, CR10 AND CR11.

FAILURE MODE:
OPEN, FAILS TO CONDUCT.

CAUSE(S):
STRUCTURAL FAILURE, ELECTRICAL STRESS, THERMAL STRESS, PROCESSING-ANOMALY

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE
(A) LOSS OF ALARM SIGNAL TO C&W AND SIREN FOR ONE SMOKE DETECTOR
(B) LOSS OF AUDIBLE ALARM FROM C&W
(C) NO EFFECT - FIRST FAILURE.
(D) NO EFFECT - FIRST FAILURE. BACKUP ALARM VIA SOFTWARE WILL PROVIDE AUDIBLE ALARM.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE BASED UPON THE FOLLOWING SCENARIO:

- 1) AUDIO TONE ISOLATION DIODE FAILED OPEN.
- 2) LOSS OF ONE SMOKE SENSOR CONCENTRATION OUTPUT.
- 3) LOSS OF REDUNDANT SMOKE SENSOR CONCENTRATION OUTPUT.

SHUTTLE CRITICAL ITEMS LIST - CRBITER

SUBSYSTEM :EPD&C - SMK DET/FIRE SUPFMEA NO 05-6VF-2251 -1 REV:01/29/81

LOSS OF ALL SMOKE DETECTION ALARMS COULD RESULT IN AN UNDETECTED FIRE. SCREEN "B" PASSES BECAUSE OF SMOKE CONCENTRATION SOFTWARE ALARM ALERTS CREW OF EMERGENCY CONDITION.

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX F, ITEM NO. 3 - DIODE

(B) GROUND TURNAROUND TEST

SMOKE DETECTION CIRCUIT TESTS PERFORMED PRIOR TO EACH FLIGHT

(E) OPERATIONAL USE

NO CREW ACTION REQUIRED FOR FIRST FAILURE