

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2293A -1 REV:05/03/88

ASSEMBLY :AFT PCA 4 ABORT: RTLS,TAL CRIT.FUNC: 1R
 P/N RI :ME451-0016-0100 CRIT. HDW: 3
 P/N VENDOR: VEHICLE 102 103 104
 QUANTITY :1 EFFECTIVITY: X X X
 :ONE, APCA 4 PHASE(S): PL X LO X OO X DO X LS X
 :

REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
 PREPARED BY: APPROVED BY: APPROVED BY (NASA):
 DES R PHILLIPS DES R. B... SSM R.C. Stone 5/12/88
 REL M HOVE REL William C. ... 5-6-88 RELDD ...
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ITEM:
 FUSE, 100 AMP, HIGH CURRENT - MAIN DC BUS A, AFT PCA 4 TO AFT LCA 1

FUNCTION:
 CONDUCTS CIRCUIT CURRENT AND PROVIDES OVERCURRENT PROTECTION FOR MAIN DC BUS A BETWEEN AFT PCA 4 AND AFT LCA 1. 54V76A134F6

FAILURE MODE:
 FAILS OPEN

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

- EFFECT(S) ON:
 (A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:
- (A) LOSS OF MAIN DC BUS A POWER TO AFT LCA-1.
 - (B) LOSS OF MAIN DC BUS A AFT LCA-1 (54V76A121) LOADS WHICH INCLUDE HELIUM SUPPLY BLOWDOWN VALVE CIRCUITRY.
 - (C) FIRST FAILURE - NO EFFECT.
 - (D) FIRST FAILURE - NO EFFECT. CRIT 1 FOR INTACT ABORT DUE TO LOSS OF CAPABILITY TO PERFORM HELIUM BLOWDOWN FOR PURGING AFT COMPARTMENTS DURING RTLS AND TAL ABORTS.
 - (E) POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO OR MORE ADDITIONAL FAILURES DUE TO LOSS OF MAIN DC BUS POWER FOR CRITICAL LOADS NECESSARY FOR CREW/VEHICLE SAFETY. EXAMPLE: AFT RCS PROPELLANT LEAK REQUIRING CLOSURE OF LEFT OR RIGHT TANK ISOLATION VALVE 1/2, FAILURE OF THIS FUSE, RCS AC MOTOR VALVE BELLOW LEAK RESULTING IN CONTINUOUS VALVE POWER AND SUBSEQUENT PROPELLANT DECOMPOSITION AND VALVE RUPTURE/EXPLOSION.

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DISPOSITION & RATIONALE:

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

A,B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX D, ITEM NO. 3 - FUSE, HIGH CURRENT.

B) GROUND TURNAROUND TEST

VERIFY DC MAIN BUSES, ESSENTIAL BUSES, FORWARD PCA, AND AFT PCA
VOLTAGES USING PANEL METERS AND OI PCM INSTRUMENTATION. TEST
PERFORMED FOR ALL FLIGHTS.

E) OPERATIONAL USE

NONE