

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2008A -1 REV:05/03/88

ASSEMBLY :M-DCA1 & APCA 4
P/N RI :ME451-0016-2200
P/N VENDOR:
QUANTITY :4
:FOUR
:

CRIT.FUNC: 1R
CRIT. HDW: 3
VEHICLE 102 103 104
EFFECTIVITY: X X X
PHASE(S): PL X LO X OO X DO X LS X

PREPARED BY:
DES R PHILLIPS
REL M HOVE
QE J COURSEN

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS
APPROVED BY:
DES [Signature]
REL [Signature] 5-6-88
QE [Signature] 5-6-88
APPROVED BY (NASA):
SSM [Signature]
REL [Signature] 5/11/88
QE [Signature]

ITEM:

FUSE, 200 AMP FUSE - MAIN DC BUS A TO APT MAIN DC BUS A FEEDERS

FUNCTION:

PROTECTS MAIN DC BUS A FROM OVERLOADS IN THE FEEDER TO THE APT DC BUS,
AND PROTECTS FEEDER FROM POSSIBLE OVERLOAD WHEN SUPPLIED BY GSE.
40V76A31F15, F16; 54V76A134F1, F2

FAILURE MODE:

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 TO APT DC BUS A FEEDER REDUNDANCY.

(B) LOSS OF REDUNDANCY TO LOADS ON APT DC BUS A. NO EFFECT FOR FIRST
FAILURE. THE REDUNDANT APT DC BUS A FEEDER CAN SUPPLY THE REQUIRED APCA
4 LOADS.

(C,D) NO EFFECT - FIRST FAILURE.

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EFFECT(S) ON (CONTINUED):

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL
CRITICALITY EFFECT:

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL EQUIPMENT
NECESSARY FOR CREW/VEHICLE SAFETY (E.G., ET UMBILICAL DOOR CLOSURE) VIA
THE FOLLOWING SCENARIO:

- (1) LOSS OF FUSE.
- (2) LOSS OF REDUNDANT AFT MAIN BUS A FEEDER.
- (3) LOSS OF ANOTHER MAIN DC BUS.

SCREEN "B" IS FAILED BECAUSE OF THE PARALLEL CIRCUIT DESIGN. UNIQUE TO
INTACT ABORT, LOSS OF SECOND FEEDER FUSE PRECLUDES OPERATION OF HELIUM
BLOWDOWN VALVES TO PURGE HAZARDOUS GAS FROM AFT COMPARTMENTS. POSSIBLE
LOSS OF CREW/VEHICLE THROUGH EXPLOSION OF UNPURGED HAZARDOUS GASES.

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 THE INTEGRITY OF THE FUSES IN REDUNDANT PATHS BETWEEN THE AFT
POWER CONTROL ASSEMBLY 4 MAIN BUS AND THE CORRESPONDING MAIN DISTRIBUTION
CONTROL ASSEMBLY 1 MAIN BUS. USE CLAMP-ON AMMETER WHERE NECESSARY TO
VERIFY REDUNDANT PATHS. TEST WILL BE PERFORMED FOR ALL FIRST FLIGHTS,
102-FLT 8, 103-FLT 7, 104-FLT 3, AND ALL VEHICLES AT 10 FLIGHT INTERVALS
THEREAFTER.

(E) OPERATIONAL USE

NONE