FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL HARDWARE
NUMBER: 05-6-2010C -X

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 7 05/26/94

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:	AFT PCA 4, 5, 6	VO70-765280
SRU	:	FUSE, HIGH CURRENT	ME451-0016-2150

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
FUSE F3, 150 AMP, HIGH CURRENT - LOCATED IN AFT PCA 6

REFERENCE DESIGNATORS: 56V76A136F3

QUANTITY OF LIKE ITEMS: 1
ONE

FUNCTION:
CONDUCTS ORBITER MAIN BUS C CURRENT AND PROVIDES OVERCURRENT PROTECTION FROM AFT POWER CONTROLLER ASSEMBLY (APCA) 6 TO APCA 3.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CRITICAL FAILURE MODE
NUMBER: 05-6-2010C - 01

REVISION# 7 05/26/94
SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
LRU: AFT PCA 4, 5, 6 **CRITICALITY OF THIS**
ITEM NAME: FUSE, HIGH CURRENT **FAILURE MODE:** 1R2

FAILURE MODE:
FAILS OPEN, FAILS TO CONDUCT

MISSION PHASE:
LO LIFT-OFF

VEHICLE/PAYLOAD/KIT EFFECTIVITY:
102 COLUMBIA
103 DISCOVERY
104 ATLANTIS
105 ENDEAVOUR

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN
A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)
"A" SCREEN PASSES BECAUSE FUSE FAIL OPEN IS DETECTABLE DURING GROUND TURNAROUND TEST
B)
"B" SCREEN PASSES BECAUSE FUSE FAIL OPEN IS DETECTABLE DURING FLIGHT FROM AVAILABLE MEASUREMENT INDICATION
C)
"C" SCREEN PASSES BECAUSE REDUNDANT FUSES ARE PHYSICALLY ISOLATED FROM EACH OTHER

- FAILURE EFFECTS -

(A) SUBSYSTEM:
INABILITY TO CONDUCT ORBITER MAIN BUS C POWER FROM APCA 6 TO APCA 3

(B) INTERFACING SUBSYSTEM(S):
LOSS OF POWER REDUNDANCY TO FOUR SRB-RGA'S (1, 2, 3 AND 4).

(C) MISSION:
NO EFFECT - FIRST FAILURE

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(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER TWO FAILURES:

FIRST FAILURE (FUSE OPENS) WOULD CAUSE LOSS OF BACK UP POWER FROM ORBITER MAIN BUS C TO FOUR SRB-RGA'S.

SECOND FAILURE (FAILING OPEN OF FUEL CELL NO. 3 MOTOR DRIVEN POWER CONTACTOR) CAUSES LOSS OF PRIMARY POWER FROM ORBITER MAIN BUS A. THIS WOULD CAUSE SIMULTANEOUS TOTAL LOSS OF POWER TO SRB-RGA'S 2, 3, AND 4 RESULTING IN LOSS OF THREE OF FOUR SRB-RGA'S.

-DISPOSITION RATIONALE-

(A) DESIGN:
REFER TO APPENDIX D, ITEM NO. 3 - FUSE, HIGH CURRENT

(B) TEST:
REFER TO APPENDIX D, ITEM NO. 3 - FUSE, HIGH CURRENT

GROUND TURNAROUND TEST
ANY GROUND TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
REFER TO APPENDIX D, ITEM NO. 3 - FUSE, HIGH CURRENT

(D) FAILURE HISTORY:
FAILURE HISTORY IS TRACKED IN THE PRACA SYSTEM.

(E) OPERATIONAL USE:
NONE

- APPROVALS -

PAE MANAGER	: K. PRESTON	: K.L. Preston 6-17-94
PRODUCT ASSURANCE ENGR	: T. KIMURA	: T. Kimura 6/2/94
DESIGN ENGINEERING	: J. GULSBY	: J. Gulsby 6/2/94
NASA SSMA	:	: [illegible] 4-11-95
NASA SUBSYSTEM MANAGER	:	: [illegible] 4-11-95 For Frank Adams