

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 05-6-2278 -X**

**SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: 0 05/03/88**

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: MDCA 1	V070-764200
LRU	: MDCA 2	V070-764220
LRU	: MDCA 3	V070-764230
SRU	: FUSE	ME451-0016-3035

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
FUSE, 35 AMP, HIGH CURRENT - MAIN DC BUSES TO PANELS O14, O15, O16, R15 AND ML86B

REFERENCE DESIGNATORS: 40V76A31F18
40V76A31F19
40V76A31F20
40V76A31F21
40V76A32F18
40V76A32F19
40V76A32F20
40V76A32F21
40V76A33F18
40V76A33F19
40V76A33F20
40V76A33F21

QUANTITY OF LIKE ITEMS: 12
TWELVE

FUNCTION:
PROVIDES CIRCUIT PROTECTION BETWEEN MAIN DC BUS IN MAIN DC ASSEMBLY TO MAIN DC SUB-BUSES IN PANELS O14, O15, O16, R15 AND ML86B.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 05-6-2278-01

REVISION#: 1 07/26/99

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL

LRU: MDCA 1, 2, 3

CRITICALITY OF THIS

ITEM NAME: FUSE

FAILURE MODE: 1R2

FAILURE MODE:

FAILS OPEN

MISSION PHASE:

PL	PRE-LAUNCH
LO	LIFT-OFF
OO	ON-ORBIT
DO	DE-ORBIT
LS	LANDING/SAFING

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) PASS
B) FAIL
C) PASS

PASS/FAIL RATIONALE:

A)

B)

"B" SCREEN FAILS SINCE THERE ARE NO DIRECT MEASUREMENTS ON FUSE OUTPUT, AND FUSES ARE REDUNDANT.

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**

LOSS OF ONE MAIN DC BUS FEEDER TO A SUB BUS IN ONE FLIGHT OR MID DECK PANEL

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(B) INTERFACING SUBSYSTEM(S):

LOSS OF REDUNDANCY FOR EMERGENCY FUNCTIONS (SMOKE DETECTION/FIRE SUPPRESSION AND KU-BAND ANTENNA JETTISON) POWERED FROM ASSOCIATED PANEL. LOSS OF KU-BAND ANTENNA ELECTRONICS AND STOW CAPABILITY

(C) MISSION:

POSSIBLE LOSS OF SCIENTIFIC DATA DUE TO LOSS OF KU BAND ANTENNA ELECTRONICS.

(D) CREW, VEHICLE, AND ELEMENT(S):

FIRST FAILURE NO EFFECT

(E) FUNCTIONAL CRITICALITY EFFECTS:

CASE 1 (1R2):

POSSIBLE LOSS OF CREW/VEHICLE AFTER SECOND FAILURE (LOSS OF KU-BAND ANTENNA JETTISON) DUE TO LOSS OF ABILITY TO ALLOW CLOSURE OF THE PAYLOAD BAY DOORS).

CASE 2 (1R3):

SECOND FAILURE - AN EVENT (I.E. FIRE IN THE AVIONICS BAY) - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF EMERGENCY FUNCTIONS (AVIONICS BAY FIRE/SMOKE DETECTION AND SUPPRESSION) AFTER THIRD FAILURE.

NOTE:

40V76A31F18 AND 40V76A33F18 ARE HARDWARE CRITICALITY 3 BECAUSE THERE ARE NO EMERGENCY FUNCTIONS SUPPLIED BY THESE FUSES.

-DISPOSITION RATIONALE-

(A) DESIGN:

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

(B) TEST:

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

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

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(C) INSPECTION:

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

(D) FAILURE HISTORY:

CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE.

(E) OPERATIONAL USE:

FLIGHT CREW MAY BE REQUIRED TO DISCHARGE HAND-HELD FIRE EXTINGUISHER INTO AFFECTED AVIONICS BAY PRIOR TO SEAT INGRESS FOR ENTRY.

- APPROVALS -

EDITORIALLY APPROVED	: BNA	: <u>J. Kemura 7-26-99</u>
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-025_05-6