

PAGE: 1

PRINT DATE: 06/08/90

S0502501
ATTACHMENT -
Page 54 of 152

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL HARDWARE
NUMBER: MO-AAZ-320-X

SUBSYSTEM NAME: STABILIZED PAYLOAD DEPLOYMENT SYSTEM
REVISION : 2 06/08/90

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ ASSEM :	PANEL A7A3	V790-773001
■ SRU :	CIRCUIT BREAKER	MC-54-0026-2030

PART DATA

■ REFERENCE DESIGNATORS: 36V73A7A3 - CB3
 : 36V73A7A3 - CB4

■ QUANTITY OF LIKE ITEMS: 2

■ FUNCTION:
PROVIDES ON/OFF SWITCHING AND OVERCURRENT PROTECTION FOR THE PEDESTAL
DRIVE TRANSFER SYSTEM. CB3 PROVIDES POWER FROM MN A TO THE "ARM" AND
"FIRE" CIRCUIT FOR SYSTEM A. CB4 PERFORMS THE SAME FUNCTION FROM MN B
TO SYSTEM B.

PAGE: 2

PRINT DATE: 06/08/90

S050250L
ATTACHMENT -
Page 55 of 152

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-320-01

REVISION# 2 06/08/90
SUBSYSTEM: STABILIZED PAYLOAD DEPLOYMENT SYSTEM
ITEM NAME: CIRCUIT BREAKER
CRITICALITY OF THIS FAILURE MODE: 1R2

■ FAILURE MODE:
OPEN

MISSION PHASE:
00 ON-ORBIT

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

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

■ CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

■ REDUNDANCY SCREEN A) PASS
■ B) FAIL
■ C) PASS

PASS/FAIL RATIONALE:

■ A)
PRELAUNCH CHECKOUT

■ B)
CAPACITOR CHARGE/DISCHARGE CAN BE MONITORED BY CREW - CANNOT DETERMINE
CIRCUIT BREAKER FAILURE.

■ C)
PHYSICAL AND ELECTRICAL ISOLATION OF REDUNDANT ELEMENTS.

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
LOSS OF DC POWER TO ASSOCIATED PYROTECHNIC CONTROL SYSTEM.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-320-01

- (B) INTERFACING SUBSYSTEM(S):
THE PEDESTAL DRIVER TRANSFER FUNCTION CANNOT BE PERFORMED BY THE ASSOCIATED SYSTEM. REDUNDANT PYROTECHNIC CONTROL WILL COMPLETE THE FUNCTION.
- (C) MISSION:
NO EFFECT - FIRST FAILURE.
- (D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF BOTH CIRCUIT BREAKERS IN THIS MODE COULD RESULT IN LOSS OF ABILITY TO TRANSFER PEDESTAL DRIVE TO THE SECONDARY PEDESTAL IF REQUIRED AS A RESULT OF EARLIER PROBLEM IN PRIMARY CIRCUIT. LOSS OF ABILITY TO TRANSFER COULD RESULT IN PARTIALLY DEPLOYED PAYLOAD PREVENTING PAYLOAD BAYDOOR CLOSURE. RESULTING IN POSSIBLE LOSS OF CREW AND VEHICLE.

- DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX D, ITEM NO. 1.
- (B) TEST:
REFER TO APPENDIX D, ITEM 1.

OMRSD: GROUND TURNAROUND
FREQUENCY OF CHECKOUT IS MISSION DEPENDENT. PIC BITE CIRCUITRY -
VERIFIES ENERGY OUTPUT OF THE PIC'S. S0790A.230-I, -J, -K, -L.
- (C) INSPECTION:
REFER TO APPENDIX D, ITEM 1.
- (D) FAILURE HISTORY:
REFER TO APPENDIX D, ITEM 1.
- (E) OPERATIONAL USE:
NONE.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-320-01

- APPROVALS -

RELIABILITY ENGINEERING:	W. R. MARLOWE	9/14/90	W. R. Marlowe 6/14/90
DESIGN ENGINEERING	: T. TAUFER		T. Tauffer 6/14/90
QUALITY ENGINEERING	: M. F. MERGEN		M. F. Mergen for 6/14/90
NASA RELIABILITY	:		9/17/90
NASA SUBSYSTEM MANAGER	:		9/25/90
NASA EPD&C RELIABILITY	:		M. S. Swanson for J. Woodward 9/18/90
NASA QUALITY ASSURANCE	:		9/19/90
NASA EPD&C SUBSYS MGR	:		for F. Lewis 9/20/90