ILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: MO-AA1-430-X

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

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
ASSEM	:	MID MCA-1	V070-764610
ASSEM	:	MID MCA-2	V070-764620
ASSEM	:	MID MCA-3	V070-764630
ASSEM	:	MID MCA-4	V070-764640
SRU	:	RELAY, HYBRID	MC455-0135-0001
■ SRU	:	RELAY, HYBRID	MC455-0135-0002

PART DATA

XTENDED DESCRIPTION OF PART UNDER ANALYSIS:

■ REFERENCE DESIGNATORS: 40V76A117 - K62
: 40V76A118 - K22
: 40V76A119 - K80
: 40V76A120 - K60

QUANTITY OF LIKE ITEMS: 4

■ FUNCTION:
PROVIDES ON/OFF CONTROL OF Yo DRIVE MOTOR POWER FOR THE "INBOARD" COMMAND IN RESPONSE TO COMMANDS FROM SWITCHES S45 AND S5.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA1-430-03

REVISION# 2 06/08/90

SUBSYSTEM: STABILIZED PAYLOAD DEPLOYMENT SYSTEM

ITEM NAME: RELAY, HYBRID

CRITICALITY OF THIS FAILURE MODE:2R3

■ FAILURE MODE:
SHORTED. ANY SINGLE SET OF CONTACTS.

MISSION PHASE:
OO ON-ORBIT

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

CAUSE:
PIECE PART 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)
ONE PHASE WILL NOT CAUSE MOTOR TO DRIVE. CANNOT CONFIRM RELAY FAILURE.

■ C)
PHYSICAL AND ELECTRICAL ISOLATION OF REDUNDANT ELEMENTS.

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
A SINGLE PHASE OF POWER WILL BE CONTINUOUSLY APPLIED TO A DRIVE MOTOR. WHENEVER THREE PHASE AC POWER IS PRESENT.

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■ (B) INTERFACING SUBSYSTEM(S):
THE DRIVE MOTOR COULD OVER HEAT AND FAIL. A FAILED MOTOR WOULD CAUSE A PEDESTAL FUNCTION TO BE AT HALF SPEED. IF THE RELAY FOR OPPOSITE MOTOR ROTATION IS ACTIVATED CIRCUIT BREAKER COULD TRIP.

■ (C) MISSION:
NO EFFECT - FIRST FAILURE.

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

■ (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF BOTH RELAYS IN THIS MODE WOULD RESULT IN LOSS OF OUTBOARD YO DRIVE CAPABILITY WHICH CAUSES LOSS OF MISSION.

- DISPOSITION RATIONALE -

■ (A) DESIGN:
REFER TO APPENDIX C, ITEM 1.

■ (B) TEST:
REFER TO APPENDIX C, ITEM 1.

■ (C) INSPECTION:
REFER TO APPENDIX C, ITEM 1.

■ (D) FAILURE HISTORY:
REFER TO APPENDIX C, ITEM 1.

■ (E) OPERATIONAL USE:
NO OPERATIONAL WORKAROUND AFTER SECOND FAILURE, HOWEVER, EVA IS AVAILABLE TO DRIVE PEDESTAL OUTBOARD.

- APPROVALS -

RELIABILITY ENGINEERING	W. R. MARLOWE	G-E	6/14/90
DESIGN ENGINEERING	T. TAUFER		6/14/90
QUALITY ENGINEERING	M. F. MERGEN		6/19/90
NASA RELIABILITY			9/25/90
NASA SUBSYSTEM MANAGER			9/12/90
NASA EPD&C RELIABILITY			9/20/90
NASA QUALITY ASSURANCE			
NASA EPD&C SUBSYS MGR			