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ATTACHMENT -
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FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: MO-AA1-415-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-3	V070-764630
SRU :	RELAY, HYBRID	MC455-0135-0001
■ SRU :	RELAY, HYBRID	MC455-0135-0002

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

■ REFERENCE DESIGNATORS: 40V76A117 - K25
: 40V76A117 - K73
: 40V76A119 - K31
: 40V76A119 - K43

QUANTITY OF LIKE ITEMS: 4

■ FUNCTION:

PROVIDES CONTROL OF AC POWER APPLICATION TO DRIVE MOTOR FOR THE PRIMARY PEDESTAL STOP FUNCTION. K25 FOR SYSTEM 1/PRIMARY PEDESTAL, K31 FOR SYSTEM 2/PRIMARY PEDESTAL. K43 AND K73 PERFORM THE SAME FUNCTION FOR THE SECONDARY PEDESTAL.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL FAILURE MODE
NUMBER: MO-AA1-415-04**

SUBSYSTEM: STABILIZED PAYLOAD DEPLOYMENT SYSTEM REVISION# 2 06/08/90
ITEM NAME: RELAY, HYBRID CRITICALITY OF THIS FAILURE MODE:2R3

- FAILURE MODE:
SHORTED, ANY TWO OR MORE SETS OF CONTACTS.

MISSION PHASE:
00 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
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REDUNDANCY SCREEN A) PASS
 B) FAIL
 C) PASS

PASS/FAIL RATIONALE:

- A)
PRELAUNCH CHECKOUT
 - B)
TWO OR MORE PHASES COULD CAUSE MOTOR TO DRIVE. CANNOT CONFIRM RELAY FAILURE.
 - C)
SEPARATION OF REDUNDANT ELEMENTS
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-

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
TWO OR MORE AC POWER PHASES WILL BE CONTINUOUSLY APPLIED TO THE ASSOCIATED MOTOR. WHENEVER THREE PHASE AC POWER IS PRESENT.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA1-415-04**

- (B) INTERFACING SUBSYSTEM(S):
IF UNDETECTED MOTOR WILL DRIVE AGAINST STOPS, OVERHEAT, AND FAIL. MOTOR DRIVE FOR THE SELECTED FUNCTION WOULD BE AT HALF SPEED. IF THE RELAY FOR OPPOSITE MOTOR ROTATION IS ACTIVATED CIRCUIT BREAKER WILL TRIP.
- (C) MISSION:
NO EFFECT.
- (D) CREW, VEHICLE, AND ELEMENT(S):
FIRST FAILURE - NO EFFECT.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF ALL CONTROL SYSTEMS ON THE PRIMARY PEDESTAL WILL REQUIRE A TRANSFER TO THE SECONDARY PEDESTAL. LOSS OF SECONDARY DRIVE CAPABILITY RESULTS IN INABILITY TO DEPLOY PAYLOAD.

- DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX C, ITEM 1.
- (B) TEST:
REFER TO APPENDIX C, ITEM 1.

OMRSD: GROUND TURNAROUND;
FREQUENCY OF CHECKOUT IS MISSION DEPENDENT. 3-PHASE AC MOTOR CIRCUITS VERIFY PROPER PHASE ROTATION AND MOTOR PHASE VOLTAGE.
S0790A.250-8
S0790A.260-8
S0790A.270-8
S0790A.280-8
- (C) INSPECTION:
REFER TO APPENDIX C, ITEM 1.
- (D) FAILURE HISTORY:
REFER TO APPENDIX C, ITEM 1.
- (E) OPERATIONAL USE:
NONE

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA1-415-04

- APPROVALS -

RELIABILITY ENGINEERING:	W. R. MARLOWE	<i>W. R. Marlowe 6/14/90</i>
DESIGN ENGINEERING	: T. TAUFER	<i>T. Tauffer 6/14/90</i>
QUALITY ENGINEERING	: M. F. MERGEN	<i>M. F. Mergen for 6/14/90</i>
NASA RELIABILITY	:	<i>9/17/90</i>
NASA SUBSYSTEM MANAGER	:	<i>9/25/90</i>
NASA EPD&C RELIABILITY	:	<i>M. S. Dixon for I. Woodard 9/18/90</i>
NASA QUALITY ASSURANCE	:	<i>9/20/90</i>
NASA EPD&C SUBSYS MGR	:	<i>for F. Harris 9/20/90</i>

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