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FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL HARDWARE
NUMBER: MO-AA2-110-X

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

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ ASSEM :	PANEL A6A1	V070-730325
■ SRU :	SWITCH, ROTARY	ME452-0093-5031

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

■ REFERENCE DESIGNATORS: 36V73A6A1 - S37

■ QUANTITY OF LIKE ITEMS: 1

■ FUNCTION:

SWITCH S37 IS A MULTIPOLE ROTARY SWITCH THAT PROVIDES ALTERNATE CAPABILITY TO SELECTIVELY SUPPLY MAIN DCA AND MAIN DCB TO SPECIFIC LOGIC CONTROL CIRCUITS FOR THE STABILIZED PAYLOAD DEPLOYMENT SYSTEM OPERATION. DEPENDENT ON THE SWITCH POSITION, MAIN DC A, MAIN DC B AND OPERATIONAL INSTRUMENTATION AND TALKBACKS WILL BE CONDUCTED THROUGH THE SWITCH.

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FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-110-02

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

■ FAILURE MODE:
FAILS OPEN (ALL 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, PROCESSING ANOMALY

■ CRITICALITY I/I DURING INTACT ABORT ONLY? NO

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

PASS/FAIL RATIONALE:

■ A)
PRELAUNCH CHECKOUT

■ B)
CREW OBSERVATION. NO INPUT TO OI MDM AND EVENT INDICATORS.

■ C)
PHYSICAL AND ELECTRICAL ISOLATION OF REDUNDANT ELEMENTS.

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
LOSS OF ALL ALTERNATE CONTROL POWER TO DRIVE LOGIC CIRCUITS.

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- (B) INTERFACING SUBSYSTEM(S):
LOSS OF YO, PRIMARY AND SECONDARY RDU CONTROL REDUNDANCY,
LOSS OF OPERATIONAL INSTRUMENTATION, AND TALKBACK.
- (C) MISSION:
FIRST FAILURE - LOSS OF MISSION. LOSS OF ALL ALTERNATE SELECT
CAPABILITY TO CONTROL YO AND RDU DRIVE ACTUATOR.
- (D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE LOSS OF CREW/VEHICLE WITH PARTIAL PAYLOAD DEPLOYMENT PREVENTING
PAYLOAD BAY DOOR CLOSURE.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF ALL CAPABILITY TO SELECT YO AND RDU DRIVE FUNCTION. COMBINED
FAILURES COULD RESULT IN PARTIAL PAYLOAD DEPLOYMENT PREVENTING PAYLOAD
BAYDOOR CLOSURE. RESULTING IN POSSIBLE LOSS OF CREW AND VEHICLE.

- DISPOSITION RATIONALE -

- (A) DESIGN:
REFER TO APPENDIX A, ITEM 2.
- (B) TEST:
REFER TO APPENDIX A, ITEM 2.

OMRSD: GROUND TURNAROUND
FREQUENCY OF CHECKOUT IS MISSION DEPENDENT. DUAL MOTOR FUNCTIONAL,
VERIFIES SWITCH OPERATION S0790A.020-B.
- (C) INSPECTION:
REFER TO APPENDIX A, ITEM 2.
- (D) FAILURE HISTORY:
REFER TO APPENDIX A, ITEM 2.
- (E) OPERATIONAL USE:
NONE.

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- APPROVALS -

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