

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: MO-AD1-A05-X

SUBSYSTEM NAME: REMOTELY OPERATED ELECTRICAL UMBILICAL

REVISION : 1 02/11/91

	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 CAPABILITY TO SELECTIVELY SUPPLY MAIN DC A AND MAIN DC B TO SPECIFIC LOGIC CONTROL CIRCUITS FOR THE REMOTELY OPERATED ELECTRICAL UMBILICAL OPERATION. DEPENDENT ON THE SWITCH POSITION, MAIN DC A, MAIN DC B, AND OPERATIONAL INSTRUMENTATION AND TALKBACKS WILL BE CONDUCTED THROUGH THE SWITCH.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AD1-A05-01

REVISION# 1 02/11/91 R
SUBSYSTEM: REMOTELY OPERATED ELECTRICAL UMBILICAL

ITEM NAME: SWITCH, ROTARY
CRITICALITY OF THIS FAILURE MODE: 2/2

■ 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 1/1 DURING INTACT ABORT ONLY? NO

■ REDUNDANCY SCREEN A) N/A
■ B) N/A
■ C) N/A

PASS/FAIL RATIONALE:

- A)
- B)
- C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:
LOSS OF ALL CONTROL POWER TO DRIVE LOGIC CIRCUITS.
- (B) INTERFACING SUBSYSTEM(S):
POSSIBLE LOSS OF NOMINAL PAYLOAD RETENTION LATCH FUNCTION AS COMMANDED BY THIS SWITCH.

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- (C) MISSION:
FIRST FAILURE - LOSS OF ROEU MISSION. LOSS OF ALL SELECT CAPABILITY TO CONTROL ARM AND HOOK LATCH DRIVE ACTUATORS.
- (D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT
- (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF ALL CAPABILITY TO SELECT ARM AND HOOK LATCH ACTUATORS. LOSS OF ROEU MISSION AND POSSIBLE LOSS OF NOMINAL PAYLOAD RETENTION LATCH FUNCTION.

- 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.
- (C) INSPECTION:
REFER TO APPENDIX A, ITEM 2.
- (D) FAILURE HISTORY:
REFER TO APPENDIX A, ITEM 2.
- (E) OPERATIONAL USE:
NONE.

- APPROVALS -

RELIABILITY ENGINEERING:	M. P. RAGUSA	<i>copy</i>	<i>M. P. Ragusa 4/2/91</i>
DESIGN SUPERVISOR	: G. M. ANDERSON	<i>copy</i>	<i>D. J. M. [unclear] 3-18-91</i>
QUALITY ENGINEERING	: M. F. MERGEN	<i>copy</i>	<i>[unclear] 4/11/91</i>
NASA RELIABILITY	:	<i>G.E.</i>	<i>[unclear] 4/24/91</i>
NASA SUBSYSTEM MANAGER	:		<i>[unclear] 6/21/91</i>
NASA EPD&C RELIABILITY	:		<i>M. Salomon [unclear] 6/21/91</i>
NASA QUALITY ASSURANCE	:		<i>RO [unclear] 6/12/91</i>
NASA EPD&C SUBSYS MGR	:		<i>[unclear] FOR F.A.C.A.N.I.S</i>