FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE
NUMBER: MO-AA2-330-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	:	SWITCH, TOGGLE	ME452-0102-7352

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

■ REFERENCE DESIGNATORS: 36V73A7A3 - S5
: 36V73A7A3 - S6

■ QUANTITY OF LIKE ITEMS: 2

■ FUNCTION:
PROVIDES ON/OFF CONTROL FOR THE PYROTECHNIC INITIATOR CONTROLLER "ARM" SIGNAL FOR THE PEDESTAL TRANSFER FUNCTION. S5 ARMS SYSTEM A AND S6 ARMS SYSTEM B.

PAGE: 5 PRINT DATE: 06/08/90

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-330-02

REVISION# 2 06/08/90

SUBSYSTEM: STABILIZED PAYLOAD DEPLOYMENT SYSTEM

ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS FAILURE MODE: 1R3

■ FAILURE MODE:
SHORTED, FAIL CLOSED 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, ELECTRICAL, 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)
CANNOT CONFIRM THAT FAILURE RESIDES IN THE SWITCH.

■ C)
PHYSICAL AND ELECTRICAL ISOLATION OF REDUNDANT ELEMENTS.

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:
A CONTINUOUS ARM SIGNAL TO THE ASSOCIATE PYRO INITIATOR CONTROLLER SYSTEM WHENEVER THE ASSOCIATED CIRCUIT BREAKER IS CLOSED.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AA2-330-02

- (B) INTERFACING SUBSYSTEM(S):
  NO EFFECT.

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

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

- (E) FUNCTIONAL CRITICALITY EFFECTS:
  THE CIRCUIT BREAKER(S) PROVIDING POWER TO THE ARM SWITCH(S) ARE NOT CLOSED UNTIL ARMING OF THE PYRO INITIATOR IS REQUIRED. TWO ADDITIONAL FAILURES ARE REQUIRED TO CAUSE AN INADVERTENT PEDESTAL TRANSFER. SUBSEQUENT LOSS OF SECONDARY PEDESTAL COULD RESULT IN A PARTIALLY DEPLOYED PAYLOAD PREVENTING PAYLOAD BAYDOOR CLOSURE RESULTING IN POSSIBLE LOSS OF CREW AND VEHICLE.

- DISPOSITION RATIONALE -

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

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

- (D) FAILURE HISTORY:
  REFER TO APPENDIX A, ITEM 1.

- (E) OPERATIONAL USE:
  NONE.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: MO-AAZ-330-02

- 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		9/12/90
NASA SUBSYSTEM MANAGER		9/25/90
NASA EPD&C RELIABILITY		9/19/90
NASA QUALITY ASSURANCE		9/19/90
NASA EPD&C SUBSYS MGR		9/20/90