PAGE: I PRINT DATE: 06/08/90

FAILURE MODES EFFECTS ANALYSIS (FMEA) — CRITICAL HARDWARE
NUMBER: MO-AA3-405-X

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

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ SRU :	SWITCH ASSEMBLY	V790-544180

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH ASSEMBLY - Yo DRIVE, GEAR BOX ASSEMBLY

■ QUANTITY OF LIKE ITEMS: 2
ONE SWITCH ASSEMBLY ON EACH PEDESTAL, PRIMARY AND SECONDARY.

■ FUNCTION:
THE SWITCH MECHANISM CONSISTS OF THREE SETS OF DUAL LIMIT SWITCHES, ACTUATED BY A COMMON CAM. THE SWITCH ASSEMBLY ON THE PRIMARY PEDESTAL I: USED TO INDICATE Y-AXIS PEDESTAL POSITION. THE SWITCH ASSEMBLY ON THE SECONDARY PEDESTAL IS USED TO CONTROL START-STOP FUNCTIONS OF THE Yo ACTUATOR DRIVE MOTORS. SWITCHES S7 AND S10 CONTROL THE OUTBOARD FUNCTION, SWITCHES S8 AND S11 CONTROL THE (RE)BERTH FUNCTION, AND SWITCHES S9 AND S12 CONTROL THE INBOARD FUNCTION. ALSO PROVIDES LOGIC INPUTS.

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: MO-AA3-405-04

REVISION# 2 03/01/90

SUBSYSTEM: STABILIZED PAYLOAD DEPLOYMENT SYSTEM

ITEM NAME: SWITCH ASSEMBLY CRITICALITY OF THIS FAILURE MODE:2/2

■ FAILURE MODE:
NO OUTPUT (AT "OUTBOARD"/"REL" POSITION).

MISSION PHASE:
OO ON-ORBIT

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

■ CAUSE:
ELECTRICALLY OPEN OR SHORTED, PIECE-PART STRUCTURAL FAILURE, CONTAMINATION

■ 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:
SWITCH DOES NOT INDICATE "OUTBOARD"/"REL" POSITION OF THE YO DRIVE.

■ (B) INTERFACING SUBSYSTEM(S):
SWITCH DOES NOT INDICATE "OUTBOARD"/"REL" POSITION OF THE YO DRIVE.

■ (C) MISSION:
LOSS OF MISSION DUE TO INABILITY TO CONFIRM POSITION.

■ (D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT ON VEHICLE OR CREW.

■ (E) FUNCTIONAL CRITICALITY EFFECTS:
LOSS OF FUNCTION COULD RESULT IN ADDITIONAL CREW ACTIVITY TO VERIFY POSITION.

- DISPOSITION RATIONALE -

■ (A) DESIGN:
REFER TO APPENDIX A, ITEM 4.

■ (B) TEST:
REFER TO APPENDIX A, ITEM 4.
QUALIFICATION TESTS PER DTP4779-801 WERE SUCCESSFULLY COMPLETED JANUARY 5, 1990 AND WILL BE DOCUMENTED IN TEST REPORT STS90D0115.

OMRSD: GROUND TURNAROUND
FREQUENCY OF CHECKOUT IS MISSION DEPENDENT. YO OUTBOARD-TO-BERTH VERIFICATION S0790A.080-A, -B, -C.

■ (C) INSPECTION:
REFER TO APPENDIX A, ITEM 4.

■ (D) FAILURE HISTORY:
REFER TO APPENDIX A, ITEM 4.

■ (E) OPERATIONAL USE:
NONE

- APPROVALS -

RELIABILITY ENGINEERING: W. R. MARLOWE : W R Marlowe 3/6/90
DESIGN ENGINEERING : G. CAMPBELL : G. Campbell 3/6/90
QUALITY ENGINEERING : M. F. MERGEN : M. F. Mergen
NASA RELIABILITY : G.E : B. L. Jenkins 9/25/90
NASA SUBSYSTEM MANAGER :
NASA QUALITY ASSURANCE : 4/4/90