

FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST

FMEA NUMBER: EC-PORT2-4 ORIGINATOR: JSC PROJECT: EDFT-03

PART NAME: HOUSING ASSY	LRU/ORU PART NUMBER: SED39126454-301	QUANTITY: 1
PART NUMBER: SED39126415-301	LRU/ORU PART NAME: PRUM ASSY	SYSTEM: GFE
LSC CONTROL NO: N/A	DRAWING/REF DESIGNATOR: SEE P/N	SUBSYSTEM: EVA
ZONE/LOCATION: PORT 2	EFFECTIVITY/AFFECT STAGE: STS-72	

CRITICALITY:

CRITICAL ITEM: Yes	SUCCESS PATHS: 2
CRITICALITY CATEGORY: 1R/2	SUCCESS PATH REMAINING: 1

END ITEM NAME: N/A
 END ITEM FUNCTIONAL: N/A
 END ITEM CAPABILITY: N/A
 END ITEM FAILURE TOLERANCE: N/A

REDUNDANCY SCREENS:

- A/1. C/O PRELAUNCH: Pass
2. C/O ON ORBIT: N/A for NSTS
- B/3. DETECTION FLIGHT CREW: Pass
4. DETECTION GROUND CREW: N/A
- C/5. LOSS OF REDUNDANCY FROM SINGLE CAUSE: Pass

FUNCTION: The Housing is the PRUM's structural interface to the transition plate mount in Port Bay 2. It incorporates 4 EVA Releasable bolts.

FAILURE MODE CODE: N/A for NSTS.

FAILURE MODE: Unable to remove bolt.

CAUSE: Contamination, galling.

REMAINING PATHS:

Primary path.

EFFECT/ MISSION PHASE: EVA

CORRECTIVE ACTION: None. The bolts would only be removed if a RU latch failure has occurred.

-FAILURE EFFECTS-

END ITEM/LRU/ORU/ASSEMBLY Unable to remove PRUM housing from Transition plate.

SUBSYSTEM/NEXT ASSEMBLY/INTERFACE: N/A.

SYSTEM/END ITEM/MISSION: None for this failure.

CREW/VEHICLE: None, unless prior failure has occurred in RU latch. Unable to secure PLB if RU is deployed. RU PRUM can not sustain landing loads in this configuration. Vehicle damage will occur unless the RU and PRUM are jettisoned.

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HAZARD INFORMATION:

HAZARD: N/A

HAZARD ORGANIZATION CODE: N/A

HAZARD NUMBER: N/A

TIME TO EFFECT: Hours
 TIME TO DETECT: Seconds
 TIME TO CORRECT: Minutes
 FAILURE DETECTION/FLIGHT Visual

REMARKS:

-RATIONALE FOR ACCEPTABILITY-

(A) DESIGN : The PRUM contingency EVA bolts are designed to the requirements specified in JSC-38192" Certification and Acceptance Requirements Document for the Flight Support Equipment for DTO 0671". The 4 bolts used to secure the PRUM mount to the transition plate incorporate the standard 7/16" bolt head required for all EVA fasteners.

(B) TEST: Applicable Requirements per JSC38192

Acceptance: Functional (performed at predelivery acceptance, preinstallation acceptance, and pre/post environmental test).

1) Torque required to release the bolts is between 230 and 250 in-lb.

Qualification:

Protoflight Vibration : A vibration test was performed to the following levels for a duration of 1 minute in each axis:

X AXIS		Y AXIS		Z AXIS	
20 - 30 Hz	+3 db/oct	20 - 45 Hz	+10 db/oct	20 - 45Hz	.009g ² /Hz
80 - 350 Hz	.040g ² /Hz	45 - 600 Hz	.060g ² /Hz	45 - 70 Hz	+12 db/oct
350 - 2000 Hz	-3db/oct	600 - 2000	-10db/oct	70 - 600 Hz	.050 g ² /Hz
				600 - 2000Hz	-6 db/oct
6.1 grms		7.7 grms		7.0 grms	

Thermal/Vacuum : PRUM subjected to a temperature of -100°F at a pressure of 1 x 10⁻⁵ torr.

(C) INSPECTION:

Fabrication - All PRUM components are verified to generally clean individually. The PRUM Assy is verified to be visually clean at predelivery acceptance.

Test - Quality Assurance surveillance is required at all test and inspections. Discrepancy reports are written on all noncompliances.

(D) FAILURE HISTORY: None

FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST

FMEA NUMBER: EC-PORT24

ORIGINATOR:

ISC

PROJECT:EDFT-03

PART NAME: HOUSING ASSY

LRU/ORU PART NUMBER: SED39126454-301

QUANTITY: 1

PART NUMBER: SED39126415-301

LRU/ORU PART NAME: PRUM ASSY

SYSTEM: GFE

LSC CONTROL NO: N/A

DRAWING/REF DESIGNATOR: SEE P/N

SUBSYSTEM: EVA

ZONE/LOCATION: PORT 2

EFFECTIVITY/AFFECT STAGE: STS-72

(E) OPERATIONAL USE:

1) Operational Effect - This is a secondary failure. If RU cannot be removed by primary method or secondary method, vehicle damage will likely occur.

2) Crew Action - Release EVA bolts securing PRUM and jettison PRUM and RU.

3) Crew Training - Crew trained in proper operation of PRUM during WETF training.

4) Mission constraint - None.

5) In Flight Checkout - Proper stowage of RU verified during EVA operations.

(F) MAINTAINABILITY: N/A

 PREPARED BY: G. Wright

REVISION:

DATE: 8/10/95

WAIVER NUMBER: