FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST

FMEA NUMBER: EC-PORT3-01 ORIGINATOR: JSC PROJECT: EDFT-03

PART NAME: SEGMENT LATCH HANDRAIL LATCH
LRU/ORU PART NUMBER: SED39126409-301
QUANTITY: 2,1

PART NUMBER: SED39126412-301 SED39126958-301
LRU/ORU PART NAME: RIG UMB ASSY
SYSTEM: GFE

LSC CONTROL NO: N/A
DRAWING/REF DESIGNATOR: SEE P/N
SUBSYSTEM: EVA

ZONE/LOCATION: PORT 3, 4
EFFECTIVITY/AFFECT STAGE: STS-72

CRITICALITY:

CRITICAL ITEM: No
SUCCESS PATHS: 3

CRITICALITY CATEGORY: 1R/3
SUCCESS PATH REMAINING: 2

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: N/A
4. DETECTION GROUND CREW: N/A
C/5. LOSS OF REDUNDANCY FROM SINGLE CAUSE: Pass

FUNCTION: The RU Segment Latch and Handrail Latch are used to secure the RU in the folded position. The latches consists of a captured EVA bolt, two hinge locks (which prevent the bolt from backing out), and a ball detent riding on notches around the bolt (preventing rotation of the bolts until a overriding torque is applied to bolt). The hinge locks are freed when a socket is inserted on the bolt.

FAILURE MODE CODE: N/A for NSTS

FAILURE MODE: Inadvertent release of latch
a) Bolt backs out b) Hinge locks out of position. c) ball detent fails

CAUSE: Piece part failure, vibration.

REMAINING PATHS:
a) hinge locks and ball detent
b) bolt , 2nd hinge lock, and ball detent.
c) bolts and 2 hinge locks

EFFECT/ MISSION PHASE:
Launch/Landing

CORRECTIVE ACTION: None.

-FAILURE EFFECTS-

END ITEM/LRU/ORU/ASSEMBLY: a) Bolt backing out will allow short section of RU to separate from long section. This is prevented by two hinge locks and ball detent. b) One hinge lock out of position has no effect. c) Ball detent failure alone has no effect.

SUBSYSTEM/NEXT ASSEMBLY/INTERFACE: N/A

SYSTEM/END ITEM/MISSION: Partial loss of DTO if RU is damaged.

CREW/VEHICLE: None for multiple failures. Loss of one RU segment latch or handrail latch may overload the remaining latches which keep RU folded. RU may become free in PLB and damage vehicle.

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HAZARD INFORMATION:

HAZARD: N/A

HAZARD ORGANIZATION CODE: N/A

HAZARD NUMBER: N/A

TIME TO EFFECT: Seconds
TIME TO DETECT: N/A
TIME TO CORRECT: Immediate
FAILURE DETECTION/FLIGHT None. Visual EVA only.

REMARKS:

Vibration test were performed to verify each redundant feature will prevent the latch bolt from backing out.

-RATIONALE FOR ACCEPTABILITY-

(A) DESIGN: N/A

(B) TEST: N/A

(C) INSPECTION: N/A

(D) FAILURE HISTORY: N/A

(E) OPERATIONAL USE: N/A

(F) MAINTAINABILITY: N/A

PREPARED BY: G. Wright
REVISION:

DATE: 8/10/95
WAIVER NUMBER: