FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST

FMEA NUMBER: EC-PWP72-40 ORIGINATOR: JSC PROJECT:EDFT-03

PART NAME: BASE JOINT
P/N: SED39127050-301
LSC CONTROL NO: N/A
ZONE/LOCATION: STBD-1,3

LRU/ORU PART NUMBER:SED39127050-301
LRU/ORU PART NAME: AIA
DRAWING/REF DESIGNATOR: SEE P/N
EFFECTIVITY/AFFECT STAGE: STS-72 & SUBS

QUANTITY:1
SYSTEM: GFE
SUBSYSTEM: EVA

CRITICALITY:

CRITICAL ITEM: YES
CRITICALITY CATEGORY: 1R/2

SUCCESS PATHS: 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: N/A
4. DETECTION GROUND CREW: N/A
C/5. LOSS OF REDUNDANCY FROM SINGLE CAUSE: Pass
6. ON-ORBIT RESTORABILITY: N/A for NSTS

FUNCTION: The APFR Ingress Aid (AIA) is a device that is used to enable the crew to ingress a foot restraint at a worksite with no handholds. The AIA attaches to a foot restraint that is equipped with the proper AIA interface. The AIA incorporates a plastic hinge, load alleviating ball and socket joint, and a deployable handle on a telescoping pole.

FAILURE MODE CODE: N/A for NSTS

FAILURE MODE: Unable to separate the AIA (at ball and socket joint) from the task plate.

CAUSE: Contamination, wear, piece part defect.

REMAINING PATHS: 1 - EVA release bolts on plate. EFFECT/ MISSION PHASE: EVA

CORRECTIVE ACTION: Remove bolts (7/16" hex heads) restraining the AIA interface to task plate.

-FAILURE EFFECTS-

END ITEM/LRU/ORU/ASSEMBLY: Unable to remove AIA from task plate.

SUBSYSTEM/NEXT ASSEMBLY/INTERFACE: N/A

SYSTEM/END ITEM/MISSION: None.

CREW/VEHICLE : Possible impact damage to vehicle.

FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST

FMEA NUMBER: EC-PWP72-40 ORIGINATOR: JSC PROJECT:EDFT-03

PART NAME: BASE JOINT	LRU/ORU PART NUMBER:SED39127050-301	QUANTITY:1
P/N: SED39127050-301	LRU/ORU PART NAME: AIA	SYSTEM: GFE
LSC CONTROL NO: N/A	DRAWING/REF DESIGNATOR: SEE P/N	SUBSYSTEM: EVA
ZONE/LOCATION: STBD-1,3	EFFECTIVITY/AFFECT STAGE: STS-72 & SUBS	

HAZARD INFORMATION:

HAZARD: N/A

HAZARD ORGANIZATION CODE: N/A

HAZARD NUMBER: N/A

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

REMARKS:

-RATIONALE FOR ACCEPTABILITY-

(A) DESIGN: The AIA is designed to the requirements specified in JSC-33063, " Certification and Acceptance Requirements Document for the Articulating Portable Foot Restraint Ingress Aid". The AIA plastic hinge is designed to withstand a minimum 1400 in-lb prior to bending. Lock status indicators are provided on the ball and socket joint. Redundant springs and ball detent make the AIA single fault tolerant in precluding inadvertent release.

(B) TEST: Applicable requirements per JSC-33063.

Acceptance:

1) Fit check of the AIA and its base performed at PDA and during qualification thermal test.
2) Force required to install the AIA shall be between 3.5 and 10 lb. Torque required is between 1 and 8 in-lb. Verified at PDA, PIA, Pre and Post Environmental test and during qualification thermal test.
3) Acceptance Vibration test of the AIA is performed to the following levels in all axis:

X AXIS/Y AXIS/Z AXIS

20 Hz	0.01 g^2/Hz
20 - 80 Hz	+3 db/oct
80 - 350 Hz	0.040g^2/Hz
350 - 2000 Hz	-3db/oct
2000 Hz	0.007 g^2/Hz

6.1 grms

Qualification:

Qualification / Acceptance Thermal: Functional test performed at -100°F and +200°F.

C) INSPECTION:

Fabrication - All AIA components are verified to visibly clean individually.
Test - Quality Assurance surveillance is required at all test and inspections. Discrepancy reports are written on all noncompliances.

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PART NAME: BASE JOINT
P/N: SED39127050-301
LSC CONTROL NO: N/A
ZONE/LOCATION: STBD-1,3

LRU/ORU PART NUMBER:SED39127050-301
LRU/ORU PART NAME: AIA
DRAWING/REF DESIGNATOR: SEE P/N
EFFECTIVITY/AFFECT STAGE: STS-72 & SUBS

QUANTITY:1
SYSTEM: GFE
SUBSYSTEM: EVA

(D) FAILURE HISTORY: None

(E) OPERATIONAL USE:
1) Operational Effect - Unable to stow AIA.
2) Crew Action - Perform contingency release using bolts securing AIA base.
3) Crew Training - Crew trained in proper operation of AIA.
4) Mission constraint - None.
5) In Flight Checkout - Proper function verified during EVA operations.

(F) MAINTAINABILITY: N/A

PREPARED BY: G. Wright REVISION:

DATE: 8/10/95 WAIVER NUMBER: