

CRITICAL ITEMS LIST (CIL)

SYSTEM: ASI
 SUBSYSTEM: ET Interface Hardware
 REV & DATE: J, 12-19-97
 DCN & DATE:
 ANALYSTS: C. Rush/E. Howell

FUNCTIONAL CRIT: 1
 PHASE(S): b
 HAZARD REF: S.11

FAILURE MODE: Structural Failure

FAILURE EFFECT: b) Loss of mission and vehicle/crew due to collapse of interface system resulting in fire/explosion.

TIME TO EFFECT: Immediate

FAILURE CAUSE(S):
 A: Improper Manufacture
 B: Failure of Attaching Hardware
 C: Failure of Shear Pin

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Interface and structural load path between ET and Orbiter interface structure.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
4.5.35.1	80911051119-069	Tank Fitting Assembly, Bipod	1	LWT-54 thru 73
	-089	Attachment	1	LWT-74 thru 83
	-099		1	LWT-84 & Up
4.5.36.1	80911051119-070	Tank Fitting Assembly, Bipod	1	LWT-54 thru 73
	-090	Attachment	1	LWT-74 thru 83
	-100		1	LWT-84 & Up

REMARKS: The fittings are grouped as the failure mode, causes and effects are the same.

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: ASI
SUBSYSTEM: ET Interface Hardware
FMEA ITEM CODE(S): 4.5.35.1, 4.5.36.1

REV & DATE: J, 12-19-97
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RATIONALE FOR RETENTION

DESIGN:

- A, B: The fitting and spindle are made from a titanium casting (TI-6AL-4V and AMS-5663 PPT HT inconel bar respectively. Materials are selected in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties. Surface integrity is assured by penetrant inspection per STP2501. The fitting and attachment hardware are designed to the required ultimate safety factor of 1.4 (ET Stress Report 826-2188).
- B: Attaching hardware is selected from the Approved Standard Parts List (ASPL 826-3500), installed per STP2014 and torqued using values specified on Engineering drawings. Tensile installation loads are sufficient to provide screening for major flaws in individual fasteners.
- C: The shear pin is machined from AMS-5663 PPT ,HT Inconel bar. Materials are selected in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties. Surface integrity is assured by penetrant inspection per STP2501. The shear pin is designed to the required ultimate safety factor of 1.4 (ET Stress Report 826-2188).

TEST:

The Tank Fitting Assembly, Bipod Attachment is certified. Reference HCS MMC-ET-TM08-L-S177 (LWT-54 thru 88) and HCS MMC-ET-TM08-L-S508 (LWT-89 & Up).

Vendor:

- B: Attaching fasteners are procured and tested to standard drawings 26L2 and 34L2.

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

- A-C: Verify materials selection and verification controls (MMC-ET-SE16, drawings 80911051112, 80911051114, 80911051107 and standard drawings 26L2 and 34L2; STMS632 for LWT-54 thru 83; STMS633 for LWT-84 & Up).
- A, C: Penetrant inspect part (drawings 80911051112, 80911051114, 80911051108 and STP2501 Type 1, Method A).
- A, C: Inspect dimensional conformance (drawings 80911051112, 80911051114, and 80911051108).

MAF Quality Inspection

- B: Inspect that attaching hardware is free from damage (drawing 80911051109 and STP2014).
- C: Inspect for shear pin installation and freedom of damage (drawing 80911051109).
- A, B: Verify fastener installation and witness torque (drawing 80911051109).
- B: Inspect safety wiring (drawing 80911051109 and STP2014).

FAILURE HISTORY:

Current data on test failures, unexplained anomalies and other failures experienced during ground processing activity can be found in the PRACA data base.