

CRITICAL ITEMS LIST (CIL)

SYSTEM: ASI
 SUBSYSTEM: ET Interface Hardware
 REV & DATE: J, 12-19-97
 DCN & DATE: 002, 2-28-99
 ANALYSTS: C. Rush/E. Howell

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

FAILURE MODE: Structural Failure

FAILURE EFFECT: a) Loss of mission and vehicle/crew due to fire/explosion.
 b) Loss of mission and vehicle/crew due to collapse of interface system resulting in fire/explosion or debris source to Orbiter from attaching hardware.

TIME TO EFFECT: Immediate

FAILURE CAUSE(S): A: Improper Manufacture
 B: Failure of Attaching Hardware
 C: Failure of Attaching Hardware (Debris Source)
 D: Bearing Failure

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provides support structure for aft Orbiter/ET attach and LO2/LH2 feedline fittings.

FMEA ITEM CODE(S)	PART NO.	PART NAME	QTY	EFFECTIVITY
4.5.34.1	80911031780-020	Structure Installation	1	LWT-54 thru 88
	-500	ET/Orbiter Aft	1	LWT-89 thru 98
	-509		1	LWT-99 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: ASI
SUBSYSTEM: ET Interface Hardware
FMEA ITEM CODE(S): 4.5.34.1

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

DESIGN:

- A-C: The pin and bushing details in the installation are made from AMS-5663 PPT HT Inconel bar stock. The cap details are made from 7075-T736 aluminum alloy plate stock. Materials selected for this part number are in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties. Surface integrity is assured by penetrant inspection per STP2501. The pins, bushings, caps and attachment hardware at pin joints are designed to the required ultimate safety factor of 1.4 (ET Stress Report 826-2188).
- B, C: 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.

TEST:

The Structure Installation ET/Orbiter Aft is certified. Reference HCS MMC-ET-TM08-L-S128 (LWT-54 thru 88) and HCS MMC-ET-TM08-L-S516 (LWT-89 & Up).

Vendor

- B, C: Attaching fasteners and bearings are procured and tested to standard drawings 26L2, 26L3, 26L13, 36L9, 26L17, 33L1, 33L2, 33L4 and 34L2.

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

- A-C: Verify materials selection and verification controls (MMC-ET-SE16, drawings 80911031742, 80911071742, 80911031971 and standard drawings 26L2, 34L2, 33L2, 26L13, 26L3, 33L4, 36L9, 26L17, 33L1).
- A: Penetrant inspect part (drawing 80911031742, 80911071742 and STP2501 Type 1 Method A).
- A: Inspect dimensional conformance (drawings 80911031742, 80911031971 and 80911071742).

MAF Quality Inspection:

- A-C: Inspect that attaching hardware is free from damage (drawing 80911031780, 80931073709 and STP2014).
- A-C: Verify fastener installation and witness torque (drawing 80911031780 and 80931073709).
- B, C: Verify locking feature (drawing 80911031780 and STP2014).
- D: Inspect for bearing movement (80911031780).

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.