

CRITICAL ITEMS LIST (CIL)

SYSTEM: ASI
 SUBSYSTEM: Support Hardware
 REV & DATE: J, 12-19-97
 DCN & DATE:
 ANALYSTS: H. Keefe/E. Howell

FUNCTIONAL CRIT: 1
 PHASE(S): a, b
 HAZARD REF: P.03
 (4.4.33.1),
 S.11 (4.4.33.1,
 4.4.34.1,
 4.4.35.1)

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 fire/explosion or debris source to Orbiter.
 TIME TO EFFECT: Seconds (a), Immediate (b)
 FAILURE CAUSE(S): A: Improper Manufacture
 B: Failure of Attaching Hardware
 C: Bearing Seizure (See Remarks)
 REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provide attachment fittings on the LH2 tank for the LO2 feedline strut and yoke assemblies.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
4.4.33.1	80911001456-009	Fitting Assy (LO2 Feedline)	2	LWT-54 & Up
4.4.34.1	80911001452-002	Fitting (LO2 Feedline)	1	LWT-54 & Up
4.4.35.1	80911001452-002	Fitting (LO2 Feedline)	1	LWT-54 & Up

REMARKS: The fittings are grouped as the failure mode, causes and effects are the same.
 Bearing seizure in 80911001456-009.

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: ASI
SUBSYSTEM: Support Hardware
FMEA ITEM CODE(S): 4.4.33.1, 4.4.34.1, 4.4.35.1

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

DESIGN:

- A, B: The Fittings are machined from 2219-T87 aluminum alloy plate stock. Materials selected for these part numbers are in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties. Acceptable surface finish of machined parts is assured by penetrant inspection per STP2501.
- A: The Fitting is designed to the required yield (1.1) and ultimate (1.4) safety factors (ET Stress Report 826-2188).
- B, C: The bearing and attaching hardware is selected from the Approved Standard Parts List (ASPL 826-3500). The hardware is 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 Fitting Assy (LO2 Feedline) and the Fitting (LO2 Feedline) are certified. Reference HCS MMC-ET-TM08-L-S088 (LWT-54 thru 88) and HCS MMC-ET-TM08-L-S507 (LWT-89 & Up).

Vendor:

- B, C: Attaching fasteners are procured and tested to standard drawings 26L2 and 34L2, and bearings are procured and tested to standard drawing 36L9.

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

- A-C: Verify materials selection and verification controls (MMC-ET-SE16, drawings 80911001456, 80911001452, and Standard drawings 26L2, 34L2 and 36L9).
- A, C: Inspect lubricant application (Standard drawing 36L9).
- A: Penetrant inspect part (drawings 80911001452, 80911001456, and STP2501, Type 1, Method A).
- A, C: Inspect dimensional conformance (drawing 80911001452 and 80911001456 and Standard drawing 36L9).
- A, C: Inspect staking of bearing (drawing 80911001456 and STP2010 Type 1).

MAF Quality Inspection:

- B: Inspect that attaching hardware is free from damage (drawing 80911001459 and STP2014).
- A, B: Verify installation and witness torque (drawings 80911001459, 80921011009 and STP2014).
- B: Verify locking feature (drawing 80911001459 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.