

CRITICAL ITEMS LIST (CIL)

SYSTEM: Propulsion/Mechanical
 SUBSYSTEM: Helium Inject
 REV & DATE: J, 12-19-97
 DCN & DATE:
 ANALYSTS: E. Flauss/H. Claybrook

FUNCTIONAL CRIT: 1
 PHASE(S): a, b, c
 HAZARD REF: P.02, P.06

FAILURE MODE: Leakage

FAILURE EFFECT: a) Loss of mission and vehicle/crew due to geysering followed by water hammer effect results in leakage of LO2 feedline and loss due to fire/explosion.
 b) Loss of mission and vehicle/crew due to loss of LH2 depletion sensor/ullage pressure transducer harnesses.
 c) Loss of life due to ET impact outside designated footprint.

TIME TO EFFECT: Seconds

FAILURE CAUSE(S): A: Structural Failure of Flex Hose Assembly
 B: Hose Mating Defects

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provides flexible connection between the tube assemblies in the I/T and LH2 cable tray.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
2.4.5.1	32L2060260AA000	Flex Hose Assy	1	LWT-54 & Up
2.4.9.1	32L2060133BA000	Flex Hose Assy	1	LWT-54 & Up

REMARKS: These items are grouped as the failure mode, causes and effects are the same.

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

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RATIONALE FOR RETENTION

DESIGN:

A, B: The flexible hoses provide connections between the tube assemblies located in the Intertank and LH2 cable tray, and in the LH2 cable tray and vertical strut cable tray. The hoses are fabricated using corrugated steel, braid wire reinforcement and end fittings. All hose material is corrosion resistant steel. The hose assembly is designed to meet the required proof (2.0) and burst (4.0) pressure safety factors and to operate in temperatures ranging from -300°F to +750°F per standard 32L2. Material selected in accordance with MMC-ET-SE16 and controlled per MMA Approved Vendor Product Assurance Plan assures conformance of composition, material compatibility and properties. Procurement is governed by material, fabrication, processing and inspection specification per MMC standard 32L2. The end fittings were selected based on operational experience and their capability to meet ET requirements for Class 3 threads and leakage performance. Installation loads are sufficient to provide screening for major flaws.

TEST:

The Flex Hose Assy is certified. Reference HCS MMC-ET-TM08-L-P004.

Qualification: Testing has been performed that included proof pressure, leakage, pressure cycle and pressure surge cycle (standard drawing 32L2). Vibration life testing was accomplished by similarity and test (MMC Denver Test Report 4323, Memo 3522-78-035 and Test Report MMC-ET-RA09-115).

Acceptance:

Vendor:

A, B: Perform proof pressure and leakage tests (Standard drawing 32L2).

MAF:

A, B: Perform leakage test (MMC-ET-TM04k).

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

A: Verify material selection and verification controls (MMC-ET-SE16 and Standard drawing 32L2).

Lockheed Martin Procurement Quality Representative:

A, B: Verify proof pressure and leakage test (Standard drawing 32L2).

MAF Quality Inspection:

A, B: Verify installation and witness torque (drawing 80921011930 and 80923011901).

B: Inspect (visually) sealing surfaces for freedom of nicks, radial scratches or other imperfections during installation (drawing 80921011930 and 80923011901).

B: Witness leakage test (MMC-ET-TM04k).

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.