

CRITICAL ITEMS LIST (CIL)

SYSTEM: Propulsion/Mechanical FUNCTIONAL CRIT: 1
 SUBSYSTEM: Helium Inject PHASE(S): a, b
 REV & DATE: J, 12-19-97 HAZARD REF: P.02, P.06
 DCN & DATE:
 ANALYSTS: J. Attar/H. Claybrook

FAILURE MODE: Leakage
 FAILURE EFFECT: a) Loss of mission and vehicle/crew due to fire/explosion.
 b) Loss of mission and vehicle/crew due to fire/explosion.
 TIME TO EFFECT: Seconds
 FAILURE CAUSE(S): Structural Failure of Manifold
 REDUNDANCY SCREENS: Not Applicable
 FUNCTIONAL DESCRIPTION: Provides flow path from redundant filter/check valve branches for injecting helium into the LO2 feedline.

| <u>FMEA ITEM CODE(S)</u> | <u>PART NO.</u> | <u>PART NAME</u> | <u>QTY</u> | <u>EFFECTIVITY</u> |
|--------------------------|-----------------|------------------------------------|------------|--------------------|
| 2.4.20.1 | 80921011942-001 | Manifold Assy (Downstream Only) | 1 | LWT-54 & Up |

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

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RATIONALE FOR RETENTION

DESIGN:

The manifold provides structural provisions to install each filter/check valve assembly and provides a helium flow path to the LO2 propellant feed system. The manifold is machined from 2219-787 aluminum plate and has been designed to meet the required yield (1.25) and ultimate (4.0) safety factors (ET Stress Report 826-2188). Material selected in accordance with MMC-ET-SE16 and controlled per MMMA Approved Vendor Product Assurance Plan, assures conformance of composition, material compatibility, and properties.

TEST:

The Manifold Assy (Downstream only) is certified. Reference HCS MMC-ET-TM08-L-P002.

Acceptance:

MAF:

Perform leakage test (MMC-ET-TM04k).

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

Penetrant inspect after machining (STP2501, Type 1, Method A).

Lockheed Martin Procurement Quality Representative:

Verify materials selection and verification controls (MMC-ET-SE16, and drawing 80921011942).

MAF Quality Inspection:

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.