

CRITICAL ITEMS LIST (CIL)

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|-------------|-----------------------|------------------|------|
| SYSTEM: | Propulsion/Mechanical | FUNCTIONAL CRIT: | 1 |
| SUBSYSTEM: | LH2 Penetrations | PHASE(S): | b |
| REV & DATE: | J, 12-19-97 | HAZARD REF: | S.06 |
| DCN & DATE: | | | |
| ANALYSTS: | J. Attar/H. Claybrook | | |

FAILURE MODE: Leakage

FAILURE EFFECT: b) Loss of mission and vehicle/crew due to fire/explosion.

TIME TO EFFECT: Seconds

FAILURE CAUSE(S):
 A: Structural Failure
 B: Disengagement of Adapter

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: The test port fitting provides LH2 tank pressure sensing capability and is located on the fwd manhole cover.

| FMEA ITEM CODE(S) | PART NO. | PART NAME | QTY | EFFECTIVITY |
|-------------------|----------|-----------|-----|-------------|
| 2.10.4.1 | 57L6-4D | Adapter | 1 | LWT-54 & Up |

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: Propulsion/Mechanical
SUBSYSTEM: LH2 Penetrations
FMEA ITEM CODE(S): 2.10.4.1

REV & DATE: J, 12-19-97
DCN & DATE: 004, 6-30-99

RATIONALE FOR RETENTION

DESIGN:

- A: The adapter is installed in the test pressure port located on the LH2 tank forward manhole cover. The port is utilized to monitor tank pressure and provide contingency pressurization during Orbiter mate. The adapter is designed to meet the required ultimate (2.0) and yield (1.5) safety factors for pressure (ET Stress Report 826-2188). Material selected in accordance with MMC-ET-SE16 and controlled by MMA Product Assurance Plan assures conformance of composition, material compatibility and properties. Procurement of adapters is governed by material, fabrication, processing, test and inspection specification per MMC standard 57L6. The adapter was selected based on operational experience and its capability to meet ET requirements for Class 3 threads and leakage performance. Installation loads are sufficient to provide screening for major flaws.
- B: The adapter is selected from the Approved Standard Parts Lists (ASPL 826-3500), installed and torqued as specified on the engineering installation drawing, and lockwired to preclude disengagement.

TEST:

The Adapter is certified. Reference HCS MMC-ET-TM08-L-P015.

Acceptance:

MAE:

- A, B: Perform leakage test on adapter after installation (MMC-ET-TM04k).

Launch Site:

- A, B: Perform leakage test (OMRSD File IV for LWT-54 thru 84, 89 thru 93).

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

- A: Verify materials selection and verification controls (MMC-ET-SE16 and standard drawing 57L6).

MAE Quality Inspection:

- A, B: Verify installation and witness torque (drawing 80914081488).

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

Launch Site:

- A, B: Witness leakage test (OMRSD File IV for LWT-54 thru 84, 89 thru 93).

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.