

CRITICAL ITEMS LIST (CIL)

SYSTEM: Propulsion/Mechanical
 SUBSYSTEM: LO2 Penetrations
 REV & DATE: J, 12-19-97
 DCN & DATE:
 ANALYSTS: J. Attar/H. Claybrook

FUNCTIONAL CRIT: 1
 PHASE(S): a, b
 HAZARD REF: S.07

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): A: Structural Failure
 B: Disengagement of Cap
 REDUNDANCY SCREENS: Not Applicable
 FUNCTIONAL DESCRIPTION: Provides pressure test port closure on the LO2 tank aft manhole cover.

FMEA ITEM CODE(S)	PART NO.	PART NAME	QTY	EFFECTIVITY
2.9.5.1	57L9-4	Cap	1	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: Propulsion/Mechanical
SUBSYSTEM: LO2 Penetrations
FMEA ITEM CODE(S): 2.9.5.1

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

RATIONALE FOR RETENTION

DESIGN:

- A: The cap is installed on the test pressure port adapter located on the LO2 tank aft dome manhole cover. The port is utilized to monitor tank pressure and provide contingency pressurization during orbiter mate. The cap 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 caps is governed by material, fabrication, processing and inspection specification per MMC standard 57L9. The cap was selected based on operation 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 cap is selected from the Approved Standard Parts List (ASPL 826-3500), installed and torqued to the adapter as specified on the engineering installation drawing, and lockwired to preclude disengagement.

TEST:

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

Acceptance:

MAE:

- A, B: Perform leakage test on cap 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 57L9).

MAE Quality Inspection:

- A, B: Verify installation and witness torque (drawing 80911001205).

- 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).

- A, B: Witness installation and torque (drawing 80911001205).

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.