

CRITICAL ITEMS LIST (CIL)

SYSTEM: Propulsion/Mechanical FUNCTIONAL CRIT: 1
 SUBSYSTEM: LO2 Propellant Feed PHASE(S): 4
 REV & DATE: J, 12-19-97 HAZARD REF: P.02, P.06
 DCN & DATE:
 ANALYSTS: J. Attar/H. Claybrook

FAILURE MODE: Loss of Geyser Protection
 FAILURE EFFECT: a) Loss of mission and vehicle/crew due to LO2 tank structural failure resulting in fire/explosion.
 TIME TO EFFECT: Seconds
 FAILURE CAUSE(S): Structural Failure of Splash Plate
 REDUNDANCY SCREENS: Not Applicable
 FUNCTIONAL DESCRIPTION: The splash plate will disperse a geyser, preventing damaging effects should one occur.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
2.1.4.1	80912651013-011	Splash Plate	1	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: Propulsion/Mechanics
SUBSYSTEM: LO2 Propellant Feed
FMEA ITEM CODE(S): 2.1.4.1

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RATIONALE FOR RETENTION

DESIGN:

The splash plate is a component of the anti-vortex assembly that is spliced to the upper edge of the baffle assembly to provide structural rigidity. The location of the plate in line with the feedline inlet provides for the dispersion of geysers in the event one should occur during loading and prelaunch operations. The plate is formed from 2024-T62 aluminum and is designed for the required ultimate safety factor of 1.4 for loads and the required yield safety factor of 1.1 for loads. (ET Stress Report 826-2138). Materials 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 Splash Plate is certified. Reference NCS MMC-ET-TM08-L-P012.

MPTA firings/Tankings: The splash plate has accumulated 62.5 minutes of firing time, 27 cryogenic cycles, and 42 pressurization cycles. There was no evidence of structural damage resulting from these exposures.

INSPECTION:

Lockheed Martin Procurement Quality Representatives:

Verify materials selection and verification controls (drawing 80912651013).

MAF Quality Inspection:

Inspect (visually) attaching hardware for freedom of damage prior to installation (drawing 80912651011).

Inspect (visually) for no damage during post installation shakedown inspection (MPP80902000SCL for LWT-56 thru 68 and 80922011900 for LWT-69 & Lp).

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.