

CRITICAL ITEMS LIST (CIL)

SYSTEM: Propulsion/Mechanical FUNCTIONAL CRIT: 1
 SUBSYSTEM: Nose Cone Purge PHASE(S): a
 REV & DATE: J, 12-19-97 HAZARD REF: P.04, S.05
 DCN & DATE:
 ANALYSTS: J. Attar/H. Claybrook

FAILURE MODE: Leakage
 FAILURE EFFECT: a) Loss of mission and vehicle/crew due to fire/explosion.
 TIME TO EFFECT: Seconds
 FAILURE CAUSE(S): A: Structural Failure
 B: Disengagement of Reducer
 REDUNDANCY SCREENS: Not Applicable
 FUNCTIONAL DESCRIPTION: Provides connections for tube assemblies that transport heated nose cone purge GN2 through the intertank.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
2.12.A.1	MS24399-J7	Reducer (Intertank)	1	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: Propulsion/Mechanical
SUBSYSTEM: Nose Cone Purge
PNEA ITEM CODE(S): 2.12.6.1

REV & DATE: J, 12-19-97
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RATIONALE FOR RETENTION

DESIGN:

The reducer provides the connection between 3/8 and 1/4 inch diameter nose cone purge tube assemblies within the Intertank.

- A: The reducer is fabricated from 304 CRES and was selected for usage based on operational experience and its capability to meet ET requirements for class 3 threads and leakage performance. The reducer is designed to meet the required ultimate (1.5) and yield (1.25) safety factors for pressure (ET Stress Report 826-2188). Material selected in accordance with MMC-ET-SE16 and controlled per MMMA approved product assurance plan assures conformance of composition, material compatibility and properties. Procurement of reducer is governed by material, fabrication, processing, and inspection specification per standard MS24399. Installation loads are sufficient to provide screening for major flaws.
- B: The reducer is selected from the Approved Standard Parts List (ASPL 826-3500) and installed and torqued as specified on the engineering installation drawing.

TEST:

The Reducer (Intertank) is certified. Reference RCS MMC-ET-TM08-L-P015.

MPTA firings/Tankings: The nose cone purge system was installed on MPTA and supported all cryogenic loadings/detankings and accumulated 82.5 minutes of firing time. There was no evidence of leakage or structural damage.

Acceptance:

Vendors:

- A, B: Perform material properties, strength and finish (Standard drawing MS24399).

MAF - (Vehicle Assembly):

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

Launch Site:

- A, B: Perform audible flow test (OMASD File IV).

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SYSTEM: Propulsion/Mechanical
SUBSYSTEM: Nose Cone Purge
FMEA ITEM CODE(S): 2.12.6.1

REV & DATE: J, 12-15-97
DCN & DATE:

RATIONALE FOR RETENTION

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

A: Verify materials selection and verification controls (MMC-ET-SE16 and Standard drawing MS24399).

RAF Quality Inspection:

A, B: Inspect fittings and flare mating surfaces for freedom of nicks, scratches or other physical damage (MPP 80923021009).

A, B: Verify installation and witness torque (drawing 80923021009).

A, B: Witness flow test (MMC-ET-TN04k).

A, B: Inspect for freedom of damage (MPP 80901010000).

Launch Site:

A, B: Witness flow test (OHRSD File IV).

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.