

CRITICAL ITEMS LIST (CIL)

SYSTEM:	Propulsion/Mechanical	FUNCTIONAL CRIT:	T
SUBSYSTEM:	Nose Cone Purge	PHASE(S):	D
REV & DATE:	J, 12-19-97	HAZARD REF:	P.04, S.05
DCN & DATE:			
ANALYSTS:	J. Altan/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 Union

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provides connections for tube assemblies that transport heated nose cone purge GM2 through the intertank.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
2.12.5.1	MS24392-J6	Union (Intertank)	2	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: Propulsion/Mechanical
SUBSYSTEM: Nose Cone Purge
FMEA ITEM CODE(S): 2.12.5.1

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RATIONALE FOR RETENTION

DESIGN:

The unions connect the first three tube assemblies within the Intertank that transport heated G₂ purge gas from the Intertank umbilical carrier plate to the nose cone.

- A: The unions are fabricated from 304 CRES and were selected for usage based on operational experience and their capability to meet E1 requirements for class 3 threads and leakage performance. The union 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 NQA Approved Product Assurance Plan assures conformance of composition, material compatibility and properties. Procurement of unions is governed by material, fabrication, processing, and inspection specification per standard MS24392. Installation loads are sufficient to provide screening for major flaws.
- B: The unions are selected from the Approved Standard Parts Lists (ASPL 826-3500) and installed and torqued as specified on the engineering installation drawing.

TEST:

The Union (Intertank) is certified. Reference WCS MMC-ET-TMOB-L-PD75.

MPTA Firings/Tankings: The nose cone purge system was installed on MPTA and supported all cryogenic loadings/detankings and accumulated 62.5 minutes of firing time. There was no evidence of leakage or structural damage.

Acceptance:

Vendor:

- A, B: Perform material properties strength and finish (Standard drawing MS24392).

MAP - (Vehicle Assembly):

- A, B: Perform flow test (MMC-ET-TMO4k).

Launch Sites:

- A, B: Perform audible flow test (CMRSD file IV).

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INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

A: Verify materials selection and verification controls (MHC-ET-5E16 and Standard drawing MS24392).

MAF Quality Inspection:

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

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

A, B: Witness flow test (MHC-ET-TM04k).

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

Launch Site:

A, B: Witness flow test (OHRSD file (V)).

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.