

CRITICAL ITEMS LIST (CIL)

SYSTEM:	ASI	FUNCTIONAL CRIT:	1
SUBSYSTEM:	Electrical Cable Trays	PHASE(S):	b, c
REV & DATE:	J, 12-19-97	HAZARD REF:	S.11 (4.3.7.1, 4.3.8.1), E.02 (4.3.8.1)
DCN & DATE:			
ANALYSTS:	J. Hicks/E. Howell		

FAILURE MODE: Structural Failure

FAILURE EFFECT: b) Loss of mission and vehicle/crew due to LO2 tank structural failure, debris source to Orbiter from gap closure or autodetonation of LSC. Autodetonation effects are not applicable for LWT-74 & Up due to LSC removal.

c) Loss of life due to ET impact outside footprint.

TIME TO EFFECT: Immediate (b), Seconds (c)

FAILURE CAUSE(S): A: Improper Manufacture
B: Failure of Attaching Hardware

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provide environmental protection for lines and cables routed along the LO2 tank surface.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
4.3.7.1	80971048416-014	Gap Closure (LO2 Tray)	1	LWT-54 & Up
4.3.8.1	80971048416-012	Machine Detail (LO2 Tray)	4	LWT-54 & Up

REMARKS: The gap closures are grouped as the failure mode, causes and effects are the same.

CRITICAL ITEMS LIST (CIL)
CONTINUATION SHEET

SYSTEM: ASI
SUBSYSTEM: Electrical Cable Trays
FMEA ITEM CODE(S): 4.3.7.1, 4.3.8.1

REV & DATE: J, 12-19-97
DCN & DATE:

RATIONALE FOR RETENTION

DESIGN:

- A, B: Gap closures are machined out of 2L3030 aluminum alloy extruded channel. Material selected for this part number are in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties.
- A: The gap closure are designed to the required yield (1.1) and ultimate (1.4) safety factors (ET Stress Report 826-2188).
- B: The attaching hardware is selected from the Approved Standard Parts List (ASPL 826-3500). The hardware is installed per STP2014 and torqued using values specified on Engineering drawings. Tensile installation loads are sufficient to provide screening for major flaws in individual fasteners.

TEST:

The Gap Closure (L02 Tray) and Machine Detail (L02 Tray) are certified. Reference HCS MMC-ET-TM08-L-S165 (LWT-54 thru 88) and HCS MMC-ET-TM08-L-S510 (LWT-89 & Up).

Vendor:

- B: Attaching fasteners are procured and tested to standard drawings 26L17 and 34L1.

INSPECTION:

Vendor Inspection-Lockheed Martin Surveillance:

- A, B: Verify materials selection and verification controls (MMC-ET-SE16, drawing 80971048416 and standard drawings 26L17 and 34L1).
- A: Inspect dimensional conformance (drawing 80971048416).

Launch Site:

- B: Inspect that attaching hardware is free from damage (drawing 80911019201 and STP2014).
- A, B: Verify installation and witness torque (drawing 80911019201).
- B: Verify locking feature (drawing 80911019201 and STP2014).

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.