

CRITICAL ITEMS LIST (CIL)

SYSTEM: ASI  
 SUBSYSTEM: Electrical Cable Trays  
 REV & DATE: J, 12-19-97  
 DCN & DATE:  
 ANALYSTS: J. Hicks/E. Howell

FUNCTIONAL CRIT: 1  
 PHASE(S): b, c  
 HAZARD REF: S.11

FAILURE MODE: Structural Failure

FAILURE EFFECT: b) Loss of mission and vehicle/crew due to LH2 tank structural failure, debris source to Orbiter from gap closure.  
 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 LH2 tank surface.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
4.3.29.1	80971048416-001	Gap Closure (LH2 Tray)	14	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)  
CONTINUATION SHEET

SYSTEM: ASI  
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RATIONALE FOR RETENTION

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DESIGN:

- A, B: The gap closure is machined from 6061-T6511 aluminum alloy extrusion. Materials selected for this part number are in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties.
- A: The gap closure is 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 Lists (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 (LM2 Tray) is certified. Reference HCS MMC-ET-TM08-L-S021 (LWT-54 thru 88) and HCS MMC-ET-TM08-L-S514 (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).

MAF Quality Inspection:

- B: Inspect that hardware is free from damage (drawing 80911041429 and STP2014).
- A, B: Verify installation and witness torque (drawing 80911041429 and STP2014).
- B: Verify locking feature (STP2014 and drawing 80911041429).

Launch Site:

- B: Inspect that attaching hardware is free from damage (drawing 80911019400 and STP2014).
- A, B: Verify installation and witness torque (drawing 80911019400).
- B: Verify locking feature (drawing 80911019400 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.