

CRITICAL ITEMS LIST (CIL)

SYSTEM:	ASI	FUNCTIONAL CRIT:	1
SUBSYSTEM:	Support Hardware	PHASE(S):	b
REV & DATE:	J, 12-19-97	HAZARD REF:	S.11
DCN & DATE:	004, 6-30-99		
ANALYSTS:	H. Keefe/E. Howell		

FAILURE MODE: Structural Failure

FAILURE EFFECT: b) Loss of mission and vehicle/crew due to LH2 tank structural failure or debris source to Orbiter.

TIME TO EFFECT: Immediate

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

REDUNDANCY SCREENS: Not Applicable

FUNCTIONAL DESCRIPTION: Provide support for the flexible section of the GH2 pressurization line.

FMEA ITEM CODE(S)	PART NO.	PART NAME	QTY	EFFECTIVITY
4.4.22.1	80921071026-020	Support Assy	1	LWT-54 thru 84, 89 thru 96
	80921071027-009	Support Assy	1	LWT-85 thru 88, 97 & Up
4.4.23.1	80921071026-029	Guide Rail Assy	1	LWT-54 thru 84, 89 thru 96
	80921071028-009	Guide Rail Assy	1	LWT-85 thru 88, 97 & Up
4.4.24.1	80921071026-016	Short Bracket	1	LWT-54 & Up
4.4.25.1	80921071026-017	Long Bracket	1	LWT-54 & Up

REMARKS: The support components are grouped as the failure mode, causes and effects are the same.

CRITICAL ITEMS LIST (CIL)  
CONTINUATION SHEET

SYSTEM: ASI  
SUBSYSTEM: Support Hardware  
FMEA ITEM CODE(S): 4.4.22.1, 4.4.23.1, 4.4.24.1, 4.4.25.1

REV & DATE: J, 12-19-97  
DCN & DATE: 004, 6-30-99

---

RATIONALE FOR RETENTION

---

DESIGN:

- A, B: The Support and Guide Rails are made from 2024-T8511 aluminum alloy extrusions. The details (80921071026-016, -017) are made from 6061-T6 aluminum alloy sheet stock. The rub strips are made from Dupont (Commercial SP-1) Vespal shapes. Materials selected for these part numbers are in accordance with MMC-ET-SE16 which assures repetitive conformance of composition and properties.
- A: The support assembly 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 List (ASPL 826-3500). Bolts are installed per STP2014 and torqued using values specified on Engineering drawings. Tensile installation loads are sufficient to provide screening for major flaws in individual bolts. Hi-Locks are installed per STP2006.

TEST:

The Support Assy, Guide Rail Assy, Short and Long Bracket are certified. Reference HCS MMC-ET-TM08-L-S166 (LWT-54 thru 88); HCS MMC-ET-TM08-L-S524 (for item code 4.4.22.1) and HCS MMC-ET-TM08-L-S516 (for item codes 4.4.23.1, 4.4.24.1, and 4.4.25.1)(LWT-89 & Up).

Vendor:

- A: Perform adhesive hardness test (STP6001 and drawing 80921071026) and (drawings 80921071027, 80921071028 for LWT-85 thru 88, 97 & Up)
- B: Attaching fasteners are procured and tested to standard drawings 25L1, 25L6, 26L3 and 33L1.

INSPECTION:

Vendor Inspection - Lockheed Martin Surveillance:

- A, B: Verify materials selection and verification controls (MMC-ET-SE16, drawing 80921071026 and standard drawings 25L1, 25L6, 26L3, 33L1; drawings 80921071027 and 80921071028 for LWT-85 thru 88, 97 & Up).
- A: Inspect dimensional conformance (drawing 80921071026; drawings 80921071027 and 80921071028 for LWT-85 thru 88, 97 & Up).
- A: Witness adhesive hardness test (STP6001 and drawing 80921071026; drawings 80921071027 and 80921071028 for LWT-85 thru 88, 97 & Up)

MAE Quality Inspection:

- B: Inspect that attaching hardware is free from damage (drawings 80921021009, 80921071009, STP2006 and STP2014).
- B: Inspect installation of attaching hardware and verify torque (drawings 80921071009, 80921021009, STP2006, 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.