

CRITICAL ITEMS LIST (CIL)

SYSTEM: Electrical  
 SUBSYSTEM: LH2 Aft Feedthru Receptacle  
 REV & DATE: J, 12-19-97  
 DCN & DATE:  
 ANALYSTS: J. Bowski/A. Oser

FUNCTIONAL CRIT: 1R  
 PHASE(S): b  
 HAZARD REF: E.01

FAILURE MODE: High Resistance (Within False Dry Band)  
 FAILURE EFFECT: b) Loss of mission and vehicle/crew due to premature MECO.  
 TIME TO EFFECT: Minutes  
 FAILURE CAUSE(S): Faulty Pin  
 REDUNDANCY SCREENS: Screen A: PASS  
 Screen B: FAIL - Not detectable in flight.  
 Screen C: PASS

FUNCTIONAL DESCRIPTION: The cryogenic feedthru connector provides the electrical connection between the level sensors in the LH2 tank and the external harnesses.

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
3.11.7.3	81L2-2 (302A02 J1, J2)	Feedthru Receptacle	1	LWT-54 & Up

REMARKS:

CRITICAL ITEMS LIST (CIL)  
CONTINUATION SHEET

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RATIONALE FOR RETENTION

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DESIGN:

The cryogenic feedthru receptacle is a jam nut mount. It is designed with a shell made from CRES 304 or 304L per QQ-S-763. The jam nut is CRES 321 or 304L per QQ-S-763. The shell and nut are cadmium plated per QQ-P-416. The insert is virgin teflon per MIL-P-19468. The hermetic sealing is accomplished by the use of a fused glass insert of a vitreous material. The pin contacts are constructed of iron-nickel alloy per MIL-I-23011 and are gold plated per MIL-G-45204. This connector is designed to meet the dielectric requirements of 1000V RMS at 60 Hz and 5000 megohms insulation resistance. Moisture protection for the external face of the receptacle is provided by a silicon wafer on the mating harness connector.

The fusing of the glass insert provides for setting of the contacts in required position. Controls are gold plated per MIL-G-45204 to minimize corrosion. The location and contact set up is per Lockheed Martin Standard Drawing 81L2.

Redundancy Description

Since each depletion sensor has its own pins on the feedthru connector, the redundancy description and effects of loss of redundancy for the high circuit resistance failure mode are the same as described for the fails dry mode of the depletion sensors. Circuits are routed on non-adjacent pins on the connectors to reduce the probability of one failed circuit affecting another.

Effect of First Failure

If any one circuit fails so as to produce a false dry indication, there is no effect since two sensors dry are required for the depletion function.

Effect of First Redundancy Loss

If a second circuit fails so as to produce a false dry indication, the effect described above will occur.

TEST:

The Feedthru Receptacle is qualified. Reference COQ MMC-ET-TM06-116.

MAF:

Perform System Resistance Test (TM04k).

Launch Site:

Perform System Resistance Test (OMRSD File IV).

Perform System Functional Test (OMRSD File II).

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INSPECTION:

Vendor:

Surveillance by Lockheed Martin Procurement Quality is performed to ensure compliance with specifications.

MAF Quality Inspection:

Inspect connector and pins for freedom of damage, are not broken, bent, misaligned or corroded, and the connector is free of foreign material (STP6501).

Verify System Resistance Test (TM04k).

Launch Site:

Verify System Resistance Test (OMRSD File IV).

Verify System Functional Test (OMRSD File II).

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.