

NON-CIL 1R ITEMS

SYSTEM: Electrical

REV & DATE: J, 12-19-97

SUBSYSTEM: LH2 Level System

DCN & DATE:

Per NSTS 22206, certain failure modes of the following items in subsystem 3.3 (LH2 Level System) meet the criteria to be designated "Non-CIL 1R". Rationale for Retention is not required.

FMEA Item Codes: 3.3.2.2, 3.3.3.2, 3.3.4.2, 3.3.5.2, 3.3.6.2, 3.3.8.3, 3.3.10.3 and 3.3.11.3.

CRITICAL ITEMS LIST (CIL)

SYSTEM:	Electrical	FUNCTIONAL CRIT:	1R
SUBSYSTEM:	LH2 Level System	PHASE(S):	a
REV & DATE:	J, 12-19-97	HAZARD REF:	E.01
DCN & DATE:			
ANALYSTS:	J. Bowski/A. Oser		

FAILURE MODE: Fails with False Dry Signal

FAILURE EFFECT: a) Loss of mission and vehicle/crew due to fire/explosion caused by LH2 flowing out of vent valve.

TIME TO EFFECT: Minutes

FAILURE CAUSE(S): Sensor Resistance in False Dry Range

REDUNDANCY SCREENS: Screen A: PASS
Screen B: N/A - Item nonfunctional in flight.
Screen C: PASS

FUNCTIONAL DESCRIPTION:

<u>Sensor Grouping</u>	<u>Function</u>
98% No. 1 & No. 2, 100% (-) 100% No. 1 & No. 2, 100% (+)	Provides signals for transition from fast fill to topping. Provides signals for transition from topping to replenish. Also provides signals used as a redline to stop flow during transition to topping when both 98% sensors and the 100% (-) sensor fail dry.
100% (-), 100% No. 1 & No. 2, 100% (+) Overfill	Provides signals for replenish control. Provides signals to stop flow when other sensors fail.

<u>FMEA Item Code</u>	<u>Part Name</u>	<u>Measurement No.</u>
3.3.2.2	98% Sensors No. 1 & No. 2	T41X1715E, T41X1716E
3.3.3.2	100% (-) Sensor	T41X1717E
3.3.4.2	100% Sensors No. 1 & No. 2	T41X1718E, T41X1719E
3.3.5.2	100% (+) Sensor	T41X1720E
3.3.6.2	Overfill Sensor	T41X1721E

<u>FMEA ITEM CODE(S)</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY</u>	<u>EFFECTIVITY</u>
3.3.2.2	74L4-2 (302A06, 302A07)	98% Sensors No. 1 & No. 2	2	LWT-54 & Up
3.3.3.2	74L4-2 (302A11)	100% (-)Sensor	1	LWT-54 & Up
3.3.4.2	74L4-2 (302A08, 302A09)	100% Sensors No. 1 & No. 2	2	LWT-54 & Up
3.3.5.2	74L4-2 (302A10)	100% (+)Sensor	1	LWT-54 & Up
3.3.6.2	74L4-2 (302A12)	LH2 Overfill Sensor	1	LWT-54 & Up

REMARKS: The level sensors are grouped by the specific function performed in the loading sequence. Items meet criteria for Non-CIL 1R. Rationale for Retention is not required.