

USA Ground Operations CIL Sheet

DEC 15 1999

**Critical Item:** Hydrogen Leak Detection Sensor  
**NASA Part No:** 79K13448-8  
**Mfg/Part No:** Del-tronics / Model 400, 006334-004  
**System:** Fixed Hydrogen Leak Detection System

**Criticality Category:** 1S  
**Total Quantity:** 18

Find No.	Qty	Area	PMN	Baseline	Drawing / Sheet
A129880	1	Pad-A	S70-1220	010.00	79K09230 / 66
A129880	1	Pad-B	S70-1220	010.00	79K40032 / 61
A129881	1	Pad-A	S70-1220	010.00	79K09203 / 64
A129881	1	Pad-B	S70-1220	010.00	79K40032 / 59
A129884	1	Pad-A	S70-1220	010.00	79K09203 / 64
A129884	1	Pad-B	S70-1220	010.00	79K40032 / 59
A129885	1	Pad-A	S70-1220	010.00	79K09203 / 64
A129885	1	Pad-B	S70-1220	010.00	79K40032 / 59
A129886	1	Pad-A	S70-1220	010.00	79K09203 / 70
A129886	1	Pad-B	S70-1220	010.00	79K40032 / 65
A129887	1	Pad-A	S70-1220	010.00	79K09203 / 68
A129887	1	Pad-B	S70-1220	010.00	79K40032 / 63
A129888	1	Pad-A	S70-1220	010.00	79K09203 / 70
A129888	1	Pad-B	S70-1220	010.00	79K40032 / 66
A129889	1	Pad-A	S70-1220	010.00	79K09203 / 68
A129889	1	Pad-B	S70-1220	010.00	79K40032 / 63
A129890	1	Pad-A	S70-1220	010.00	79K09203 / 68
A129890	1	Pad-B	S70-1220	010.00	79K40032 / 63

**Function:**

Converts Hydrogen concentration in air to an equivalent voltage level.

Failure Mode No. Failure Mode	Failure Cause Failure Effect	Detection Method Time to Effect	Crit Cat
08SY07-014.001  Erroneous low or no output	Structural failure of an internal part or failure of a discrete component within the sensor.  Failure to detect an H2 leak which could lead to loss of life/vehicle or damage to a vehicle system during a hazardous condition.	Audible, Visual  Seconds to hours	1S

**ACCEPTANCE RATIONALE****Design:**

The hydrogen leak detection sensor meets design requirements in accordance with NASA drawing 79K08419 "Specifications for Hydrogen Leak Detection Sensor (S70-1220)":

- Explosion proof housing
- MTBF of 50,000 hours (5 years) in outdoor environment at KSC.
- Analog output of 0-5V DC (0-40,000 ppm hydrogen concentration).
- 28V +/- 4V DC input power.
- Repeatability: 5%.
- Temperature: -40 deg. - 158 deg. F.

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- Response time: 1 second for 90% of change
- Solid state device with over voltage and reverse polarity protection

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**Test:**

- OMRS File VI requires a two-point local functional test of each sensor each flow by checking the zero level in air and by stimulating with a certified concentration of 2% hydrogen air.

**Inspection:**

- Leak detection sensors are removed and calibrated before each functional test as preventive maintenance. This occurs before each flow, per OMI G2297.

**Failure History:**

- Current data on test failures, unexplained anomalies, and other failures experienced during ground processing activities can be found in the PRACA database. The PRACA database was researched and the following data was found on this component in the critical failure mode.

-There was one PV6 problem report identified through 11/22/99, in the "Failed Low or No Output" failure mode. The PR was generated during TPS SS23A-915.

- The GIDEP failure data interchange was researched and no failure data was found on this component in the critical failure mode.

**Operational Use:**

Correcting Action	Timeframe
There is no action which can be taken to mitigate the failure effect	Since no correcting action is available, timeframe does not apply.