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SAA09PP03-001
REV. E

JAN 14 1988

Critical Item: Heater
Find Number: A105958
Criticality Category: 2

SAA No: 09PP03-001

System/Area: LH2 MPS/LOA

NASA

Part No: GCH-62005LTXX CSCRW

PPM/ S72-0685-5 Orbiter Helium
Name: Anti-Ice Panel

Mfg/ Chromalux

Part No: GCH-62005LTXX CSCRW

Drawing/ 79K06063/79K40023
Sheet No: 2

Function: Heats helium flowing to prepressurization line for ice prevention.

Critical Failure Mode: Loss of heater. FM. No. 09PP03-001.028

Failure Effect: Loss of heated helium to the ET LH2 and LO2 prepressurization lines. Ice formation on ET prepressurization lines, with subsequent loosening and falling, could damage the Orbiter thermal protection system.

- o This component is only Criticality Category 2 when the ambient temperature is 36°F or below because the unheated backup helium supply is not effective at these temperatures.

Acceptance Rationale

Design:

- o This component is operated within all design specifications. Heater rated at 480V 3 phase 15 KW. Heater has 3 heat elements.
- o Rated for 300 PSIG working pressure.
- o Rated for 450 PSIG proof pressure.
- o Actual working pressure 200 ± 15 PSIG.
- o Heat transfer to be delta temperature of 220° F to a flow of 2.83 lbs/min. of helium.
- o Thermal covers are moisture-resistant.
- o Unit is SERMETAL "W" coated except the elements, terminals, and jacket.

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Heater, A105958 (Continued)

- o At 220°F a power requirement of 3.9 KW is necessary, representing only 26% of total available power.

Test/Inspection:

- o OMRSD File VI verifies the following:
 - Functional operation of the primary purge prior to each launch and at component replacement. The purge is verified via pressure switch indication and must satisfy a temperature specification within seven minutes after heater activation.
 - Functional operation of the redundant purge prior to each launch and at component replacement. The purge must satisfy a purge pressure specification.
- o Operational procedures perform a functional electrical check of each heater element.

Failure History:

- o PRACA - The PRACA data base was queried, and there were no Problem Reports found for this component.
- o GIDEP - The GIDEP Failure Data Interchange System has been researched, and no data on this component was found.