

Critical Item: Relay  
Ref. Des. No.: K-128  
Criticality Category: 2

SAA No: 09PP03-001

System/Area: LH2 MPS/LOA-VAA

NASA  
Part No: 79K11622

PMN/ S72-0812/  
Name: MLP Electrical, LH2 System

Mfg/ General Electric/  
Part No: R10889P1

Drawing/ 79K06414/79K40025  
Sheet No: 83

Function: K-128 relay controls electrical power to the Orbiter Anti-Ice Heater Power Enable Switch.

Critical Failure Mode: Fail open. FM. No. 09PP03-001.026

Failure Effect: Loss of temperature control for the A105958 heater will result in loss of capability to heat GHe for the ET LH2 and LO2 tank prepressurization lines. Ice formation on the 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 The relay's contacts are tungsten, the coil is copper, the spring is steel and the core is soft iron. Relay contacts are protected by spark suppression diodes.
- o Failure is detectable by the 6413MT3 and 6413MT4 GHe output temperature sensors.

#### Test/Inspection:

- o File VI verifies the following:

ATTACHMENT  
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REV. E  
B/L 8/30  
MPS LH2, LOA SYSTEM

Relay, K-128 (Continued)

- 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 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 Drawing 79K12402 requires an annual and component replacement operational/functional check of the A105958 heater and its associated electrical power/control system.

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.