Cryo Ops 2008



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The liquid nitrogen system for chamber A: a change from forced flow to a natural flow (thermo siphon) system

Thursday 25 September 2008 09:00 (25 minutes)

NASA at the Johnson Space Center (JSC) in Houston is presently working toward modifying the original forced flow liquid nitrogen cooling system for the thermal shield in the environmental control chamber-A (65'dia x 120'high) to work as a natural flow (thermo siphon) system. The new thermo siphon system will improve the reliability, stability, and operating temperature while reducing the amount of liquid nitrogen used to operate the system.

This paper will present the requirements for the various operating modes. System level thermodynamic comparisons of the existing system to the various options studied and the selected option. A thermal and hydraulic analysis used to validate the selected option for the conversion of the current design will be discussed. The modifications to the existing system as well as design features that improve the operations and maintenance will be presented.

Proposed for workshop session (see call for abstracts): 1- Operation 2- Maintenance 3 - Safety 4 - Control

1

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