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Cryogenic System Operating Experience at SNS

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The helium cryogenic system at Spallation Neutron Source (SNS) provides cooling to 81 superconducting radio frequency cavities. During the first ten years of operation, much operational experience and lessons learned have been gained. The lessons learned include integrated system issues as well as component failures in the areas of mechanical, electrical and controls. Several single point failure scenarios have also been identified and engineering efforts have begun to mitigate those possibilities. Past issues that have been corrected as well as current issues in the system will be detailed in this paper. In 2009, a Process Failure Modes and Effects Analysis (PFMEA) was completed as a way to identify high risk items and prioritize efforts. Since 2009, the progress on mitigating the identified high risk items has been tracked. The results of the PFMEA and the progress made in reducing risk to the cryogenic system operation will be detailed in this paper.

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