



Contribution ID: 104

Type: Poster

C1Po1A-05: Spallation Neutron Source Upgrade Status and Operational Success of the Cryogenic Moderator System

Monday 19 May 2025 09:15 (1h 45m)

The Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL) utilizes the Cryogenic Moderator System (CMS) to provide supercritical hydrogen cooling at 20 K to three neutron moderators. As part of the Proton Power Upgrade (PPU) project, two significant enhancements were made to the CMS: the integration of ortho-hydrogen into para-hydrogen catalyst beds and an expansion of hydrogen supply capacity through a new Hydrogen Refill System (HRS). This paper will detail the design, installation, and commissioning of these subsystems. PPU increased SNS beam power on the First Target Station (FTS) from 1.4 MW to 1.7 MW. Implementation of new controls for the CMS helium cryogenic cold box for this higher beam power will be discussed. Future work to ensure successful operation at a 2.0 MW beam power will also be outlined.

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Session Classification: C1Po1A - Hydrogen Cooling and Test Facilities