Contribution ID: **1391** Contribution code: **THPS126** Type: **Poster Presentation**

Impact of beam energy increase on the dose rates in and around SNS service bay

Thursday 5 June 2025 15:30 (2 hours)

The Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL) is an accelerator-based neutron source facility that provides the most intense pulsed neutron beams in the world for scientific research and industrial development. The neutron production occurs when a horizontally injected proton beam strikes the liquid mercury target placed in the center of the target monolith. The mercury target has a finite lifespan due to radiation and cavitation damage, and therefore is mounted on a carriage that can be retracted for replacement into the target service bay located at the back of the target monolith. The Proton Power Upgrade Project (PPU), which will double the accelerator power capability from 1.4 to 2.8 MW and will increase the proton beam energy from 1 GeV to 1.3 GeV, is completed. To evaluate the impact of the proton energy increase on radiation safety, neutronics studies are performed to characterize the dose rates inside and outside the SNS service bay. Studies are conducted for the incoming proton beam at 1 GeV and 1.3 GeV.Analyses of the dose rates show thatvthe target service bay shielding works adequately providing dose rates below facility limits.

Footnotes

Paper preparation format

Word

Region represented

America

Funding Agency

This manuscript has been authored by UT-Battelle, LLC under Contract No. DE-AC05-00OR22725 with the U.S. Department of Energy.

Author: POPOVA, Irina (Oak Ridge National Laboratory)

Co-author: GALLMEIER, Franz (Oak Ridge National Laboratory)

Presenter: POPOVA, Irina (Oak Ridge National Laboratory)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation and Controls,Feedback and Operational Aspects: MC6.T18 Radiation Monitoring and Safety