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Spallation Neutron Source Operating Experience and Outlook for Upgrades[1]

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The Spallation Neutron Source (SNS) at Oak Ridge National Laboratory is a MW-class accelerator-driven pulsed neutron source. The SNS began formal operations in October 2006. Since then, the beam power has been increased to 1 MW, the number of operating hours per year has increased to nearly 5000, the availability has increased to 85%, and the number of operating neutron scattering instruments has increased to 13. Plans are in place to increase the beam power and availability to their design values of 1.4 MW and 90% over the next two years, and to continue the build-out of instruments to 16 by 2012. Two upgrade projects are in the planning stages. In the first, the beam power of the SNS is increased to at least 2 MW by raising the beam energy from 1.0 to 1.3 GeV and the beam current by 60%. In the second, a Second Target Station is constructed, and is powered by sharing beam pulses with the first target station. The operating experience will be described, as will the challenges that have been met along the path toward 1 MW beam power. The strategy for upgrades will also be presented.

[1]SNS is managed by UT-Battelle, LLC, under contract DE-AC05-00OR22725 for the U.S. Dept. of Energy