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The SNS External Antenna Ion Source and Spare RFQ Test Facility Readiness

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The Oak Ridge National Laboratory operates two world-class neutron scattering facilities, the High Flux Isotope Reactor and the Spallation Neutron Source (SNS). The SNS produces neutrons by first forming an H⁻ beam from an RF-driven, Cs-enhanced ion source, accelerating it to ~1GeV in a linac and accumulating the doubly-stripped beam in a storage ring. The <1μs-long, ~35-A beam pulses are then extracted from the ring at 60 Hz, and directed onto a liquid Hg target, whereby neutrons are produced through spallation and guided through beam lines into 20 world class instruments. Currently the facility operates routinely with ~1.2 MW of beam power on target. In the near-term, the goal is to operate routinely at 1.4 MW, and then later near 2.8 MW when the facility is upgraded with a second target station. This paper describes the status of two accelerator components expected to play key roles in achieving these goals: a newly constructed RFQ accelerator and the External Antenna ion source. Currently, the RFQ is being conditioned in a newly constructed test facility and the external antenna source is also being tested on a separate test stand. This paper will summarize the results of experiments and the testing of these systems in order to assess their operational readiness.