

PLANS FOR A COLLABORATIVELY DEVELOPED DISTRIBUTED CONTROL SYSTEM FOR THE SPALLATION NEUTRON SOURCE

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The Spallation Neutron Source (SNS) is an accelerator-based pulsed neutron source to be built in Oak Ridge, Tennessee. The facility has five major sections - a "front end" consisting of a 65 keV H⁻ ion source followed by a 2.5 MeV RFQ; a 1 GeV linac; a storage ring; a 1 MW spallation neutron target (capable of 4 MW); the conventional facilities to support these machines and a suite of neutron scattering instruments to exploit them. These components will be designed and implemented by five collaborating institutions: Lawrence Berkeley National Laboratory (Front End), Los Alamos National Laboratory (Linac); Brookhaven National Laboratory (Storage Ring); Argonne National Laboratory (Instruments); and Oak Ridge National Laboratory (Neutron Source and Conventional Facilities). It is proposed to implement a fully integrated control system for all aspects of this complex. The system will be developed collaboratively, with some degree of local autonomy for distributed systems, but centralized accountability. Technical integration will be based upon the widely-used EPICS control system toolkit, and a complete set of hardware and software standards. The scope of the integrated control system includes site-wide timing and synchronization, networking and machine protection. This paper discusses the technical and organizational issues of planning a large control system to be developed collaboratively at five different institutions, the approaches being taken to address those issues, as well as some of the particular technical challenges for the SNS control system.