The Spallation Neutron Source (SNS) Cryogenic System Commissioning Plan

F. Casagrande[1], D.Hatfield[1], M.Howell[1], D.Richied[1]
D. Arenius[2], J. Creel[2], K. Dixon, V. Ganni[2], P. Knudsen[2]

[1]Oak Ridge National Laboratory
Spallation Neutron Source (SNS) Project
Oak Ridge, TN 37831 USA

[2]Thomas Jefferson National Accelerator Facility
12000 Jefferson Ave
Newport News, VA 23606 USA

The Spallation Neutron Source (SNS) is an accelerator-based neutron source being built in Oak Ridge, Tennessee. This facility is scheduled to be completed in 2006 and will provide the most intense pulsed neutron beams in the world for scientific research and industrial development. The SNS project design and construction is a partnership involving six DOE national laboratories and they are Argonne, Brookhaven, Jefferson, Lawrence Berkeley, Los Alamos, and Oak Ridge. The linac is a superposition of normal conducting and super-conducting radio-frequency niobium cavities cooled in cryomodules to an operating temperature of 2.1 K. The cooling of the cavities is provided by a helium refrigeration system having a capacity of 2500W @2.1K and 8300W shield load @38/50K. This paper presents the commissioning plan and the status of the various subsystems of the cryogenic plant. This includes the Main helium Compressors, 4.5K Main Cold Box and 2.1K Sub-atmospheric Cold Box and the utility systems. Also included in the cryo system are the cryogenic transfer lines with 4.5K and 38K Helium supply and 4.0K and 50K Helium return which connect the cryomodules to the helium refrigeration system.