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# Second Target Station Instrument Systems Design Status 2025

The Second Target Station (STS) at Oak Ridge National Laboratory's Spallation Neutron Source will be a high-brightness facility optimized for producing cold neutrons with compact coupled moderators. STS will complement the laboratory's existing neutron sources by enabling time-resolved studies of kinetic phenomena, investigations of smaller or weakly scattering samples, and experiments conducted under extreme environmental conditions.

The project is organized into two sub-projects. **Sub-project 1 (SP1)** covers the conventional facilities (Target and Instrument Building), neutron-production systems (accelerator and target), and the instrument bunker; these elements are advancing toward final design completion in 2026. **Sub-project 2 (SP2)** encompasses the neutron-scattering instruments and their integrated control systems. Following a refreshed science case completed earlier this year, additional instrument concepts have been developed alongside the twelve concepts developed in 2021. A new instrument-selection process, now being formulated, will align the initial instrument suite with the updated science case and define the final scope of SP2.

This presentation will summarize the current status of STS Instrument Systems, highlight recent progress in instrument and bunker development, and provide an overview of the STS Project as a whole—charting the path toward transformative new capabilities for cold-neutron research.

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