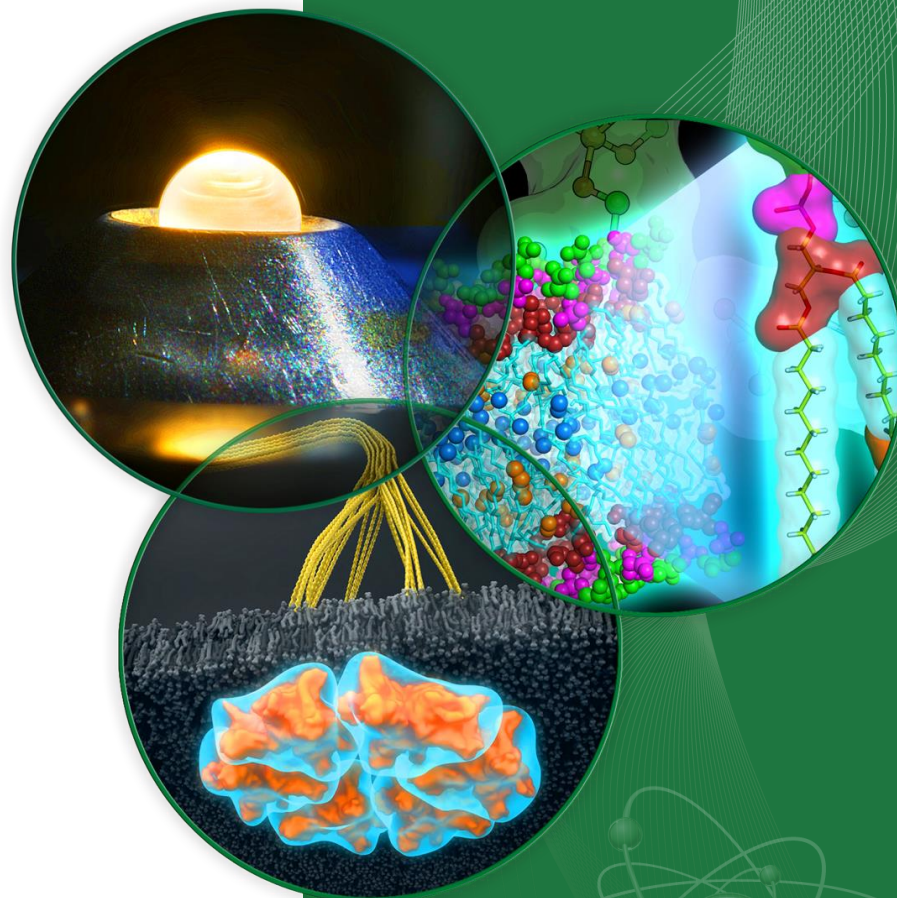


Charge

Presented to
Neutron Advisory Board

June 30, 2016
Clinch River Cabin
Oak Ridge, Tennessee

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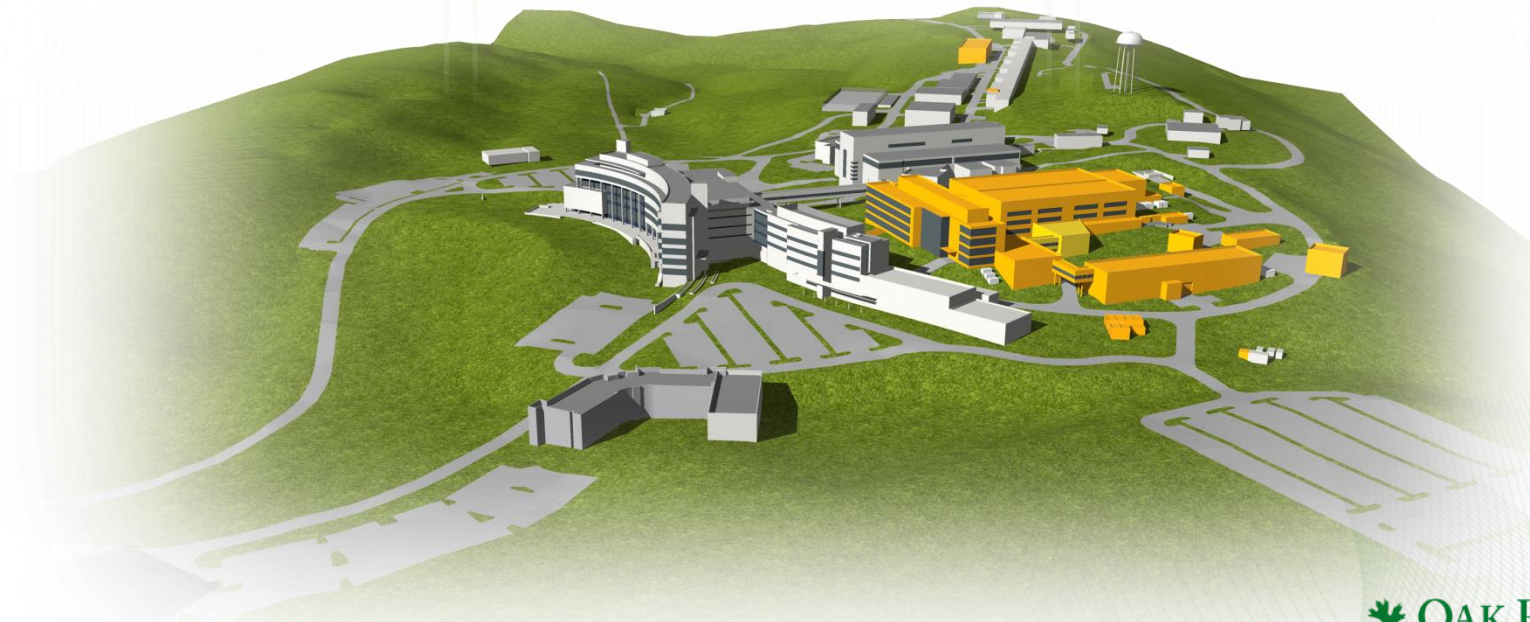
BESAC facilities prioritization review of the Second Target Station

SNS-Proton Power Upgrade (PPU) from 1.4 MW to 2.8 MW

Provides a platform for SNS-STS

SNS-Second Target Station (STS) constructs a second target station with an initial suite of 8 beam lines

Mission need and science case for SNS-PPU and SNS-STS are the same



Main findings

The SNS in combination with HFIR makes Oak Ridge National Laboratory one of the world leading experimental facilities for neutron experiments. However, the European Spallation Source, now under construction in Sweden, will soon eclipse the SNS first target station. The Proton Power Upgrade (PPU) and Second Target Station (STS) at the SNS has the potential to provide a pulsed neutron facility that remains world leading. As such the **PPU and STS are considered to be “absolutely central to contribute to world leading science.”**

Questions exist as to the detailed design and implementation of the STS and how the proton pulses from the PPU are distributed between the first and second target stations -

Establish a review panel to make a detailed evaluation and recommendations on the proposed designs - detailed analysis of the technical issues such as those related to the STS repetition rate and pulse length.



Results of BESAC prioritization

Summary Table of Assessment

Facility Upgrade	Criteria 1	Criteria 2
APS-U	Absolutely Central	Ready to initiate construction
ALS-U	Absolutely Central	Ready to initiate construction
LCLS II-HE	Absolutely Central	Ready to initiate construction
Proton Power Upgrade	Absolutely Central	Significant scientific/engineering challenges to resolve before initiating construction
SNS Second Target Station	Absolutely Central	Significant scientific/engineering challenges to resolve before initiating construction

Main recommendations

- Establish a review panel to make a detailed evaluation and recommendations on the proposed designs - detailed analysis of the technical issues such as those related to the STS repetition rate and pulse length.
- Work closely with the neutron science user community to develop the most exciting and robust set of “first experiments.”
- Develop more robust targets for the first target station that can fully utilize the proposed SNS-PPU.
- Build-out the experimental stations for the first target station a priority.



Charge to NAB 2016

We seek your feedback and guidance in the following two areas:

- **First Target Station:**

- Our path to improved scientific productivity
- Our plans to achieve and sustain reliable operation of SNS at 1.4 MW beam power, improve target predictability and reliability
- Our plans for improved and new experimental stations

- **Second Target Station:**

- Our approach to defining a process to conduct a detailed evaluation of the proposed designs for SNS-PPU and SNS-STS



Questions?

