

NEAC Facilities Subcommittee Report

Presentation to the NEAC Committee

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Facilities Subcommittee Members

- John Ahearne
- Dana Christensen
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- Mike Corradini
- Dave Hill
- Hussein Khalil
- Andy Klein
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Subcommittee Objectives

- The objective of our deliberations has been to help DOE-NE develop a means to identify, prioritize and make available those facilities important to Nuclear Energy Research and Development.
 - All facilities have been considered, including those existing at DOE laboratories, universities, industry and international.
 - Provides a context for consideration of the need for a new irradiation-test or demonstration reactor.

Background

- There have been many studies conducted to identify facilities that exist within the DOE and university complex. The list of facilities is long.
- It is difficult to independently assess capability and readiness of many of these facilities, not only because there are so many, but also because their use and availability changes as program priorities and needs change.
- A consistent theme is the need to maintain U.S. expertise at a high level by supporting relevant research. The question is how to accomplish that goal with seemingly ever-changing priorities for research that requires facility support.

Background (contd.)

- Previous studies have provided an excellent library of information. Prioritization has been elusive.
 - Major facilities are well documented and prioritized.
 - Deficiencies have been noted, particularly in **transient testing and fast-flux irradiation**.
 - **University capability is underutilized** while DOE facilities are at capacity in many cases.
- The Nuclear Science Users Facilities (NSUF) has succeeded in providing a path forward.
 - The extensive data base, its ease of access and ability to verify both condition and availability of facilities and instrumentation is a major step forward.

Previous Recommendations

- ***The DOE-NE pilot program for a virtual user facility, which began in 2007, should be expanded to include the use of all facilities important to DOE NE's programs in nuclear technology research and development.***
- ***The scope of the user facility should be expanded beyond its present emphasis on materials development.***
 - As modeling and simulation of nuclear systems has become an increasingly important aspect of nuclear technology development, the importance of validation and verification through testing has also become increasingly important. The user facility could underpin this need.
- **While a vibrant combination of irradiation test facilities exist (ATR/HFIR/MITR/etc.), a new test/demonstration reactor will serve to expand the capability and fill critical capability gaps.**

Personal Observations

- The Gateway for Accelerated Innovation in Nuclear (GAIN) is a logical realization of these recommendations.
 - Builds upon the vision and success of the NSUF.
 - Success of the NSUF has demonstrated a proven gateway for researchers to access needed facilities.
 - “Through GAIN, DOE is making its state-of-the art and continuously improving RD&D infrastructure available to stakeholders to achieve faster and cost-effective development of inventive nuclear energy technologies toward commercial readiness”.