

Report of the Facilities Subcommittee Nuclear Energy Advisory Committee

Presented June 17, 2016

Washington DC

John I Sackett

Charge to the Facilities Subcommittee

- “..request that NEAC now undertake a forward looking review of where you believe the Idaho National Laboratory should be ten years from now to maintain overall world-class status in nuclear energy research, development, and demonstration, and considering its role as a maturing multi-program national laboratory.”
- “The review should result in a summary report providing any recommended actions for NE and BEA to achieve the ten year end-state for the INL, in terms of leadership, governance, oversight, program engagement, user facility approaches, ownership, stewardship and partnership.”

2004 NEAC Report on Attributes of a World Class National Laboratory

- “World-class performance results from achieving excellence in six key areas: customer focus; resources and capabilities; strategic vision; value creation; quality focus (including safety, security, and management performance); and sound governance.”
- “The attributes that all world-class scientific and technical laboratories have in common include:
 - A well defined mission; funding for necessary supporting research programs; a director and staff with broad experience; outstanding technical judgment and a record of prior success; a leadership team that has authority and freedom to manage the laboratory while being held accountable; a sponsoring agency staff that is very knowledgeable and has authority to make decisions for the sponsor; and substantive interaction with peer technical communities.”

Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL), Oct. 2015

- Major findings (from the DOE Response)
 - “..oversight has grown increasingly transactional rather than strategically mission-driven.”
 - “..importance of providing an environment in which DOE sets the mission needs and provides oversight, while the managing contractor and laboratory leadership and staff put together the teams and structure programs in response to the mission needs, all in the public interest.”
 - DOE response is focused on “..(1) recognizing value, (2) rebuilding trust, (3) maintaining alignment and quality, (4) maximizing impact, (5) managing effectiveness and efficiency, and (6) ensuring lasting change.”

NEAC Subcommittee Approach

- Identify
 - Opportunities
 - Barriers
 - Recommendations for action
- Consider input from a broad spectrum of stakeholders
 - INL Management
 - DOE Management
 - Industry
 - National Laboratories
 - International Community
 - Environmental Technology Community (NREL)
 - Public

Facility Subcommittee Members

John Ahearne	NEAC Historical Perspective
Dana Christensen	Renewables Community Perspective
Tom Cochran	Public Perspective
Dave Hill	INL Perspective
Hussein Khalil	National Laboratory Perspective
Andy Klein	NEAC 2004 Report Perspective
Paul Murray	Industry Perspective
Mark Rudin	Idaho Perspective
John Sackett	DOE, INL Perspective
Andrew Sherry	International Perspective
Mike Corradini	Chair, Nuclear Reactor Technology Subcommittee
Regis Matzie	Chair, International Subcommittee
Al Sattelberger	Chair, Fuel Cycle Research and Development Subcommittee

Interim Report: First Major Finding

- ***Opportunity: Increased volume of private investment in advanced nuclear systems***, estimated to total close to \$1.3 B presently.
- ***Barrier: Difficulty and cost of accessing capability at the INL and other national laboratories***
 - Emphasize access by private entities to Lab expertise and world class user facilities. The role of the **Nuclear Science User Facilities (NSUF) in providing information, access and expert support for private investment** at facilities and expertise across the complex should be broadened as part of this initiative. The INL is DOE-NE's lead laboratory for nuclear power, meaning that it is the principal gateway to both facilities and expertise across the national laboratory complex. NSUF serves this role well.

First Major Finding, contd.

- The **Gateway for Accelerated Innovation in Nuclear (GAIN)*** is an excellent start in reducing cost and procedural barriers to private investment and should be continued and expanded.
- Especially important is the **international presence of the INL**. This aspect should be emphasized with both the NSUF and GAIN as important elements in cooperation with the international community. There are important international test facilities that complement those in the U.S. and these programs facilitate both awareness and access for the international community.
- It is important that the INL have the leadership, focus, and support to grow the Lab's **innovation capabilities** to conceive and develop future nuclear energy systems. (Break down old perceptions of how national labs cooperate with private interests). The key is people, developing a culture that encourages new approaches to present challenges.

Second Major Finding

- ***Opportunity:*** Establish the Context for nuclear power as a choice to ensure energy security and to protect the environment.
- ***Barrier:*** Lack of a national consensus on the role of nuclear power.
- **Recommendations:**
 - Leverage the expertise at the INL as a multi-program laboratory and its partnership with other laboratories, especially NREL, to provide the expert analysis that establishes the context within which nuclear power choices exist. It is important to both DOE-NE and the INL that the public be engaged in understanding of nuclear power as an important component of emission-free power generation.

Second Major Finding, contd.

- The **Center for Advanced Energy Studies (CAES)** associated with the INL is an ideal vehicle for this role, developing a public presence in consideration of energy technology choices. Other institutes and agencies with recognized expertise in multifaceted interests (technical/political/economic/social) bring important insights and should be brought into the discussion through the Center for Advanced Energy Studies.
- DOE-NE should consider **funding special studies** led by CAES/INL to address these issues.

Third Major Finding

- ***Opportunity:*** Closer cooperation between DOE-NE, DOE-ID and the INL in its role as NE's lead Laboratory.
- ***Barrier:*** Different priorities that are occasionally at odds.
 - From the CRENEL report, “..oversight has grown increasingly transactional rather than strategically mission-driven.”
- **Recommendations:**
 - Consistent with the newly-developed **stewardship and partnership agreement**, articulate the role of the INL as DOE's Lead Nuclear Energy laboratory, as a partner with DOE's other national laboratories and universities, and align elements of DOE and INL to strengthen the effectiveness of each.

Third Major Finding, contd.

- Ensure **strengthened stewardship and partnership** between DOE and INL as the Lab matures as a multi-purpose, multi-program national laboratory. Doing so is important for DOE-NE's standing within the broader DOE.
- As the INL has matured, oversight from DOE-NE and ID can increasingly be **redirected to support**. For example, there are many issues that could be addressed jointly by teams from both DOE and the INL. Examples include communication with public interest groups, project planning for important initiatives such as TREAT restart, review of DOE orders and procedures that unnecessarily impede progress, etc. The objective is to be proactive in facilitating success of both organizations, anticipating and eliminating barriers to success before problems arise.

Subcommittee Plans Going Forward

- Submit the final report at the December NEAC meeting.
 - The interim report represents only those opportunities seen as most important. There are many more identified.
- Team visits and communication in each of the stakeholder areas.
 - INL Management
 - DOE Management
 - Industry
 - National Laboratories
 - International Community
 - Environmental Technology Community (NREL)
 - Public

Conclusion

- The Idaho National Laboratory is well on its way to becoming a stronger world-class national laboratory
 - The basis has been well established over the last 10 years.
 - There are exceptional leadership teams in place at both INL and DOE.
 - There are new opportunities in nuclear technology as private interests grow and innovation is pursued.
 - Climate change, technology choices, partnerships, international growth, innovation, attracting talent, real-world solutions and demonstration.
 - Managing and leading change is the challenge.
- The goal of the Facilities Subcommittee is to help identify those opportunities and remove the barriers.