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The Model for the National Nuclear Security Administration and its Laboratories: Recommendations for Moving Forward

The Mission

The National Nuclear Security Administration (NNSA) laboratories have a core mission of nuclear weapons. This unique, demanding, and solemn mission is central to US national security and comes with an obligation that the laboratories have science and engineering capabilities that are second-to-none. Because of the distinctive capabilities developed and sustained at the laboratories for nuclear weapons, other elements of NNSA, DOE, and other federal agencies depend on the labs to perform work for a wide spectrum of critical national security missions. This work outside the nuclear weapons program (referred to as interagency work in the remainder of this document) has been accomplished by the labs since the 1960s and has expanded in scope as national security threats increased in complexity and urgency. Today the integrated skills and knowledge this interagency work generates and the technical challenge it creates for the laboratories' staff has become an essential element in sustaining the core nuclear weapons mission, and the present and future technical vitality of the labs. It is no longer imaginable that the laboratories could deliver consistently on the commitments to the nuclear weapons program without the synergistic interagency work that attracts top talent, hones our skills, and provides stability through the nuclear weapons program cycles. Government commitment for the broad national security work of the laboratories is essential for the US to ensure the preeminence of our nuclear weapons and to enable multidisciplinary technical solutions to other complex and high-risk national security challenges.

Today the interagency work conducted at the NNSA produces critical national security solutions *and* strengthens the core nuclear weapons program. However, the interagency work is not codified in statutory language of the labs' missions, and the processes to manage the broader national security missions into the future are not optimized. To advance this broad national security model it is critical that discussions on strategic support of enabling research, development, test and evaluation occur between the laboratories, NNSA, and other federal agencies. A new comprehensive set of reduced requirements is also needed, tailored specifically to address how federal agencies access the capabilities of NNSA's laboratories for national security related work.

Recommendation #1: Include statutory language codifying the broad national security mission of the NNSA laboratories in legislation. In addition, establish a streamlined statutory and regulatory framework for the NNSA laboratories to accept and perform national security work for other US federal agencies. NNSA oversight of other agency work should focus on the portfolio of work rather than individual projects.

The Federally Funded Research and Development Center Construct

The construct of Federally Funded Research and Development Centers (FFRDC) has been robust for 70 years. Today, the core tenets of FFRDCs (from FAR Title 48CRF35.017) remain relevant to the NNSA Labs:

- An FFRDC meets a special long-term research or development need
- An FFRDC is required to conduct its business in a manner befitting its special relationship with the Government, to operate in the public interest with objectivity and independence
- The long-term relationships between the Government and FFRDCs should provide the continuity that helps attract high-quality personnel to the FFRDC. This relationship should also be of a type to encourage the FFRDC to maintain currency in its field(s) of expertise, retain objectivity and independence, preserve familiarity with the needs of its sponsor(s), and provide a quick response capability.

While it remains clear the FFRDC construct is appropriate for the national security challenges the NNSA laboratories support, practical application of some of the intent of the construct has atrophied. Returning to the founding principles of FFRDCs across the national security enterprise will help create a more efficient and impactful future for the ultimate benefit of the US public. Specifically, the Government should use the laboratories as mission partners, free from conflict of interest, to help define strategic direction and provide innovative approaches. A strategic dialog between executive leaders of the NNSA FFRDCs and Government sponsors needs to be restored. Part of the dialog should include the laboratories' Directors' assessment of the health of the laboratories.

Recommendation #2: Support a return to a strong partnership between the Government and the NNSA FFRDCs exemplified by active engagement of the National laboratories' leaders in collaborative strategic discussion with the Government sponsors regarding currency of expertise, health of the laboratories, and mission priorities. Restore the role of the laboratories to contribute meaningfully to annual and long-term budget and program planning.

Government-Owned, Contractor-Operated Model

The Government-Owned, Contractor-Operated (GOCO) model remains well suited for the unique, core mission of the NNSA laboratories for nuclear weapons and the highly specialized facilities and associated liabilities needed to conduct that mission. The GOCO model allows the Government to make the substantial investments needed for the unique mission, and the private sector to provide best practices. In addition, the reachback of FFRDCs to their respective parent companies and/or universities provide important ties to the larger science and engineering communities.

However, the Management and Operating (M&O) contracts have become very complex and overly prescriptive. The amount and level of detail in the contracts, supporting measurement vehicles (Performance Evaluation Plans - PEPs), and resultant oversight exercised by NNSA and DOE headquarters and site offices, as well as third party groups, are redundant and costly. The burden the NNSA oversight model imposes appears to be significantly higher than the models used by FFRDCs operated by other federal agencies such as the DoD and NASA. Many independent studies have come to this conclusion and recommended modifications, yet changes in the NNSA oversight model and M&O contracts have not occurred, and in fact the oversight has continually increased.

The lack of progress in achieving cost-effective oversight is hampered by (1) the complexity associated with accurately assessing the costs of oversight versus risks, and (2) the general lack of trust between the DOE/NNSA and the labs. Within the DOE/NNSA, there are overhead costs

well beyond the number of people who have direct oversight responsibilities, many resulting from lack of clarity and duplication of roles, responsibilities, authorities, and accountabilities among DOE, NNSA, NNSA site offices, and the FFRDCs.

It is critical to improve the current oversight practices now, and to begin to envision oversight practices for the future that include risk and performance evaluation sharing with other Government agencies.

Recommendation #3: Implement improved contracting and oversight models based on best practices from other FFRDCs and FFRDC-like institutions (e.g. DOE Office of Science, DoD, NASA) that would drive a cultural change in the way NNSA manages the labs – moving toward an efficient approach consistent with the original FFRDC intent. Provide greater flexibility to the laboratories to execute mission, sustain capability, and manage risk within an approved operating envelope, with roles, responsibilities, authorities, and accountability defined at a higher-level and with greater autonomy. Implement a risk management framework model to balance responsibilities between laboratories and NNSA to improve trust and increase effectiveness.

Recommendation #4: Limit the funding the NNSA uses for oversight to a percentage of the total agency budget consistent with best practices from other FFRDCs or the private sector. Reinvest resulting cost savings in the laboratories' infrastructure to ensure the unique facilities required for the broad national security missions are supported. Eliminate duplicative assessments and oversight, with a preference for internal and third party assessments integrated into the contractor performance management system.

Managing the Health of Science and Engineering

The decreased flexibility within mission-driven programs and increased oversight on Laboratory-Directed R&D (LDRD) funds has led to a strain on the ability to sustain long-term excellence of science and engineering. Increasingly, mission work has become more milestone-driven, with short-term drivers that do not allow for supporting long-term capability needed to respond to future, and unanticipated, national security needs. No other institutions maintain this reservoir of talent for the nation, available as needed when urgent national needs arise. The recently completed National Academy of Sciences (NAS) study has a section devoted to recommendations to restore the flexibility of Lab Directors to manage capability with a multi-year horizon.

Recommendation #5: Incentivize a longer-term perspective in managing the health of the laboratories by increasing flexibility for laboratories to invest in core science and engineering capabilities. Rebalance fee incentives to value mission execution and strategic management of capability relative to compliance and operational oversight. Emphasize the importance of LDRD as an investment that benefits all current and future programs. Provide for approval of LDRD as a portfolio rather than project-by-project, designate a single approval office, and focus oversight on high-risk projects. Restore programmatic investments in supporting science needed for long-term mission delivery and unanticipated national security challenges.

NNSA Laboratories' Governance

Many reports by independent committees have found the micromanagement of the NNSA labs is debilitating and costly, and other reports have called for increased oversight. While these finding appear to be in opposition, one conclusion is clear -the governance of the NNSA labs is broken and must be changed.

From the laboratories' perspective, the NNSA involvement with the details of how the mission is accomplished is excessive and expensive, is not risk-based, and does not represent best practices. The governance is in urgent need of transformation.

The 2002 "Report to Congress on the Organization and Operations of the NNSA" contains a strong set of organizational principles that, if followed, would move the institution to a more streamlined operational model. Since the current structure has now been in place for about twelve years and the original organizational principles not adhered to, the only practical way of achieving the kind of change needed is to institute a structural change, even though structure alone will not ensure better governance.

Options for structural changes have been reviewed by many and are nicely summarized in "America's Strategic Posture – The Final Report of the Congressional Commission on the Strategic Posture of the United States" published in 2009. The options for a new structure range from strengthen NNSA autonomy within DOE to move all or some of the NNSA enterprise to DoD to more complete independence of NNSA with more attention from the President. In that report the Commission recommends creating NNSA as an independent agency reporting to the President through the Secretary of Energy. The Commission also states the preferred state is NNSA as an independent agency reporting to the President with a "Board of Directors" composed of the Secretaries of Energy, Defense, State, Homeland Security, and the Director of National Intelligence.

We believe the time to act on a change in governance is now, although the desired end-state may take time to achieve. If governance changes are reinforced by structural changes, the changes are more likely to be effective over the long-range. Any changes should decrease costs and also result in increased effectiveness of Government and laboratories' management systems.

Recommendation #6: Congress and the Administration should take immediate action to improve governance of the NNSA laboratories.

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