Report 1 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise

DETAILS

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CONTRIBUTORS

Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise; Laboratory Assessments Board; Division on Engineering and Physical Sciences; National Academies of Sciences, Engineering, and Medicine; National Academy of Public Administration

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Report 1 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise

Panel to Track and Assess Governance and Management Reform
in the Nuclear Security Enterprise

Laboratory Assessments Board

Division on Engineering and Physical Sciences

A Report of

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PANEL TO TRACK AND ASSESS GOVERNANCE AND MANAGEMENT REFORM IN THE NUCLEAR SECURITY ENTERPRISE

JILL P. DAHLBURG, Naval Research Laboratory, Washington, D.C., *Co-Chair*
ROBERT SHEA, Grant Thornton, LLP, Alexandria, Virginia, *Co-Chair*
ELIZABETH R. CANTWELL, Arizona State University, Tempe
KEITH COLEMAN, Boeing Phantom Works, St. Louis, Missouri
DONA L. CRAWFORD, Lawrence Livermore National Laboratory (retired), California
MARTIN C. FAGA, MITRE Corporation (retired), Falls Church, Virginia
PAUL A. FLEURY, NAS[1]/NAE,[2] Yale University, New Haven, Connecticut
DAVID GRAHAM, Institute for Defense Analyses, Alexandria, Virginia
WILLIAM MADIA, Stanford University, Menlo Park, California
KATHLEEN A. PEROFF, Peroff and Associates, LLC, Washington, D.C.
BARBARA ROMZEK, American University, Washington, D.C.
TAMMY P. TAYLOR, Pacific Northwest National Laboratory, Richland, Washington
MERRI WOOD-SCHULTZ, Los Alamos National Laboratory (retired), New Mexico

Staff

SARAH JAGGAR, National Academy of Public Administration, Staff Lead
SCOTT WEIDMAN, National Academies of Sciences, Engineering, and Medicine, Staff Lead
ADAM DARR, National Academy of Public Administration
EMILY FAY, National Academy of Public Administration
RODNEY HOWARD, National Academies of Sciences, Engineering, and Medicine
LAWRENCE B. NOVEY, National Academy of Public Administration
MICHELLE SCHWALBE, National Academies of Sciences, Engineering, and Medicine
MYRA HOWZE SHIPLETT, National Academy of Public Administration

[1] National Academy of Sciences.
[2] National Academy of Engineering.

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Preface

The Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise was jointly established by the National Academies of Sciences, Engineering, and Medicine ("the National Academies") and the National Academy of Public Administration (NAPA) to carry out a 4½-year assessment of the National Nuclear Security Administration's responses to longstanding problems affecting the nuclear security enterprise. Those problems were documented in the 2014 congressional advisory panel report *A New Foundation for the Nuclear Enterprise* and in the 2015 report *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories* of the Commission to Review the Effectiveness of the National Energy Laboratories, and in several earlier studies.

Most of the problems identified in past reports have been in the realm of management and governance, including misalignments and mistrust between the Department of Energy (DOE) and its National Nuclear Security Administration (NNSA) and their management and operations contractors. Because these problems have, to a large part, resisted past attempts at resolution, Congress called for the establishment of this panel and charged it with semiannual assessments over a prolonged period—an approach that will provide the sustained attention needed. And because the nuclear security enterprise comprises both a highly technical mission and a complex government management challenge—and many of the problems to be addressed may have roots in that duality—Congress stipulated that the study was to be joint between NAPA and the National Academies. As a reflection of the need to bridge cultures and areas of expertise, approximately half the panel members were nominated by the National Academies and half by NAPA. Their expertise spans relevant perspectives from science, governance, engineering, and management. (See Appendix A for biographical sketches of panel members.) The study is being conducted in accordance with the National Academies' policies—for example, all panel members were officially appointed by the President of the National Academy of Sciences and subject to the National Academies' policies on bias and conflict, the study follows the National Academies' policies on transparency, and this report has gone through the National Academies' peer review process. The panel was established under the National Academies' Laboratory Assessments Board, which has relevant expertise to provide oversight to the study.

The National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA), which mandated this study, also called for DOE to release an implementation plan by March 31, 2016, for addressing the concerns alluded to above. The study plan and deliverables stipulated in the FY2016 NDAA, which are also reflected in the study's statement of task, have been adjusted to align with the actual release date of that plan. The focus for subsequent semi-annual reports will be developed in coordination with Congress and NNSA.

We are grateful to NNSA and DOE for their generous assistance and openness in helping the panel conduct its study. We also thank the NAPA and the National Academies' staff for all their contributions to this study. The panel would like to thank the individuals listed in Appendix B for providing input to this study.

Jill P. Dahlburg and Robert Shea, *Co-Chairs*
Panel to Track and Assess Governance and
Management Reform in the Nuclear
Security Enterprise

Acknowledgment of Reviewers

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

Norman R. Augustine, Lockheed Martin Corporation (retired),
Jonathan D. Breul, Georgetown University,
Robert C. Dynes, University of California, San Diego,
T.J. Glauthier, TJG Energy Associates, LLC,
Robert F. Hale, Booz Allen Hamilton,
Julia M. Phillips, Sandia National Laboratories (retired), and
Mitchel B. Wallerstein, Baruch College of the City University of New York.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the views presented in the report, nor did they see the final draft of the report before its release. The review of this report was overseen by John F. Ahearne, Sigma Xi, The Scientific Research Society (retired) and Stephen M. Robinson, University of Wisconsin, Madison, who were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the panel and the institutions.

Contents

Summary

The congressionally mandated report *A New Foundation for the Nuclear Enterprise* (the "Augustine-Mies" report), released in November 2014, concluded that "the existing governance structures and many of the practices of the [nuclear security] enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term."[1] The report offered 19 recommendations, many with subcomponents, to improve the effectiveness of the enterprise. The recommendations that are within the control of the Department of Energy (DOE) and/or its National Nuclear Security Administration (NNSA) relate to challenges in the following areas:

- Management structure and processes;
- Decision-making practices;
- Risk management;
- Culture of performance, accountability, and credibility;
- Best practices for shaping and building the enterprise workforce;
- Cost analysis and resource management capabilities;
- Budget and accounting structure;
- Strategy and plan for meeting future needs, including deferred maintenance, infrastructure, and workforce;
- Construction project management capabilities;
- Interactions between management and operating (M&O) contractors and NNSA/DOE;
- Wasteful and ineffective transactional oversight;
- Government–federally funded research and development center relationship; and
- Collaborations and trust with NNSA customers.

Similar issues were raised in another congressionally mandated report released in 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories* (the "CRENEL" report),[2] which examined all 17 of the DOE laboratories, including the 3 NNSA laboratories. Its 36 recommendations cover topics such as rebuilding trust, maintaining alignment and quality, managing effectiveness and efficiency, and ensuring lasting change.

Following the release of the Augustine-Mies report, the National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA)[3] called for DOE to develop an implementation plan for responding to the recommendations in that report and similar recommendations. The NDAA also called for a 4½-year study, joint between the National Academies of Sciences, Engineering, and Medicine and the National

[1] Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, 2014, *A New Foundation for the Nuclear Enterprise: Report of the Congressional Advisory Panel on the Governance of th1e Nuclear Security Enterprise*, http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934, p. ix.

[2] Commission to Review the Effectiveness of the National Energy Laboratories, 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories,* https://energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories.

[3] Section 3137 of the National Defense Authorization Act for Fiscal Year 2016, Pub. L. 112-92 (Nov. 25, 2016).

BOX S.1
Statement of Task

[E]valuate the implementation plan developed by the National Nuclear Security Administration (NNSA) and DOE in response to the FY2016 National Defense Authorization Act, and the subsequent implementation of such plan. The study will be carried out collaboratively with the National Academy of Public Administration (NAPA), as directed by the FY2016 National Defense Authorization Act, and will follow [the National Academies'] procedures and policies. The committee's first report will be an initial assessment of the implementation plan. That report will be followed by seven semi-annual interim reports to evaluate progress in implementing the plan. A final report will be issued at the end of the study to document the overall progress in executing the implementation plan, assess the effectiveness of the reform efforts under that plan, and recommend whether further action is needed.

Academy of Public Administration, to track the actions proposed in that plan and to assess progress. This report is the first in a series of semi-annual reports to be issued over 2017-2020 as part of that study. The overall charge for the National Academies–NAPA study is described in Box S.1. The study panel, in consultation with cognizant staff from NNSA and Congress, decided to focus this first report on steps taken by NNSA to (1) clarify roles, responsibilities, authorities, and accountability; (2) mitigate burdensome practices; and (3) enable change to be achieved and sustained. These themes will be examined in greater detail in additional reports from the panel, along with additional themes.

Many previous reports have emphasized the importance of defining and implementing clear roles, responsibilities, authorities, and accountability within the nuclear security enterprise. Those studies found that overlapping and poorly defined functions and authorities have fostered inefficient and overly risk-averse procedures and cultures within DOE and NNSA. Furthermore, they noted that the lack of clear allocation of responsibilities between the M&O contractors and their federal sponsors has contributed to a significant deterioration in their relationship.

The existence of burdensome practices that limit the efficiency of work in the nuclear security enterprise has also been noted by many previous reports. Elements in the field are subject to oversight by a multiplicity of parties and policies—not only those of DOE and NNSA, but also those of the DOE Inspector General, DOE's Office of Enterprise Assessment, the relevant NNSA field office, program offices at NNSA, and other federal and non-federal agencies, such as the Occupational Safety and Health Administration, the Government Accountability Office, the Department of Defense, state and local regulators, the Defense Nuclear Facilities Safety Board, and so on. The resulting excessive and uncoordinated oversight—through management processes and through inspections, audits, reviews, site visits, and data calls—fuels inefficiencies, per past reports. Balancing the burden and value of necessary oversight has not been approached systematically, and it could be.

At a higher level, addressing the issues noted in reports such as that from the Augustine-Mies study required the nuclear security enterprise to embark on a program of large-scale change. Experience with change in many organizations has shown that successfully achieving and sustaining improvements to effectiveness, efficiency, and culture across the nuclear security enterprise will require sustained effort and an iterative process. Many management and governance changes have been recommended for DOE and NNSA over the years by many experts and committees, and yet sustained effective change has not been achieved. The FY2016 NDAA noted that correcting the longstanding governance and management problems afflicting NNSA and the nuclear security enterprise would require "personal engagement by senior leaders, a clear plan, and mechanisms for ensuring follow-through and accountability."[4] Thus, an

[4] National Defense Authorization Act for Fiscal Year 2016, H.R. 1735, 114th Cong. (2015-2016).

approach that explicitly prioritizes *sustainable* change is necessary to the accomplishment of NNSA's mission, especially in partnership with its M&O contractors.

In this beginning stage of its study, the panel was impressed to see that longstanding governance and management issues in the nuclear security enterprise have received focused attention over the past 1 to 2 years. The direct involvement of the DOE Secretary and NNSA Administrator has been very valuable and absolutely necessary for this endeavor. In particular, the establishment of an NNSA Office of Policy to serve as a nexus for change management is an important element. It is critical that this momentum be sustained—a challenging requirement given the transition in top leadership and future uncertainty regarding funding and priorities. In fact, for the purpose of clarifying roles, responsibilities, authorities, and accountability—a task that is foundational to addressing other governance and management challenges—the panel believes greater urgency should be demonstrated. For example, although the need for clarification was identified in 2014 or earlier, a new governance construct was not released until 2016, after which a working group was established to resolve implementation details, which is ongoing. Further, an important open question is whether these initial changes are having the desired effect. This first report can assess only the very beginning of what may be a long trajectory.

The panel arrived at the following findings and recommendations, which are numbered here as they are numbered in the full report:

> **Finding 2.1.** Many of the reform efforts called for in the Augustine-Mies report and elsewhere (e.g., reductions in the burden associated with necessary oversight) are contingent on having clarity as to roles, responsibilities, authorities, and accountability. The communications and relationships between NNSA's M&O contractors and the agency appear to have improved in recent years, thanks in part to the creation of several crosscutting boards and advisory groups. However, there remains considerable ambiguity in roles, responsibilities, authorities, and accountability.
>
> **Finding 2.2.** DOE and NNSA have issued several new documents and have undertaken other activities to address the recommendations for clarifying roles, responsibilities, authorities, and accountability, both among the officials and offices within DOE and NNSA and between the M&O contractors and their government sponsors. But the panel's information gathering to date is not yet sufficient to fairly assess the current articulation and implementation of roles, responsibilities, authorities, and accountability (although laboratory staff expressed concerns to the panel) or to ascertain whether the current articulation and implementation are yielding the intended results.
>
> **Recommendation 2.1.** The NNSA Administrator should demonstrate urgency in efforts to clarify roles, responsibilities, authorities, and accountability, with particular emphasis on clarifying interactions and relationships between NNSA's management and operating contractors and their government sponsors. Future documents need to resolve ambiguity in several of the earlier policy documents.
>
> **Finding 3.1.** The mix of burdensome practices affecting the nuclear security enterprise is not characterized precisely enough to lead to targeted interventions for all of them. It would be helpful to know, for example, what fraction of oversight activities are within NNSA's control, which burdensome practices are contributing the most to "burden" and why, which are associated with overlapping responsibilities, and so on. Such understanding is necessary before rational rebalancing is possible. The panel is not suggesting that a complete inventory of regular or ad hoc audits, investigations, and requests for data needs to be compiled.

Recommendation 3.1. The NNSA Administrator should develop and promulgate criteria to help the nuclear security enterprise understand when a process is adding burden that is not commensurate with its value and establish feedback loops so that burdensome practices are recognized. The nuclear security enterprise can then more rationally determine which practices to re-engineer through working groups that bring together the affected parties. In the long term, NNSA should strive to move away from a subjective debate over "burdensome practices" and seek to adopt a more systematic approach for defining oversight requirements.

Finding 4.1. NNSA has not defined what success looks like as it works toward implementing the recommendations from previous reports, and it lacks qualitative or quantitative metrics to identify and measure change.

Finding 4.2. The change management process in place within NNSA is promising—it has addressed many foundational elements, such as obtaining top-level direction and involving participants from across the subcultures of the nuclear security enterprise. But the first steps of change are not yet fully embedded.

Recommendation 4.1. The NNSA Administrator should define an effective mission-focused operating model as the vision for implementing the changes called for in reports of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise and the Commission to Review the Effectiveness of the National Energy Laboratories and elsewhere. NNSA should continue to embrace the concept that change is an iterative process, requiring the sustained attention of leadership and the institution of a mature change management process. NNSA and the management and operating contractors should identify meaningful metrics that can be used to facilitate the identification, measurement, and tracking of change. Results from early change successes should become the foundation for subsequent, iterative actions that support the enterprise in achieving its important mission.

1

Introduction

ORIGIN OF THIS STUDY

A congressionally mandated study carried out in 2013-2014, co-chaired by Norman Augustine and Richard Mies, led to the November 2014 report *A New Foundation for the Nuclear Enterprise*[1] (the "Augustine-Mies" report). That report, according to its preface, "summarizes the panel's findings on the current health of the enterprise, examines the root causes of its governance challenges, and offers the panel's recommendations to address the identified problems" (p. iii). It concludes—echoing many other examinations in recent years, including at least two reports from the National Academies[2]—that "the existing governance structures and many of the practices of the enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term" (p. ix). It offers 19 recommendations, many with subcomponents, to put the entire nuclear security enterprise on a stronger footing.

Some of the Augustine-Mies recommendations are directed to Congress and the White House and thus may not be controlled by National Nuclear Security Administration (NNSA) or the Department of Energy (DOE). The remaining recommendations address challenges arising in the following areas:

- Management structure and processes;
- Decision-making practices;
- Risk management;
- Culture of performance, accountability, and credibility;
- Best practices for shaping and building the enterprise workforce;
- Cost analysis and resource management capabilities;
- Budget and accounting structure;
- Strategy and plan for meeting future needs, including deferred maintenance, infrastructure, and workforce;
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- Collaborations and trust with NNSA customers.

Similar issues were raised in a 2015 study by the Commission to Review the Effectiveness of the National Energy Laboratories, *Securing America's Future: Realizing the Potential of the Department of*

[1] Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, 2014, *A New Foundation for the Nuclear Enterprise: Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise*, http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934.

[2] National Research Council, 2012, *Managing for High-Quality Science and Engineering at the NNSA National Security Laboratories*, and National Research Council, 2013, *The Quality of Science and Engineering at the NNSA National Security Laboratories*, both from National Academies Press, Washington, D.C.

Energy's National Laboratories[3] (the "CRENEL" report, which was also requested by Congress). That report examined the full range of 17 DOE laboratories, which includes the 3 NNSA laboratories. Its 36 recommendations are grouped into 6 thematic areas: recognizing value (provide sufficient resources); rebuilding trust, particularly between DOE and its laboratories; maintaining alignment and quality; maximizing impact; managing effectiveness and efficiency; and ensuring lasting change. That panel also pointed out that more than 50 reports, dating at least to the 1990s, have raised similar concerns about management and governance problems affecting the nuclear security enterprise or DOE more broadly.

The nuclear security enterprise is large and complex. According to DOE/NNSA *2017 Stockpile Stewardship and Management Plan*,[4] capabilities of the enterprise are distributed "at NNSA Headquarters (located in Washington, DC; Germantown, Maryland; and the Albuquerque Complex in Albuquerque, New Mexico); the NNSA field offices; four production facilities; three national security laboratories, two of which include production missions; and a national security site [and a] workforce consisting of Federal employees (more than 1,500), employees of our management and operating (M&O) partners (more than 35,000), and assigned members of the military" (p. 1-4).

Recognizing the persistence of governance and management concerns, the National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA) mandates that NNSA and DOE develop a plan for addressing the recommendations of the Augustine-Mies report and, at NNSA's discretion, those of similar reports. That Act also calls for the National Academies of Sciences, Engineering, and Medicine ("the National Academies") and the National Academy of Public Administration (NAPA) to jointly track and assess the execution of that plan through a long-term study. The relevant provision of the Act is included in Appendix C. Accordingly, the National Academies and NAPA jointly assembled the Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise ("the panel"). In calling for these steps, Congress explicitly recognized the following:

> (1) Correcting the longstanding problems with the governance and management of the nuclear security enterprise will require robust, personal, and long-term engagement by the President, the Secretary of Energy, the Administrator for Nuclear Security, and leaders from the appropriate congressional committees; (2) recent and past studies of the governance and management of the nuclear security enterprise have provided a list of reasonable, practical, and actionable steps that the Secretary and the Administrator should take to make the nuclear security enterprise more efficient and more effective; and (3) lasting and effective change to the nuclear security enterprise will require personal engagement by senior leaders, a clear plan, and mechanisms for ensuring follow-through and accountability.[5]

The overall charge for the National Academies–NAPA study is described in Box 1.1.

[3] Commission to Review the Effectiveness of the National Energy Laboratories, 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories,* https://energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories.

[4] Department of Energy (DOE)/National Nuclear Security Administration, 2016, *Fiscal Year 2017 Stockpile Stewardship and Management Plan—Biennial Plan Summary*, Report to Congress, March 2016.

[5] National Defense Authorization Act for Fiscal Year 2016, H.R. 1735, 114th Cong. (2015-2016), Sec. 3137.

BOX 1.1
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[E]valuate the implementation plan developed by the National Nuclear Security Administration (NNSA) and DOE in response to the FY2016 National Defense Authorization Act, and the subsequent implementation of such plan. The study will be carried out collaboratively with the National Academy of Public Administration (NAPA), as directed by the FY2016 National Defense Authorization Act, and will follow [the National Academies'] procedures and policies. The committee's first report will be an initial assessment of the implementation plan. That report will be followed by seven semi-annual interim reports to evaluate progress in implementing the plan. A final report will be issued at the end of the study to document the overall progress in executing the implementation plan, assess the effectiveness of the reform efforts under that plan, and recommend whether further action is needed.

FOCUS OF THIS REPORT

It was not possible to begin the study in the way envisioned by the FY2016 NDAA, and in the charge given to the panel, because of a delay in the release of the DOE and NNSA implementation plan for reforming the governance and management of the nuclear security enterprise. Therefore, after appropriate consultations, the panel decided to begin its study with an examination of steps taken by NNSA to address a subset of recommendations from the Augustine-Mies and CRENEL reports to (1) clarify roles, responsibilities, authorities, and accountability; (2) mitigate burdensome practices; and (3) enable change to be achieved and sustained. The panel judged the first two themes to be among the highest-priority challenges and also ones for which the nuclear security enterprise could make progress in the near term. In addition, recognizing that change management in any complex organization is a long-term process requiring focused attention, the panel also elected to examine as a third theme how large-scale change can be achieved and sustained. The panel's goal for the first of these themes is to assess the actions that DOE and NNSA have taken or plan to take in order to ensure that the Administrator has the authorities necessary for executing nuclear enterprise missions and that other individuals at all levels understand their roles and contributions to mission execution, as recommended especially in the Augustine-Mies report. For the second theme, the panel's goal is to determine if appropriate steps have been taken to begin mitigating burdensome management practices, which have been flagged by several reports as a persistent and fundamental problem. The goal for the third theme is to understand, document, and assess the change management philosophy, goals, methodologies, and accomplishments to date being carried out by NNSA and DOE in response to the Augustine-Mies and CRENEL report recommendations.

The panel began its focused information gathering in December 2016. This report is the first in a series of reports to be issued by the panel over 2017 to 2020. Many of the topics discussed in this report will be examined in more detail in subsequent reports.

The panel's goal is to assess the degree to which the nuclear security enterprise successfully addresses concerns raised in the Augustine-Mies and CRENEL reports. It begins by examining NNSA's current actions and considering whether they are reasonable and positioned to succeed, but its longer-term plan is to compare how the enterprise functions in comparison to the desired state described in those reports. In that light, the DOE implementation plan, discussed next, is just a first step.

THE DEPARTMENT OF ENERGY IMPLEMENTATION PLAN

While the panel was examining the three themes listed above, DOE released the implementation plan, *Governance and Management of the Nuclear Security Enterprise: Report to Congress,*[6] that was called for in the FY2016 NDAA. The plan aims to address recommendations—except those requiring legislation—from the Augustine-Mies and CRENEL reports. DOE also decided to address recommendations from a June 2015 report of the Secretary of Energy Advisory Board's Task Force on DOE National Laboratories (the "SEAB Task Force" report).[7] That report examined the operations of all 17 DOE national laboratories (including the 3 NNSA laboratories) and evaluated their effectiveness. Its executive summary captures the primary focus as follows:

> The [report] stresses the overriding importance of two actions: clarifying the authorities and responsibilities of the entities involved in laboratory management and adopting a disciplined process for implementing change. The TF report further proposes targeted "experiments" in three areas: (1) the management and operation (M&O) contracting system that the U.S. Department of Energy (DOE) uses to run the laboratory system; (2) technology transfer as a means for creating value for the private sector; and (3) Laboratory Directed Research and Development (LDRD).[8]

Although the SEAB Task Force report is not called out in the NDAA language behind this study, its recommendations are included in the DOE implementation plan and hence are examined as part of this report.

The first two themes for this report—clarifying roles, responsibilities, authorities, and accountability, and mitigating burdensome practices—are prominent in the DOE implementation plan, and the panel's information gathering explored the relevant actions included in that plan. The panel's third theme, on steps to achieve and sustain change, is not explicitly addressed by that implementation plan, but it is implicit.

Because this report is just the first in a series, it should be read as a preliminary assessment of actions taken or under way in the nuclear security enterprise in response to the challenges identified by the Augustine-Mies, CRENEL, and SEAB Task Force reports. Addressing those challenges requires change at many levels: to processes, relationships, embedded assumptions, and cultures. This report describes many of the steps taken to date, but the panel's limited fact-finding has not yet permitted an in-depth examination of the implication of NNSA's actions at the laboratory and plant level. Given the status of its work, the panel has provided only a few top-level findings and recommendations that merit early attention in shaping NNSA's reform efforts. The three themes covered by this report will be revisited over the course of this lengthy study, and they will also be augmented to eventually cover the full set of recommendations from the Augustine-Mies and CRENEL reports and all the actions reflected in the DOE implementation plan.

METHODOLOGY

To prepare this report, the panel studied the Augustine-Mies, CRENEL, and SEAB Task Force reports as well as the DOE and/or NNSA responses to them.[9] It received an overview of the entire nuclear

[6] DOE, 2016, *Governance and Management of the Nuclear Security Enterprise: Report to Congress*.

[7] Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, https://energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf.

[8] SEAB, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, p.1.

[9] DOE, 2016, *Departmental Response to the Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories: Report to Congress*, https://energy.gov/sites/prod/files/2016/02/f29/CRENEL%20Response%20-%20FINAL%20COMBINED_0.pdf;

security enterprise from the head of the NNSA Office of Policy and briefings on the Augustine-Mies and CRENEL reports from their co-chairs. The panel's information-gathering activities are listed in Appendix B. Information gathering featured in-depth discussions with key personnel in senior decision-making positions at DOE/NNSA headquarters, senior personnel from the NNSA laboratories and their field offices, and other officials and experts. Because the panel's focus shifted mid-way through its work on this report—initially preparing to assess the DOE implementation plan and, in early December 2016, changing course to examine the three themes identified above—its investigation of those three themes was limited.

The panel was briefed on the 2016 examination by a SEAB working group that looked at steps taken to improve governance and management and also on follow-up work by the CRENEL co-chairs. It had access to all publicly available management directives and other documented actions issued or taken by the Secretary of Energy or the NNSA Administrator that are responsive to the recommendations of the Augustine-Mies, CRENEL, and SEAB Task Force reports.

SEAB, 2015, "SEAB comments on the Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise," https://energy.gov/sites/prod/files/2015/02/f19/FINAL_SEAB%20Letter_Augustine-Mies%20Report_1.pdf.

2

Actions Under Way to Clarify Roles, Responsibilities, Authorities, and Accountability

THE PROBLEM IN BRIEF

The reports by the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise (Augustine-Mies),[1] the Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL),[2] and the Secretary of Energy Advisory Board's Task Force on DOE National Laboratories (SEAB Task Force),[3] along with many others, have emphasized the importance of defining and implementing clear roles, responsibilities, authorities, and accountability within the nuclear security enterprise. These studies found that overlapping and poorly defined functions and authorities have fostered inefficient and overly risk-averse procedures and work culture within the Department of Energy (DOE) and the National Nuclear Security Administration (NNSA). Furthermore, they found that the lack of clear allocation of responsibilities between the management and operating (M&O) contractors and their federal sponsors has contributed to the deterioration in their relationship. Establishing a clear understanding of who is responsible and accountable for actions across managerial levels and institutional boundaries is a building block for other essential reforms as well, such as tackling burdensome practices and sustaining desired organizational change.

WHAT HAVE PAST REPORTS SAID?

The Augustine-Mies report[4] found that, because of the way the NNSA Act[5] had been implemented, "NNSA was not provided the line-management authority necessary to integrate safety, security, and environmental concerns into the decision making for executing NNSA's missions;" nor was

[1] Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, 2014, *A New Foundation for the Nuclear Enterprise: Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise*, http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934.

[2] Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL), 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories,* https://energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories.

[3] Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, https://energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf.

[4] Congressional Advisory Panel, 2014, *A New Foundation*.

[5] The "NNSA Act" is the common term for Title XXXII of the National Defense Authorization Act for Fiscal Year 2000, Pub. L. No. 106-65 (1999), which established the NNSA.

an "effective policy implementation framework established" (p. xii). The report identified several important components and consequences, including the following:

- "DOE headquarters mission support staffs have continued to exercise oversight of NNSA—acting in parallel with the counterpart staffs in NNSA," resulting in significant inefficiencies (p. 22).
- "[T]he lack of understanding of responsibilities among DOE, NNSA headquarters, the field offices, and the M&Os" results in a "corrosive" structure "where many people can say no, but too few can say yes" (p. 23).
- "A dysfunctional relationship between line managers and mission-support staffs" (p. 6) results in a "risk-averse culture in which the penalties of being responsible for a wrong (albeit well-intentioned) decision are far greater than any rewards for taking initiative" (p. 23-24).

Moreover, all three reports—Augustine-Mies, CRENEL, and SEAB Task Force—found that the lack of clarity in the respective roles, responsibilities, authorities, and accountability of M&O contractors and their federal sponsors fosters distrust and contributes to the deterioration in their relationships.

The Augustine-Mies report[6] further explained, "The open communication and collaboration on program and technical matters that historically existed between the M&Os and federal officials has eroded over the past two decades to an arm's length, customer-to-contractor and, occasionally, adversarial relationship" (p. xv). One of the factors contributing to this deterioration was "unclear accountability for risk" (p. xv), Augustine-Mies explained. "In effective organizations, the federal sponsor decides what is needed and the M&O organization decides how to meet that need," but at NNSA "the respective roles and responsibilities of the federal sponsors and the M&Os are not consistently and clearly stated or understood" but "vary from site to site and from issue to issue" (p. 65 and 60). CRENEL and SEAB Task Force stated the problem in similar terms, and SEAB Task Force[7] noted, "the greatest feeling of dissatisfaction exists in the large NNSA weapons laboratories" (p. 9).

Recommendations from Past Reports

To address the unclear relationships among government offices and officials within DOE and NNSA, the Augustine-Mies report[8] recommend that "management processes" be established "that specify the [NNSA Administrator's[9]] authorities for executing nuclear enterprise missions" (p. 31, Recommendation 4). To accomplish this, the Augustine-Mies report[10] proposed several specific actions, including the following:

- The Administrator should not be subject to "undue intervention or interference from other senior officials" in the Department (p. 31, Action Item 4.1).
- Senior headquarters positions [at NNSA and DOE] with "line-management decision authorities" and those responsible for "mission-support functions" should be clearly designated (p. 34, Action Item 4.4), and line managers should be required to "seek the

[6] Congressional Advisory Panel, 2014, *A New Foundation*.
[7] SEAB, 2015, *Report of the Secretary of Energy Task Force*.
[8] Congressional Advisory Panel, 2014, *A New Foundation*.
[9] The Augustine-Mies report recommended enactment of legislation that would, among other things, change the names of DOE and NNSA and the titles of the Energy Secretary and the Administrator, and that report used the proposed names and titles in its recommendations. Because the legislation was not enacted, this report uses the existing names and titles when describing those recommendations.
[10] Congressional Advisory Panel, 2014, *A New Foundation*.

support and advice of mission-support functional experts," while remaining responsible for program-execution decisions and accepting the risk (p. 31, Action Item 4.1).
- "The Secretary should adopt processes defining the [Administrator's] role in ensuring applicable [DOE] processes, rules, and orders are compatible with the operating circumstances of the nuclear security enterprise" (p. 34, Action Item 4.3).
- A "matrix management structure" should be established [at NNSA], including "structures and processes to ensure that the [Administrator] can interact with and draw upon the skills and expertise across line-management staffs and . . . mission-support elements" (pp. 32-33, Action Item 4.2).

As for the respective roles, responsibilities, authorities, and accountability of the M&O contractors and their government sponsors, all three reports recommended that they should be clarified, and the studies suggested this could be done through processes involving consultation and discussion. The CRENEL report[11] stated that the goal should be to "delegate more authority and flexibility to the laboratories on how to perform their R&D, and hold them fully accountable," and that this might be accomplished by long-term strategic planning and agreed-upon annual operating plans for each laboratory that would "serve as the foundation for an effective working relationship with appropriate roles and responsibilities" (pp. 19-20, Recommendation 2). The SEAB Task Force report[12] suggested that top leadership should lead collaborative councils in clarifying roles and responsibilities and in implementation of those changes (p.10, Recommendation 1.1). The Augustine-Mies report[13] recommended that DOE and NNSA should address the problem by "continu[ing] to reinvigorate the strategic dialog with the laboratory directors," including by "[i]ntegrating planning and decision-making forums," by improving "communication policies," and by organizing frequent meetings and informal interactions (pp. 81-82, Recommendation 17, Action Items 17.1-17.3).

WHAT IS NNSA DOING IN RESPONSE?

To address the problems and recommendations in the Augustine-Mies, CRENEL, and SEAB Task Force reports relating to clarifying roles, responsibilities, authorities, and accountability,[14] DOE and NNSA's implementation plan[15] describes a number of completed and ongoing activities, including the following:

- DOE reported that it "is managing crosscutting functions through a new network of councils, boards, and working groups, such as the National Laboratory Directors' Council, the National Laboratory Policy Council, and the National Laboratory Operations Board." [16] NNSA cited other DOE-level councils and advisory bodies that "are improving alignment and functional integration throughout DOE,"[17] and NNSA also cited its own hierarchy of councils and other

[11] CRENEL, 2015, *Securing America's Future,* Vol. 1.
[12] SEAB, 2015, *Report of the Secretary of Energy Task Force*.
[13] Congressional Advisory Panel, 2014, *A New Foundation*.
[14] This report adds the word "accountability" into the term "roles, responsibilities, and authorities," which is the analogous phrase that appears in the implementation plan. The panel believes that adding this word provides a more complete description of the concept. It is not implying a broadening of the issue as characterized in Augustine-Mies and other reports. In fact, responsibility and accountability should go hand in hand, and accountability should be determinable from a set of roles, responsibilities, and authorities. The panel considers responsibility and accountability to be two sides of one coin.
[15] U.S. Department of Energy (DOE), 2016, *Governance and Management of the Nuclear Security Enterprise: Report to Congress*.
[16] Ibid., p. iii.
[17] Ibid., p. 4.

advisory bodies by which NNSA conducts integrated decision-making analysis, such as the NNSA Council and the Management Council.[18]

- NNSA has designated each of its components as a program, support function, or field office and has clarified the functions of each: "NNSA's line managers have responsibility to meet assigned program objectives safely and securely as well as in a legally and fiscally responsible manner." By comparison, mission support functional organizations "participate in policy, direction, prioritization, and funding activities in support of the nuclear security mission."[19]
- The NNSA field office managers (FOMs), who now report directly to the Administrator, are designated as line managers: "In accordance with headquarters program direction, FOMs are responsible for on-site federal oversight and administration of the M&O contract."[20]
- NNSA is updating its mission and function statements and has recently issued a new Management System Description[21] (MSD) that delineates functions, responsibilities, and authorities of various NNSA components. The MSD also describes NNSA's governance model, which is "implemented collaboratively by federal and contractor organizations in pursuit of shared mission objectives," is "defined by documented organizational roles, responsibilities, and work processes," and "is implemented through a hierarchical and disciplined structure of councils, boards, and committees."[22]
- NNSA also is establishing an updated site governance model "composed of three interactive and complementary systems which involve the following: (1) the M&O site, lab, or plant partner operating the site; (2) the M&O site, lab, or plant partner's corporate parent(s); and (3) the federal NNSA team, to include program, functional, and field office personnel. The level of federal involvement will be driven by the degree and impact of issues that an M&O partner is having relative to executing the mission, the magnitude of risks, site hazards, and work complexity."[23]

WHAT HAS THE PANEL OBSERVED?

In examining these issues, the panel conducted a series of interviews with high-level officials at DOE and NNSA, from both headquarters and field offices, and with three of NNSA's M&O contractors. In addition, the panel met with lead authors of the Augustine-Mies and CRENEL studies and examined documents issued by DOE and NNSA, as well as recent assessments by the CRENEL co-chairs. (See Chapter 1 for a description of the study approach and Appendix B for a list of people with whom the panel met.)

Over the past several years, key initiatives have been taken in response to recurring recommendations made by dozens of studies since the 1990s—including the Augustine-Mies, CRENEL, and SEAB Task Force studies—regarding governance and management of DOE and NNSA. A central theme in those studies' recommendations is the need to clarify, rationalize, and implement the many roles, responsibilities, and authorities embodied in DOE (including DOE headquarters) and NNSA, as well as the respective roles, responsibilities, authorities, and accountability of the government and of the associated contractor-operated sites and laboratories. The unparalleled risks and consequences of the

[18] Ibid., pp. 4-5.
[19] Ibid., pp. 5-6.
[20] Ibid., p. 6.
[21] National Nuclear Security Administration (NNSA), 2017, "Appendix 4: Management System Description," in *Quality Management System*, *NNSA Policy Letter, NAP-26B*, https://nnsa.energy.gov/sites/default/files/nnsa/multiplefiles/nap-26b_final_1-10-17.pdf.
[22] NNSA, 2017, *Quality Management System*, p. AP4-5.
[23] DOE, 2016, *Governance and Management*, p. 12.

operations within this enterprise require clarity on, and buy-in to, the roles, responsibilities, and authorities of all elements.

Both DOE and NNSA have substantial activities under way to address the range of recommendations in the Augustine-Mies, CRENEL, and SEAB Task Force studies. DOE and NNSA have compiled crosscutting lists of their responses in several memos and policy statements, as noted earlier. Recognizing that essentially all important activities in the nuclear security enterprise involve, and indeed rely upon, the participation of people from many different segments, DOE and NNSA have focused on fostering communications and building trust, partnerships, and collaboration through the establishment of councils, boards, and working groups. The policies and directives issued by DOE and NNSA established broad principles for clarification and improvement in governance of laboratories and other sites. DOE and NNSA have also undertaken other actions to improve and clarify the roles, responsibilities, authorities, and accountability.

The panel focused particularly on four principal ways in which DOE and NNSA have sought to clarify roles, responsibilities, authorities, and accountability:

- *Functional integration and corporate decision-making through crosscutting boards, councils, and working groups.*

Individuals with whom the panel has spoken credit the networks of crosscutting boards, councils, and working groups with improving the sense of partnering across the nuclear security enterprise. Officials from government mentioned the value of these crosscutting boards in fostering dialog across the entire enterprise, developing policy, sharing deviations from policy and possible remedies, and sharing best practices and lessons learned. Senior officials from the laboratories reported that they found the collaborative councils and boards valuable because these forums provide direct, two-way communications with the Secretary and the Administrator, which is valuable both for addressing specific issues and for building trust. Although these additional boards, councils, and working groups might appear to add to bureaucracy in the nuclear security enterprise, the panel has not heard concerns along that line. It has not yet had the opportunity to examine specific instances of the work of such multilateral bodies, so it cannot offer an independent assessment of the net value of forming them.

- *"Process enabling" the NNSA to ensure that DOE rules and guidance are consistent with the nuclear security missions.*

The panel heard about processes and role clarifications that are intended to enable NNSA and its laboratories, as well as other offices with DOE program responsibilities, to engage more effectively in the development of Department-wide rules and directives. For example, DOE has established a process in which all the Under Secretaries, including the NNSA Administrator, are placed on a team to consider each proposed rule change. This enables consideration of perspectives that may go beyond those of the functional office proposing the rule. Also, based on the clarification throughout DOE between those offices with line-management authority and the functional support offices, the latter are now required to send policy guidance for the laboratories through program line-management offices, thereby enabling offices closer to the laboratories and with better understanding of their challenges to weigh in.

- *Clarification of the mission-support function of the DOE Office of Enterprise Assessment.*

The Secretary restructured the DOE Office of Enterprise Assessment to clarify its role as more supportive of the mission than it used to be. Several interviewees, including laboratory officials, reported that the Office of Enterprise Assessment now functions in a more mission-focused manner, better coordinating with the laboratories on the timing and subject matter of assessments and trying to give helpful advice, rather than focusing on merely trying to catch violations. (The role of the Office of Enterprise Assessment and other offices responsible for investigation and audit will be further discussed in Chapter 3.)

- *Clarification of the respective roles, responsibilities, authorities, and accountability of the laboratories and the NNSA.*

The panel devoted particular attention to DOE's and NNSA's efforts to clarify the critically important respective roles and responsibilities of the M&O contractors and those government officials with responsibilities for the site. DOE policy 112.1, approved November 23, 2016, and NNSA supplemental directive 226.1B, approved August 12, 2016, laid out the respective roles and responsibilities of NNSA and its M&O contractors in broad terms. That DOE policy identifies the following responsibilities:

> — NNSA serves as steward of its three laboratories, has enterprise-wide responsibility to maintain the laboratories' enduring vitality, and is "accountable for mission success."[24]
>
> — The laboratories' M&O contractors are "responsible for meeting the mission" and for "integrating programmatic efforts with safety, security, and quality requirements." The contractors' responsibility also includes to "balance," "[i]n collaboration" with the field office and other federal oversight, the programmatic and project "execution against risks or concerns associated with operations and crosscutting mission functions."[25]

A principal recommendation of the Augustine-Mies study[26] was that DOE and NNSA should designate which offices and officials have line-management authority and which have support functions, and to clarify that line officials are empowered to make decisions, whereas support offices give information and advice to line managers. Designating FOMs as line managers to whom NNSA support staffs must provide information and advice, but not direction, appears intended to follow this recommendation. However, the functions of the FOMs relative to the functions of the program managers and M&O managers may still need additional clarification.

The NNSA supplemental directive,[27] entitled "NNSA Site Governance," defines the responsibilities of various NNSA components and officials with regard to oversight of NNSA's laboratories, plants, and sites, and also describes the site governance model within which NNSA and its M&O contractors are expected to operate. Under the directive, functional support staffs at DOE and NNSA headquarters and site offices provide information, advice, and mission support, but it is the line managers who, within the scope of their specified responsibilities, are responsible for taking account of the information and advice and making decisions. Interaction between NNSA and the laboratory directors is to be primarily through the FOMs, who are line managers responsible for making decisions and accepting risk with respect to a number of specific responsibilities assigned to them, including oversight of contracting officers (COs).[28]

The panel was told that describing the FOMs as managers of the COs is intended to end the earlier uncertainty over which site official had the authority to tell the M&O contractors what to do. Moreover, it was explained to the panel that the goal is to move away from the past tendency for site officials to direct the M&O contractors on a day-to-day basis.

The NNSA supplemental directive[29] also describes the NNSA Site Governance System. Both NNSA and the M&O contractor are expected to have "[e]xperienced, competent . . . line managers" for the site. The working relationship among NNSA, its headquarters and field office, and the contractor management is intended to be a "trusting, transparent strategic partnership . . . which benefits from the *constructive dynamic tension* inherent in the contractual relationship," and the directive notes that this

[24] DOE, 2016, DOE Roles and Responsibilities—National Laboratories, DOE P 112.1, para. 2, https://www.directives.doe.gov/directives-documents/100-series/0112-1-apolicy.

[25] DOE, 2016, DOE Roles and Responsibilities, para. 6.

[26] Congressional Advisory Panel, 2014, *A New Foundation*.

[27] NNSA, 2016, NNSA Site Governance, NNSA SD 226.2B, para. 7.e, https://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/SD%20226.1B%20final%208-12-16.pdf.

[28] Ibid.

[29] Ibid.

constructive dynamic tension involves economic aspects of the contract by which the government provides incentives to the contractor. The site governance model also includes a "strategic partnership between the NNSA leadership and the site contractor parent(s), to the extent permitted by contract."[30]

It is understood that some high-risk decisions require federal sign-off, but, except in the case of those decisions, the goal of the DOE order and the NNSA directive is for the laboratory directors to work collaboratively with the FOMs, with the involvement of other federal oversight officials as appropriate, to reach agreement. In addition, NNSA leadership told the panel that their long-term goal is to empower the M&O contractors with as much authority and responsibility as possible. Certain well-defined "inherently federal" approvals are specified in each contract, and NNSA's goal is to see how many can be eliminated or transferred to M&O responsibility. A similar goal is to reduce the number of specific demands sent to the contractor. Progress in these directions will require the alignment of the expectations of various federal organizations and of the expectations federal and M&O organizations have with respect to commonly understood mission objectives.

Officials of both the laboratories and NNSA told the panel that some of these reforms seem to already be producing some improvement. The unequivocal directive that COs report to FOMs has reportedly led to greater coordination, clarifying both roles and communication. Several individuals also told the panel that the emphasis on working in partnership, together with the Administrator's emphasis (in NNSA's published Strategic Vision[31]) on "Mission first, people always," has helped create a more collaborative approach and improved relationships between the FOMs and the laboratory directors. They also noted that that the DOE and NNSA documentation seems to have usefully clarified that support offices are meant to play supporting roles.

However, although the panel spoke with only a small number of laboratory officials, most of them still raised significant concerns with the continued ambiguity in the documentation establishing roles, responsibilities, authorities, and accountability. They also told the panel that they believe the documentation is deficient in that it elaborates extensively on the roles, responsibilities, authorities, and accountability of various federal officials but says little about the roles of the laboratory officials, who must run the laboratories every day and are responsible for accomplishing the mission. Laboratory officials also told the panel that they found it confusing that the FOMs are described in the documentation as line managers who make decisions and accept risk, because the laboratory directors consider themselves to be the ultimate acceptors of integrated risk and to be ultimately responsible for mission delivery. Therefore, the role of the FOMs, as described in the DOE and NNSA documentation, is confusing, at least to laboratory leaders. The panel is concerned that the central question of who will really be held accountable is not clear. When a safety or security problem happens, who will testify before Congress?

Laboratory officials also noted that, even if roles and responsibilities are clarified on paper, changes in behavior depend on the individuals involved, so seeing the results of clarification will probably take a long time. In addition, a federal official at NNSA headquarters stated that, although he has heard fewer complaints than in the past, adequate clarification of the roles, responsibilities, authorities, and accountability at the sites still appears to be a work in progress. In its future information gathering, the panel will seek specific examples of problematic ambiguities with respect to roles, responsibilities, and authorities, and evaluate whether any such instances stem from inadequate documentation or from the way documentation is interpreted.

[30] Ibid., pp. AT2.1-AT2.2.

[31] DOE/NNSA, 2015, "Enterprise Strategic Vision," August, https://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/Final_Strategic_Vision_2015_9-3_screen%20quality.pdf.

NEXT STEPS

Based on interviews with selected officials from throughout the nuclear security enterprise, as well as review of recent assessments by the co-chairs of the CRENEL report, the panel believes that many of DOE's and NNSA's initiatives to clarify roles, responsibilities, authorities, and accountability are appropriate, and the panel has heard reports that some progress may already have been made. However, it appears that progress is neither uniform nor complete, requiring further efforts. The panel is concerned that there remains ambiguity, uncertainty, dissatisfaction, and potential for misunderstanding. Some of the problem reflects the fact that the day-to-day definition of roles and responsibilities still remains largely in the hands of the individuals involved at a site. This situation allows for continuing disagreement over respective government and contractor roles, responsibilities, authorities, and accountability under various circumstances. There still is not a shared view, between government officials and those at the laboratories, on the implications of some of the provisions and terminology in the applicable documentation.

In any event, everyone should understand that the laboratories, sites, and plants have essential roles and responsibilities in executing the NNSA's missions safely and securely. It will remain a fundamental problem for the enterprise if the roles, responsibilities, authorities, and accountability of all parties are not adequately described and addressed in DOE's and NNSA's documentation. In fact, for the purpose of clarifying roles, responsibilities, authorities, and accountability—a task that is foundational to addressing other governance and management challenges—the panel believes greater urgency should be demonstrated. For example, although the need for clarification was identified in 2014 or earlier, a new governance construct was not released until 2016, after which a working group was established to resolve implementation details, which is ongoing. Working out the details of implementation will be a lengthy process, requiring resolution of differing interpretations of roles and responsibilities (which may reflect deeply embedded assumptions), and then converging on a common understanding of how day-to-day practices should be adjusted.

Going forward, the new Secretary and other top leadership at DOE and NNSA have the opportunity to further and even accelerate these much-needed reforms. The panel's impression is that all elements of the nuclear security enterprise are positively inclined and even enthusiastic about the increased emphasis on, and the initial steps taken toward, more effective partnering and better communication, both within DOE and NNSA and between NNSA and its customers and external collaborators. The panel recognizes that improvement may not be quickly achieved. Nevertheless, with committed and sustained leadership, substantial progress should be possible over the next few years.

The panel also recognizes that, while the statement of a vision for clarifying roles, responsibilities, and authorities may be relatively straightforward, the alignment of behaviors across the nuclear security enterprise is a highly complex undertaking, involving other aspects of organizational transformation such as strategic planning, the reform of M&O contract structures and incentives, and improvement in workplace culture. A useful next step might be for NNSA to issue a simple and clear "commander's intent"[32] that provides the guideposts for addressing the details of reform and shaping behaviors across the enterprise. In future reports, the panel will consider the proposal that a commander's intent be issued, and it will further explore this topic of clarifying roles, responsibilities, authorities, and accountability.

To monitor progress, DOE and NNSA should address the following three high-level questions:

[32] "Commander's intent" is a term, derived from military planning, referring to a clear and concise description by the head of an organization that lays out the desired end-state to be achieved from an operation. The purpose is to enable personnel to adapt the plan to achieve the desired objectives in a dynamic environment. See, for example, Chad Storlie, 2010, "Manage Uncertainty with Commander's Intent," *Harvard Business Review*, November 3, https://hbr.org/2010/11/dont-play-golf-in-a-football-g.

1. How can "success" in clarifying roles, responsibilities, and authorities be defined?
2. How is it determined whether the initiatives taken are appropriate and well-targeted to address the problems for which they are intended? Who makes this determination?
3. How is it known whether these steps are effective? How much improvement is being achieved?

FINDINGS AND RECOMMENDATION

Based on its discussions and deliberations leading up to this report, the panel offers two findings and a recommendation:

Finding 2.1. Many of the reform efforts called for in the Augustine-Mies report and elsewhere (e.g., reductions in the burden associated with necessary oversight) are contingent on having clarity as to roles, responsibilities, authorities, and accountability. The communications and relationships between NNSA's M&O contractors and the agency appear to have improved in recent years, thanks in part to the creation of several crosscutting boards and advisory groups. However, there remains considerable ambiguity in roles, responsibilities, authorities, and accountability.

Finding 2.2. DOE and NNSA have issued several new documents and have undertaken other activities to address the recommendations for clarifying roles, responsibilities, authorities, and accountability, both among the officials and offices within DOE and NNSA and between the M&O contractors and their government sponsors. But the panel's information gathering to date is not yet sufficient to fairly assess the current articulation and implementation of roles, responsibilities, authorities, and accountability (although laboratory staff expressed concerns to the panel) or to ascertain whether the current articulation and implementation are yielding the intended results.

Recommendation 2.1. The NNSA Administrator should demonstrate urgency in efforts to clarify roles, responsibilities, authorities, and accountability, with particular emphasis on clarifying interactions and relationships between NNSA's management and operating contractors and their government sponsors. Future documents need to resolve ambiguity in several of the earlier policy documents.

3

Actions Under Way to Mitigate Burdensome Practices

THE PROBLEM IN BRIEF

The reports by the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise (Augustine-Mies)[1] and the Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL),[2] along with many others, raised concerns about the existence, at the time of those studies, of burdensome practices that limit the efficiency of work in the nuclear security enterprise. According to those studies, elements in the field are subject to oversight by a multiplicity of parties and policies—including Department of Energy (DOE) and National Nuclear Security Administration (NNSA) headquarters, the DOE Inspector General, DOE's Office of Enterprise Assessment, NNSA field offices, program offices at NNSA and in other federal agencies, the Occupational Safety and Health Administration, Government Accountability Office (GAO), Department of Defense, state and local regulators, the Defense Nuclear Facilities Safety Board, and so on—and that oversight is not rationalized or coordinated. One manifestation of this is excessive and uncoordinated oversight—through management processes and through inspections, audits, reviews, site visits, and data calls—which fuels inefficiencies and generates little value added. Balancing the burden and value of necessary oversight has not been approached systematically, and it could be.

WHAT HAVE PAST REPORTS SAID?

In the view of the Augustine-Mies report,[3] "excessive and uncoordinated inspections, audits, and formal data calls fuel inefficiencies and generate little value added; in fact, they may detract from the desired safety, security, or environmental outcome" (p. 71). That report suggests "a zero-based review of all audits, inspections, and studies" and that the head of the nuclear security operations "should be empowered to approve or disapprove any internal . . . audits to eliminate non-value-added activities [and] should establish procedures to coordinate and synchronize all internal and external (e.g., GAO) audits, inspections, and formal data calls imposed on headquarters and field activities to the extent possible to minimize disruptions to operations. The focus of internal reviews should shift toward mission success as opposed to compliance" (p. 80).

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[1] Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, 2014, *A New Foundation for the Nuclear Enterprise: Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise*, p. 71, http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934.

[2] Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL), 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories,* Vol. 1, p. 68, https://energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories.

[3] Congressional Advisory Panel, 2014, *A New Foundation*.

The Augustine-Mies report elaborates as follows:

> NNSA's transactional oversight has proven to be expensive and counterproductive ["extremely conservative, risk-averse, and avoids appropriate cost-benefit considerations" according to footnote 64]. From the perspective of the field looking up at headquarters, the emergence of powerful but unaligned mission-support staffs within NNSA has created confusing, layered oversight. The operating entities of the enterprise face a multitude of oversight agencies, exacerbated in part by the flawed DOE/NNSA governance structure . . . The result is uncoordinated efforts to address the mission's safety, security, and environmental stewardship without sufficient regard to effectiveness, cost, schedule, risk, or mission impact.
>
> [M]ultiple layers of process cannot by themselves ensure zero risk or high confidence in mission performance. These processes can, in fact, generate late changes in requirements that are costly and excessive. Competent, dedicated human judgment is also required . . . .
>
> The panel found there is no consistent reporting on the kinds and frequency of transactional oversight imposed on the weapons complex. Data provided to the panel from the field show that the scope and criteria for required approvals vary significantly across sites. Approval requirements address such areas as interagency work . . . travel, conference attendance approvals, and subcontract approvals. The thresholds for reporting vary across sites as well.
>
> Evidence of the high costs and ineffectiveness of transactional, compliance-focused oversight is provided by the gains achieved from the successful reform of regulation at the Kansas City Plant.[4]

The CRENEL report[5] adds, "The current degree of micromanagement and oversight impose a 'stealth overhead' cost at DOE headquarters, the site offices, and the laboratories by virtue of the extra professional time that those activities require, without yielding corresponding benefits." (Vol. 1, p. 68).

Volume 2 of the CRENEL report[6] recommends increased reliance on contractor assurance systems (CASs), through which a laboratory can "provide assurance to stakeholders through creation of systems and metrics to monitor performance and for the federal stakeholders—DOE—to leverage the information from the contractor in areas of lower risk and better performance. This, in turn, should reduce the number of duplicative external independent reviews, and increase the number of shadowing and joint reviews conducted by the site office" (p. 101). The report goes on to say, "Leveraging these systems requires the federal employees to place increasing trust in laboratory systems while ensuring the rigor of these systems. In turn, the laboratory's systems and processes must be transparent and accessible to their site federal authorities" (p. 101).

This chapter discusses four different categories of burdensome practices: (1) data calls (authorized and unauthorized); (2) audits, inspections, site visits, and reviews; (3) excessive transactional oversight; and (4) specific burdensome practices identified by the Secretary of Energy Advisory Board's Task Force on DOE National Laboratories (SEAB Task Force). That SEAB Task Force report flagged seven oversight processes as unnecessarily burdensome: processes to approve contractors' employee compensation plans, labor negotiations, benefits packages, pension contributions, engagement of outside legal counsel, and conference participation and processes for reviewing large requests for quotations and contract awards.

This taxonomy is broader than what is covered in the "Mitigating Burdensome Practices" section of the DOE implementation plan,[7] and that difference will be discussed below. The panel believes this

[4] Congressional Advisory Panel, 2014, *A New Foundation,* pp. 71-74.
[5] CRENEL, 2015, *Securing America's Future*.
[6] CRENEL, 2015, *Securing America's Future,* Vol. 2.
[7] U.S. Department of Energy (DOE), 2016, *Governance and Management of the Nuclear Security Enterprise: Report to Congress.*

broader definition is consistent with the problem identified in the Augustine-Mies report,[8] which is characterized as an "approach that invites detailed, tactical, and transactional oversight rather than a strategic, performance-based management approach" (p. xv). That report notes an indicator of the needed change would be when "internal management reforms have substantially reduced excessively burdensome budgeting detail and transactional oversight, and have led to substantial staff realignments and a performance-based approach; a federal staff right-sizing plan is in place and being executed" (p. xvii).

The definition of "burdensome" is subjective, in that a process that may seem like a burden to a contractor may be seen as necessary diligence by others. The Augustine-Mies report[9] recommends DOE focus on "eliminating wasteful and ineffective transactional oversight" and, more specifically, calls for "a reduction in the number of audits, inspections, and formal data calls" and the "elimination of transactional oversight where there are better mechanisms for certifying contractor performance" (p. xxiii); these phrases suggest some of the factors that create unnecessary burden. Practices that are more intrusive or disruptive than necessary, require an excessive amount of time for the value provided, or are tailored to the needs of a support function (e.g., in issues of data formatting or schedule)—instead of being designed to minimize effort and disruption—can also contribute to burden. The panel recognizes, however, that some practices that are considered burdensome—for example, mandatory training courses—are part of normal workplaces and that workers will always have some obligations not directly related to program execution.

Where recurring practices involve more formality than is necessary, such as those identified by the SEAB Task Force, they may be revised so as to lessen their burden.[10] The affected parties can and do come together to evaluate the pros and cons of such processes, and the panel was told that this has occurred for most of those processes cited by SEAB Task Force and the National Laboratory Directors' Council. But burden also arises from less predictable interactions, such as one-off requests for data, one-time audits or inspections, oversight from a field office that slows a contractor's freedom to execute an experiment, and so on. As an indication of the scale of this issue, the panel has been told that the laboratories typically host "hundreds" of reviews per year, each of which requires scheduling and staff time to prepare and interact with visitors. Lower-level inquiries from a field office or headquarters, which may come by phone or email, would add to this amount of oversight activity. In these cases, an important approach to reducing burden is not only to minimize the number of such oversight actions, but also to ensure that those carried out are designed with clear attention to how they can best contribute to NNSA's mission.

The Augustine-Mies report did not distinguish between "burdensome" oversight that is within the purview of NNSA and DOE and that which is not. The latter category includes, at a minimum, audits and inspections initiated by the DOE Inspector General, Congress, and the GAO. Some other oversight is driven by provisions in existing contracts or other regulations, and some arises from the high-risk nature of certain activities within the nuclear security enterprise. Such practices may not be candidates for a revised approach, at least in the near term. Therefore, it is clear that some fraction of the problem identified in past reports is not easily addressed. It remains unclear at this point how large that fraction is.

However, the panel is not suggesting that contractors or NNSA should catalogue the full extent of oversight activities. Not only would that be a burdensome task itself, but the perception of what is a burden will vary. It is likely there will always be some oversight that appears to contractors to be unnecessary. The true measure of whether burdensome practices are being effectively mitigated must be judged subjectively by the people in the field who raised the concern initially. The panel has not heard of any NNSA steps to understand the scope of burdensome practices, which would have to be done methodically and multilaterally.

There is an inherent tension between enabling a contractor to carry out its work efficiently—where the contractor is responsible for planning and decision-making—and ensuring that funds are

[8] Congressional Advisory Panel, 2014, *A New Foundation*.
[9] Congressional Advisory Panel, 2014, *A New Foundation*.
[10] Another list of 20 such processes was developed in 2013 by DOE's National Laboratory Directors' Council.

appropriately spent and that safety, security, and health are protected. Thus, clear strategic discussions of the competing needs for performance and oversight will be necessary in order to achieve a better balance. Ongoing work to establish an enterprise risk management culture within DOE may help in this regard.

The following recommendations address the theme of mitigating burdensome practices:

Augustine-Mies Recommendation 16.1:

> The Secretary and Director should direct a reduction in the number of audits, inspections, and formal data calls, and better synchronize those that remain.[11]

CRENEL Recommendation 13:

> DOE should establish a single point of control—within the Department or each stewarding program office—for all laboratory-directed data requests.[12]

Augustine-Mies Recommendation 16.2:

> The Secretary and Director should eliminate transactional oversight in areas where there are better mechanisms for certifying contractor performance, to include reform of the field office's staffing levels and performance criteria.[13]

CRENEL Recommendation 18:

> There must be a government-wide reconsideration of the conference travel restrictions to enable conference participation at levels appropriate to both the professional needs of the existing scientific staff and to attract the highest quality staff in the future.[14]

SEAB Task Force, in its Recommendation 2.2.5, echoes CRENEL Recommendation 18:

> The current process for conference participation approval creates lengthy delays and barriers . . . the TF proposes piloting a new arrangement for two years in which laboratories and DOE agree to an annual ceiling for conference attendance and spending, and then allow the laboratory to make its own decisions on attendance on a conference-by-conference basis.[15]

SEAB Task Force Recommendation 2.2:

> This recommendation proposes seven DOE-wide "experiments," as noted in the previous section, to "move control authority for certain operational procedures to the laboratory management.[16]

[11] Congressional Advisory Panel, 2014, *A New Foundation,* p. xxiii.
[12] CRENEL, 2015, *Securing America's Future,* Vol. 1, p. 31.
[13] Congressional Advisory Panel, 2014, *A New Foundation,* p. xxiii.
[14] CRENEL, 2015, *Securing America's Future,* Vol. 1, p. 39.
[15] Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, p. 23, https://energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf.
[16] SEAB, 2015, *Report of the Secretary of Energy Task Force*, p. 21.

WHAT IS NNSA DOING IN RESPONSE?

According to the DOE implementation plan,[17] NNSA and DOE have taken, or are taking, actions to mitigate some burdensome practices.

With regard to the burden from audits, inspections, and data calls, the plan says the following:

> NNSA is implementing a revised process to centralize and better coordinate and control internal and external oversight activities and reviews at NNSA sites (i.e., a "clearinghouse"). Congressionally directed reviews, reviews by the Office of Inspector General, Government Accountability Office (GAO), and others specifically exempted by the Principal Deputy Administrator will be excluded from this effort. A senior federal manager will be assigned to ensure planned reviews and visits are not duplicative and are coordinated with other activities to the extent practicable. All NNSA-directed reviews will be coordinated and scheduled through the SIAP [Site Integrated Assessment Plan][18] process except for those that by design must be unannounced. The senior federal manager will coordinate with external organizations to obtain insight into planned visits as appropriate.
>
> NNSA is taking a number of actions to facilitate collection of appropriate data and reduce the impacts of data calls on its plants and laboratories. The Office of Acquisition and Project Management will provide guidance on the contract requirements and authorities necessary for personnel to approve and issue data calls to NNSA plants and laboratories. A single, executive-level point of contact will serve as a liaison between NNSA field offices and other organizations within DOE as necessary to minimize and streamline data calls, particularly those that are not authorized through appropriate contract channels. NNSA is developing a comprehensive list of recurring reports, and the content of such, to establish a baseline as an initial screening and consideration for use in answering any request. Finally, NNSA headquarters offices will internally evaluate, streamline and integrate any necessary data calls and ensure that any data calls follow the appropriate contract terms and conditions, as well as NNSA policies and procedures.
>
> (Action 37: NA-MB/50) The process to improve the coordination of external reviews and visits will be fully implemented in 2016.
> (Action 38: NA-1/APM) The process to improve the coordination of data calls will be fully implemented in FY2017.[19]

The process mentioned in connection with Action 37 is shorthand for what NNSA calls Site Integrated Assessment Plans (SIAPs), and the panel was told that this deadline was met. SIAPs are the vehicles by which the NNSA headquarter offices inform the field office managers (FOMs) when they intend to schedule reviews and assessments of the field offices or their management and operating (M&O) contractors.[20] The SIAP process has actually been used for many years, but in the past the data were incomplete, and thus they did not provide a truly integrated view of upcoming visits and reviews. Now that they are more thorough, SIAPs provide field offices and their contractors with information to help coordinate, combine, or stagger reviews, as appropriate. A systematic, metrics-driven use of the SIAPs is needed to ensure this happens. However, this process also provides a window into the limitations of what NNSA can control, in that the SIAP schedules do not list audits or inquiries from DOE Inspector General or GAO, visits by Congress or VIPs, unannounced security reviews, or one-off visits.

[17] DOE, 2016, *Governance and Management.*

[18] On p. 11, the plan provides the following additional detail: "NNSA uses a Site Integrated Assessment Plan (SIAP) to identify those Safety Management Programs (SMP) and security reviews that will be performed each fiscal year … a consolidated schedule across all field offices and with resources assigned based on expertise and functional area."

[19] DOE, 2016, *Governance and Management*, pp. 27-28.

[20] Information in this paragraph was provided by Patrick Rhoads, Chief of Staff for the NNSA Office of Safety, Infrastructure and Operations, personal communication, February 21, 2017.

To address the burden from excessive transactional oversight, the implementation plan[21] proposes the following actions to adjust the operations of the field offices:

> In accordance with headquarters program direction, FOMs are responsible for on-site federal oversight and administration of the M&O contract. NNSA FOMs serve as line management, site-level mission integrators and as the risk-accepting and authorizing officials for activities at the site on behalf of the Administrator . . . Field offices rely on frequent communication with their M&O partners and a strong and transparent contractor assurance system (CAS) to form the foundation of their oversight relationship with the M&O (p. 6.)
>
> NNSA is developing an MSD [Management System Description] that will serve as the overarching governance and management framework that is aligned with the DOE Strategic Plan and other applicable Departmental policies . . . The MSD will meet the quality assurance program requirements of DOE O 414.lD, Quality Assurance, and embrace principles consistent with ISO 9001, Quality Management Systems—Requirements. (Action 5: NA-MB) NNSA will issue the MSD in FY2017 (p. 7).
>
> The CAS will continue to serve as a system for the contractor to manage performance consistent with contract requirements. Under this system, the oversight of activities with potentially high consequences is given higher priority and greater emphasis. A DOE working group has been reviewing how the various offices operate CAS at the laboratories under their purview and is developing a policy document that articulates high-level CAS principles to help apply them more uniformly across the enterprise. NNSA is in the process of updating its site governance model to track the DOE Office of Science model more closely and use peer reviews to analyze the strength of the CAS systems (p. 12).[22]

The panel does not dispute the potential value of these steps in rebalancing the amount of transactional oversight, and the increased reliance on CASs is consistent with the CRENEL report. However, it is not entirely clear whether these field office-based steps are sufficient to address the full range of issues of concern in the Augustine-Mies report. That report implies that mission-support functions beyond just those in the field offices also contribute to the burden: "NNSA's transactional oversight has proven to be expensive and counterproductive. From the perspective of the field looking up at headquarters, the emergence of *powerful but unaligned mission-support staffs* within NNSA has created confusing, layered oversight. The operating entities of the enterprise face *a multitude of oversight agencies*, exacerbated in part by the flawed DOE/NNSA governance structure . . . . The result is *uncoordinated efforts to address the mission's safety, security, and environmental stewardship* without sufficient regard to effectiveness, cost, schedule, risk, or mission impact."[23] [emphases added]

Some of the actions described in Chapter 2 are meant to address the existence of "powerful but unaligned mission-support staffs within NNSA" and the lack of coordination mentioned in this quoted passage. The adequacy of field office-based improvements will ultimately be determined by assessing whether contractors continue to feel excessively burdened by transactional oversight.

To address the burden from excessive specific management processes identified by the SEAB Task Force, the implementation plan describes how those practices have been, or are being, revised.[24,25]

[21] DOE, 2016, *Governance and Management.*
[22] DOE, 2016, *Governance and Management*.
[23] Congressional Advisory Panel, 2014, *A New Foundation,* p. 71.
[24] DOE, 2016, *Governance and Management,* pp. 26-27.
[25] Additional details are available in DOE's public response to the SEAB Task Force report at https://www.energy.gov/sites/prod/files/2016/06/f32/DOE%20Response%20to%20Interim%20Report%20of%20the%20Task%20Force%20on%20DOE%20National%20Labs.pdf.

WHAT HAS THE PANEL OBSERVED?

The panel explored the topic of burdensome practices, and options for mitigating them, with a large number of senior officials within NNSA, DOE, and M&O contractors. (See Chapter 1 for a description of the study approach and Appendix B for a list of people with whom the panel met.) It quickly became clear that this topic is intertwined with the theme covered in Chapter 2, and so it is helpful to consider these two sets of challenges and actions together.

Several senior NNSA officials interviewed by the panel believe that the number of *unauthorized* data calls declined noticeably following an August 2016 memo from William (Ike) White, NNSA Chief of Staff and Associate Principal Deputy Administrator, which clarified limits on such calls. Several also believe that the process[26] now used to coordinate site reviews, site visits, and data calls has been beneficial. Several individuals, including the directors of the three NNSA laboratories, noted that FOMs and the DOE Office of Enterprise Assessment has worked more collaboratively in the past few years to coordinate reviews, visits, and data calls.

Several FOMs told the panel they are increasing their reliance on CASs in order to reduce transactional oversight. Additional benefit is being sought from a soon-to-be-implemented peer review process for evaluating and employing CASs. However, while one FOM highlighted the increased reliance on CASs in place of field office checking, another manager pointed out that field offices still must comport with state, local, and federal law, and with scores or hundreds of requirements in each M&O contract, so there are a lot of oversight requirements to be examined and possibly rebalanced. A senior leader observed that it can be challenging to weed out DOE regulations that are duplicative of others (e.g., from the Occupational Safety and Health Administration) or which cannot be removed because they are required by the Defense Nuclear Facilities Safety Board or some other stakeholder.

Overall, the laboratory directors have not yet sensed a decline in the number of audits, inspections, and data calls, and they mentioned the flat or increasing number of audits to support that impression. Oversight from outside of DOE and NNSA, such as from the DOE Inspector General and the GAO, seems not to have abated, and several individuals have told the panel that those outside investigations are generally inflexible about scheduling, leveraging existing sources of information, or relaxing their deadlines so as to allow the laboratories to balance competing requirements.

The panel was told that the seven management "experiments" the SEAB Task Force recommended to reduce some of the oversight on M&O contractors are being phased into new contracts. It appears that some of those changes were begun even before the Task Force released its report. Past restrictions on conference travel have been relaxed, thanks to personal intervention of the DOE Secretary, who reportedly expended political capital to effect this change. The panel has not had an opportunity to assess the effects of these changes, and for many of them, it may be too early to discern their impact.

NEXT STEPS

It will likely take some time before unnecessary burdensome practices can be removed or mitigated, and thus this theme will be revisited in future reports from this panel. A major direction for the panel to explore is how staff members at various positions in the enterprise perceive efforts to mitigate burdensome practices and their effectiveness; because the panel observations reported in this section were derived from a small sample of individuals, it is not possible yet to draw firm conclusions. To monitor progress, DOE and NNSA should address the following questions:

1. How can "success" in mitigating various types of burdensome practices be defined?
2. How can it be known that individual steps taken to reduce burden are effective? How can improvement be measured?

[26] DOE, 2016, *Governance and Management*, p. 27.

3. How can NNSA evaluate the effectiveness of the management experiments recommended by the SEAB Task Force?

FINDING AND RECOMMENDATION

Based on its discussions and deliberations leading up to this report, the panel offers a finding and a recommendation:

Finding 3.1. The mix of burdensome practices affecting the nuclear security enterprise is not characterized precisely enough to lead to targeted interventions for all of them. It would be helpful to know, for example, what fraction of oversight activities are within NNSA's control, which burdensome practices are contributing the most to "burden" and why, which are associated with overlapping responsibilities, and so on. Such understanding is necessary before rational rebalancing is possible. The panel is not suggesting that a complete inventory of regular or ad hoc audits, investigations, and requests for data needs to be compiled.

Recommendation 3.1. The NNSA Administrator should develop and promulgate criteria to help the nuclear security enterprise understand when a process is adding burden that is not commensurate with its value and establish feedback loops so that burdensome practices are recognized. The nuclear security enterprise can then more rationally determine which practices to re-engineer through working groups that bring together the affected parties. In the long term, NNSA should strive to move away from a subjective debate over "burdensome practices" and seek to adopt a more systematic approach for defining oversight requirements.

4

Achieving and Sustaining Change

THE PROBLEM IN BRIEF

Experience with large-scale change in many organizations has shown that successfully achieving and sustaining improvements to effectiveness, efficiency, and culture across the nuclear security enterprise will require sustained effort and an iterative process. Many management and governance changes have been recommended for the Department of Energy (DOE) and the National Nuclear Security Administration (NNSA) over the years by many experts and committees, and yet sustained effective change has not been achieved. The Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL) report[1] noted, "Lasting change takes time and work. In the past four decades, over 50 commissions, panels, reviews, and studies of the National Laboratories have been conducted . . . . Where past assessments have sometimes failed to produce meaningful change, this Commission strives to go beyond identifying findings and recommendations by charging the implementation of recommendations to those with the ability to realize them" (p. 61). Thus CRENEL concluded that attention to achieving and sustaining change is as important as identifying what those changes should be.

The reports of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise (Augustine-Mies),[2] CRENEL,[3] and the Secretary of Energy Advisory Board's Task Force on Department of Energy National Laboratories (SEAB Task Force)[4] identify institutional and cultural changes needed in DOE/NNSA. In the National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA), Congress agreed and noted that correcting the longstanding governance and management problems afflicting NNSA and the nuclear security enterprise would require "personal engagement by senior leaders, a clear plan, and mechanisms for ensuring follow-through and accountability."[5] Thus, an approach that explicitly prioritizes *sustainable* change is necessary, especially in partnership with its management and operating (M&O) contractors. It is important that changes that are accomplished in the next few years be done well, so that they will lead to the identification of additional helpful actions, leading to a culture of continuous improvement.

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[1] Commission to Review the Effectiveness of the National Energy Laboratories (CRENEL), 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories*, https://energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories.

[2] Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise, 2014, *A New Foundation for the Nuclear Enterprise: Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise*, p. 71, http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934.

[3] CRENEL, 2015, *Securing America's Future*.

[4] Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, p. 23, https://energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf.

[5] National Defense Authorization Act for Fiscal Year 2016, H.R. 1735, 114th Cong. (2015-2016), Section 3137 (a) (3).

WHAT HAVE PAST REPORTS SAID?

Each of the three reports cited above identified the need for important cultural change in the nuclear security enterprise, noting that in order to preserve its ability to accomplish its mission, NNSA needs a culture that embraces and sustains change and adaptation. The reports especially focused on challenges in the relationships and trust between NNSA and M&O contractors. Each report noted the need for change—away from a culture of distrust and siloed operations and toward greater cooperation and collaboration. The Augustine-Mies panel noted the dysfunctional relationships between those responsible for mission execution and those affiliated with support functions. It recommended that Department leadership "streamline management, transform the culture of the Department, strengthen the M&Os' contribution to the mission, and restore trust and credibility with customers."[6] Steps toward these results include establishing "transparent information sharing mechanisms and increasing direct staff collaboration."[7] To track whether such efforts result in improved trust, the panel called for periodic efforts to "survey personnel to gauge morale, assess cultural changes, and identify the results of efforts to change management practices."[8]

The CRENEL review likewise emphasized culture and noted the need for the reestablishment of working partnerships and trust between DOE and its national laboratories. The SEAB Task Force report stressed the importance of adopting a disciplined process for implementing productive change relevant to the performance and efficiency of the DOE national laboratories.[9]

General Principles for Managing Large-Scale Change

Research into organizational change has shown that organizational culture can both facilitate and obstruct organizational changes.[10] Organization culture is based on shared assumptions and mission and is reflected in administrative policies and practices. Because a salient feature of organizational culture is its persistence, deliberate culture change requires a shared recognition and commitment by leadership of the need for the organization to adapt and a commitment by that leadership to see that adaptation process through. In addition, such change specifically requires employee engagement across organizational divisions in the identification and implementation of needed changes. Such engagement may be especially challenging in an organization as geographically distributed as the nuclear security enterprise. To achieve and sustain change, an organization must develop metrics to measure change, then collect the necessary data and provide feedback on results. Once initial efforts are successful (based on documented results), the process continues, focusing on the next change iteration needed. Of course, the ultimate goal is for the nuclear security enterprise to successfully address the challenges identified in the Augustine-Mies and CRENEL reports (and elsewhere). The panel's role is to assess whether NNSA stays focused on addressing those challenges and to evaluate whether they succeed, which is broader than merely tracking specified metrics.

Some steps are common for effective change and change management. One version of best practices to create and sustain change can be found in a monograph *Transformational Change: Making It Last.*[11] The steps summarized in Box 4.1 illustrate the importance of activities that may not be directly associated with any particular change but are nevertheless essential to adjusting the culture so that

[6] Congressional Advisory Panel, 2014, *A New Foundation*, p. 96.
[7] Congressional Advisory Panel, 2014, *A New Foundation*, p. xxiv.
[8] Congressional Advisory Panel, 2014, *A New Foundation*, p. xxi, Recommendation 6.3.
[9] SEAB, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, p.1.
[10] E. Schein, 2010, *Organizational Culture and Leadership*, Jossey-Bass, San Francisco, Calif.
[11] American Productivity and Quality Center, 2014, *Transformational Change: Making It Last,* https://www.grantthornton.com/~/media/content-page-files/advisory/pdfs/2014/BAS-transformational-change-report.ashx.

BOX 4.1
Transformational Change: Making It Last

1. Senior management should drive the change.
    - Ensure executives are accountable for the transformational change, and
    - Leverage top-down communications to set the groundwork.
2. Build a holistic framework, not just a road map.
    - Tailor tactics and solutions to the people, and
    - Build phased rollouts into the plan.
3. Combine centralized governance with decentralized implementation.
    - Use centralized team with project and change management skills to manage.
4. Engage employees throughout the change journey.
    - Combine communication and engagement plans.
5. Build reviews and accumulative measures into the process.
    - Create flexibility and…timely problem solving,
    - Start with the end-state in mind, and
    - Evolve measures of success as the organization matures.
6. Reinforce change through ongoing training, modified performance.
    - Provide ongoing training,
    - Incorporate desired behaviors, and
    - Use continuous improvement programs.

SOURCE: American Productivity & Quality Center, 2014, *Transformational Change: Making It Last,* https://www.apqc.org/knowledge-base/documents/transformational-change-making-it-last-best-practices-report, p. 11. Courtesy of the American Productivity & Quality Center, www.apqc.org.

changes can take root and spread. The panel is not suggesting that NNSA address all of the steps in Box 4.1, but NNSA should undertake some strategic approach toward achieving systematic change.

The first requirement of "transformational change" is that senior leaders must drive that change. The literature on leadership notes that a common leadership vision sets direction and clarifies organizational priorities; it focuses attention on what matters most. General Klotz, NNSA's Administrator, provided a piece of that direction and overall vision for NNSA in his statement, "Mission first, people always," which he presented at his confirmation hearing in September 2013 and has since promulgated throughout NNSA. During interviews for this report, many leaders cited "Mission first, people always" as providing an important reminder that NNSA elements and employees should give top priority to the agency's mission. This is in contrast to what was perceived in the past as support functions prioritizing their own work without keeping it in balance with the larger mission context. This short phrase appears to serve in some instances as a clarifying precept for guiding the organization toward what is most important when problem solving and thus is key for defining NNSA's intended culture.

Successful culture change results from efforts that are designed to address specific problems rather than to effect culture change per se. One specific problem noted in the referenced reports is the lack of trust and productive working relationships between NNSA and its M&O contractors. Steps are being undertaken by NNSA to build greater communication among the components of the enterprise so as to improve the level of trust among them. Strategies include creation of various governance councils to facilitate communication and increase trust by working jointly on solutions to problems, better coordination of processes and policies to reduce burdens and foster better working relationships, and

fostering employee engagement and participation, as measured by the Federal Employee Viewpoint Survey.

In large, complex organizations, of which the nuclear security enterprise in a good example, the formation of subcultures is inevitable. Subcultures add complexity for those leading and managing cultural change in any organization. Successful cultural change requires leadership strategies that recognize the need for overarching changes that can accommodate and embrace the diversity of subcultures, some of which may be guided by assumptions and attitudes other than those of leadership, and be resistant to change. Successful change will support and find ways to reconcile the interests of the agency as a whole and its important subgroups, especially M&O contractors.

WHAT IS NNSA DOING TO ACHIEVE AND SUSTAIN CHANGE?

FY2016 NDAA requires that DOE/NNSA "develop and carry out an implementation plan to reform the governance and management of the nuclear security enterprise to improve the effectiveness and efficiency of the nuclear security enterprise."[12] *Governance and Management of the Nuclear Security Enterprise: Report to Congress*,[13] released in December 2016, identifies actions under way and/or to be taken in support of the various change recommendations in the three referenced reports. In the "Message from the Administrator," responsibility is assigned: "These initiatives are assigned to career Senior Executive Service managers who are held accountable by the NNSA Management Council, which is chaired by NNSA's Principal Deputy Administrator, and ultimately the NNSA Administrator."[14] That message goes on to stress that meeting the objectives of the NDAA requires the efforts of both federal and contractor (M&O) personnel: "NNSA's federal employees and M&O partners will work together to implement these improvements and ensure the mission is efficiently and safely carried out well into the future."[15]

The "Message from the Secretary" in that plan also reflects an understanding of other principles of change as described in Box 4.1, including the necessity of evaluating the effectiveness of the actions taken:

> DOE recognizes that to be successful the improvements must be long lasting and clearly understood. As a result DOE/NNSA is on track to create new policy documents and update existing ones to reflect these and other changes in the governance structure. Many of the new initiatives will take longer to put in place … cultural change takes time, persistence, and follow-up. DOE/NNSA will continue to evaluate whether the actions taken to date and in the future are effective."[16]

After discussing recent NNSA accomplishments, the executive summary of the implementation plan summarizes the change approach taken thus far:

> Governance and management reforms facilitated these programmatic achievements and continue to improve NNSA performance across the enterprise. These reforms include reorganizing several offices to enhance performance; clarifying roles and responsibilities; developing and promulgating clear and coherent policy; and implementing repeatable processes to ensure that headquarters elements, field offices, laboratories, plants, and sites make integrated, risk-informed decisions. DOE/NNSA has incorporated these processes into a variety of new DOE orders and policies, and NNSA supplemental directives and policies."[17]

[12] National Defense Authorization Act for Fiscal Year 2016, H.R. 1735, 114th Cong. (2015-2016).
[13] U.S. Department of Energy (DOE), 2016, *Governance and Management of the Nuclear Security Enterprise: Report to Congress*.
[14] DOE, 2016, *Governance and Management*, p. i.
[15] DOE, 2016, *Governance and Management*, p. i.
[16] DOE, 2016, *Governance and Management,* p. iii.
[17] DOE, 2016, *Governance and Management*, pp. vi-vii.

The panel has not had the opportunity to examine all of these steps nor assess their degree of completion or their effectiveness.

Finally, the plan commits NNSA to continued effort. In the executive summary, it says,

> NNSA is committed to further reforms that will continue to improve its performance. Drawing from the recommendations of internal and external sources and reviews, NNSA is pursuing several initiatives to strengthen performance by instilling a more mission-driven management culture. These measures include (1) strengthening the national leadership's attention to the nuclear security mission; (2) building a culture of performance and accountability at every level within NNSA and its laboratories, plants, and sites; (3) strengthening the partnership between NNSA and its M&O contractors; and (4) improving relations with other U.S. government agencies and departments."[18]

Senior NNSA officials who had been assigned responsibility for implementing the recommendations of the three reference reports (notably, the Director of the Office of Policy and the Chief of Staff and Associate Principal Deputy Administrator) adopted an approach that grouped the Augustine-Mies and relevant CRENEL and SEAB Task Force recommendations into 17 topic areas, or themes, and identified lead officials for each of these areas. The Office of Policy worked with these officials to develop and begin implementing the plans for each of the thematic areas. Deadlines were set and monitored, and progress has been tracked since this effort began in early 2016. The implementation plan[19] summarizes many of the actions taken to date—such as establishing and working with councils and developing, vetting, and implementing new policies and directives—as well as plans for actions yet to be implemented. The NNSA officials interviewed by the panel acknowledged that they have not yet developed or implemented plans for measuring and monitoring the effectiveness of the actions being taken.

In their separate reviews of year-after progress, the CRENEL co-chairs T.J. Glauthier and Jared L. Cohon noted that DOE and NNSA senior leadership were significantly involved in efforts to resolve administrative issues and improve relationships with national laboratories and M&O contractors. One example is the establishment of crosscutting working groups that combine DOE and national laboratory personnel to tackle tough challenges together.[20] Continued progress will depend in part on the sustained actions of the Secretary and Administrator in utilizing the insights of these crosscutting working groups.

WHAT HAS THE PANEL OBSERVED?

The external reports mentioned above, along with the leadership within DOE and NNSA, have provided important insights, recommendations, and initial steps for building a strong foundation upon which to achieve and sustain change that can improve effectiveness and efficiency of operations across the nuclear security enterprise. NNSA leadership appears to have embraced the recommendations for change identified by those reports. It has employed multiple strategies to foster greater strategic thinking, broader communications, and more productive and trusting working relationships across the collective enterprise. An important step toward institutionalizing change has been the reinstatement of high-level boards, with participation from former Secretary Moniz and General Klotz, which have focused more attention on big-picture discussions and long-term strategic thinking. The result is more productive strategic discussions between contractors and NNSA. These discussions, in turn, build trust by facilitating cross-enterprise leadership to work on problems together.

[18] DOE, 2016, *Governance and Management*, pp. vii-viii.

[19] DOE, 2016, *Governance and Management*.

[20] T.J. Glauthier, letter to DOE Secretary Ernest J. Moniz, November 30, 2016; J.L. Cohon, letter to DOE Secretary Ernest J. Moniz, November 30, 2016; see also Chapter 2 of this report.

Promising Actions and Approaches Taken to Achieving and Sustaining Change

The creation and activities of the high-level boards and councils has facilitated two-way communication and collaboration and holds promise for sustaining change across the enterprise while also fostering joint problem solving. Examples of these boards include the NNSA Management Council, the DOE Laboratory Policy Council, the DOE Laboratory Operations Board, and joint task forces of chief operating officers, chief financial officers, and chief information officers. One member of the Laboratory Operations Board said its deliberations have surfaced fewer points of friction. The commitment and attention of leadership has contributed significantly to the effectiveness of these groups, including building relationships and trust, but panel members' experience with change management has shown that effective cross-organizational conversations based on shared goals and trust require ongoing attention if they are to be sustained.

The emphasis on partnering and decision making focused on achieving mission has the potential to influence the NNSA culture. This reflects the expectation that partnership relations between NNSA officials and contractors are more fruitful if they emphasize collaboration, often via integrated project teams (i.e., teams that are composed of individuals from the various affected entities). While additional information is needed to understand the extent of this nascent change, emphasis on collaboration and bringing together representatives from M&Os and NNSA functional offices appears encouraging.

An important early step for achieving change is to assign clear overall responsibility for developing and monitoring the actions to implement improvements. NNSA's Administrator did this when he assigned this responsibility to the Director of the Office of Policy and the NNSA Chief of Staff and Associate Principle Deputy Administrator. These individuals have coordinated and monitored activities and taken on responsibility for implementing some specific actions. Their efforts have been designed to improve communication and relationships throughout the enterprise. As one particular example, they have spearheaded the work to coordinate data calls and reduce or eliminate unauthorized ones. The panel notes the continuing importance of clear assignment of responsibility for monitoring activities in the implementation plan.

DOE's Office of Enterprise Assessment has revised its operations to work more collaboratively with program units, and it serves as an example of how a heightened mission focus may be achieved. DOE officials told the panel that steps taken by the Office of Enterprise Assessment since 2014 have resulted in reducing the number of their assessments and making those that are undertaken more constructive, moving away from a "fault-finding" focus. Another positive step is the work NNSA has under way to update its reliance on contractor assurance systems and its site governance model to more closely mirror the model used by the DOE Office of Science in oversight of its M&O contractors, which is generally seen as less burdensome.

Successful change can occur when both NNSA staff and M&O contractors share positive working relationships based on trust, shared information, and collaboration. Leadership's early focus has been on achieving and sustaining attention to the need for change. Going forward, it will be equally important that steps are taken to ensure that early changes are embedded in daily practice, so that early changes provide a foundation for subsequent changes. Recognizing change as an iterative process can minimize the potential for early changes to be lost (or to backslide) when attention turns to subsequent change iterations.

NEXT STEPS

As discussed above, successful change is dependent on clear communications, especially reliance on plain language in communicating important policies. Agency communication still has room for improvement on this dimension. For example, in DOE Policy 112.1, regarding DOE Roles and Responsibilities—National Laboratories, discussions the panel has had with various affected individuals have revealed that the definition of line management is understood differently by different parties, and

this sort of confusion is very concerning. Such lack of clarity on roles, responsibilities, and authority may undermine the process of effective change (see Chapter 2). An additional challenge is ensuring that the new Secretary of Energy is fully informed of and fully engaged in the importance of the NNSA, these change efforts, and the long-term nature of this work.

The panel also notes that NNSA change leaders have not identified what success looks like for the many activities under way, do not have measures (quantitative or qualitative) for monitoring progress, and have not yet developed reliable methods for knowing whether the steps being taken are accomplishing what is intended, what else is needed, or whether those steps should be modified to be more successful.[21] The use of appropriate metrics would enable NNSA to monitor its efforts to achieve and sustain change. Experience with large-scale change management has shown that developing and testing metrics is an iterative process that can extend over years, so it is important that this work begin soon. Sustained attention to managing a culture of engagement and collaboration is needed if NNSA is to be an adaptable, high performing, and accountable agency.

In summary, the panel notes recent efforts, attention, and funding have led to encouraging progress to date. The panel further recognizes that leadership's continued engagement in and focus on change management concepts and processes was an important accomplishment for the NNSA. To monitor and assess its progress, NNSA should address the following high-level questions:

1. How is NNSA defining success in the aggregate? For specific programmatic and process changes?
2. What entities in DOE and NNSA are responsible for designing, implementing, testing, and assessing the successes and/or failures of the various change initiatives? For making the needed adjustments to improve the likelihood of changes being successful?
3. What quantitative or qualitative factors are being used to measure success for each of the 17 themes or topic areas listed in the implementation plan?
4. What communications strategies and methods are being/will be used to inform agency leaders, employees, and contractors about change efforts and results? How is their effectiveness to be measured?

FINDINGS AND RECOMMENDATION

The Augustine-Mies, CRENEL, and SEAB Task Force reports, as well as the leadership within DOE/NNSA, identified practices that limit the effectiveness and efficiency of the nuclear security enterprise. The types of change necessary—process as well as culture change—take a long time and will require sustained attention from top leadership and engagement throughout the enterprise, as described earlier. The lack of clarity on roles and responsibilities observed by the panel may confound the process of change. Despite the emphasis on change and efforts to clarify priorities with the Administrator's "Mission first, people always" goal, a common vision of change goals is not yet thoroughly embraced across the enterprise. Important progress has been made, but more needs to be done.

Finding 4.1. NNSA has not defined what success looks like as it works toward implementing the recommendations from previous reports, and it lacks qualitative or quantitative metrics to identify and measure change.

Finding 4.2. The change management process in place within NNSA is promising—it has addressed many foundational elements, such as obtaining top-level direction and involving

[21] While performance metrics are essential to gauge success, documentation of change efforts and success should not become yet another burdensome practice.

participants from across the subcultures of the nuclear security enterprise. But the first steps of change are not yet fully embedded.

Recommendation 4.1. The NNSA Administrator should define an effective mission-focused operating model as the vision for implementing the changes called for in reports of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise and the Commission to Review the Effectiveness of the National Energy Laboratories and elsewhere. NNSA should continue to embrace the concept that change is an iterative process, requiring the sustained attention of leadership and the institution of a mature change management process. NNSA and the management and operating contractors should identify meaningful metrics that can be used to facilitate the identification, measurement, and tracking of change. Results from early change successes should become the foundation for subsequent, iterative actions that support the enterprise in achieving its important mission.

5

Concluding Thoughts

The panel notes with approval that longstanding governance and management issues in the nuclear security enterprise have received focused attention over the past 1 to 2 years. The direct involvement of the Department of Energy (DOE) Secretary and National Nuclear Security Administration (NNSA) Administrator has been very valuable and necessary for this endeavor, and the establishment of an NNSA Office of Policy to serve as a nexus for change efforts is an important element. It is critical that this momentum be sustained, but that may be challenging given the ongoing change in top leadership and future uncertainty regarding funding and priorities. And a very large open question is whether these first changes are having the desired effect. This first report can assess only the very beginning of what may be a long trajectory, and the panel will revisit the topics herein in future reports.

For the convenience of the reader, the report's findings and recommendations are repeated below.

Finding 2.1. Many of the reform efforts called for in the Augustine-Mies report and elsewhere (e.g., reductions in the burden associated with necessary oversight) are contingent on having clarity as to roles, responsibilities, authorities, and accountability. The communications and relationships between NNSA's M&O contractors and the agency appear to have improved in recent years, thanks in part to the creation of several crosscutting boards and advisory groups. However, there remains considerable ambiguity in roles, responsibilities, authorities, and accountability.

Finding 2.2. DOE and NNSA have issued several new documents and have undertaken other activities to address the recommendations for clarifying roles, responsibilities, authorities, and accountability, both among the officials and offices within DOE and NNSA and between the M&O contractors and their government sponsors. But the panel's information gathering to date is not yet sufficient to fairly assess the current articulation and implementation of roles, responsibilities, authorities, and accountability (although laboratory staff expressed concerns to the panel) or to ascertain whether the current articulation and implementation are yielding the intended results.

Recommendation 2.1. The NNSA Administrator should demonstrate urgency in efforts to clarify roles, responsibilities, authorities, and accountability, with particular emphasis on clarifying interactions and relationships between NNSA's management and operating contractors and their government sponsors. Future documents need to resolve ambiguity in several of the earlier policy documents.

Finding 3.1. The mix of burdensome practices affecting the nuclear security enterprise is not characterized precisely enough to lead to targeted interventions for all of them. It would be helpful to know, for example, what fraction of oversight activities are within NNSA's control, which burdensome practices are contributing the most to "burden" and why, which are associated with overlapping responsibilities, and so on. Such understanding is necessary before rational

rebalancing is possible. The panel is not suggesting that a complete inventory of regular or ad hoc audits, investigations, and requests for data needs to be compiled.

Recommendation 3.1. The NNSA Administrator should develop and promulgate criteria to help the nuclear security enterprise understand when a process is adding burden that is not commensurate with its value and establish feedback loops so that burdensome practices are recognized. The nuclear security enterprise can then more rationally determine which practices to re-engineer through working groups that bring together the affected parties. In the long term, NNSA should strive to move away from a subjective debate over "burdensome practices" and seek to adopt a more systematic approach for defining oversight requirements.

Finding 4.1. NNSA has not defined what success looks like as it works toward implementing the recommendations from previous reports, and it lacks qualitative or quantitative metrics to identify and measure change.

Finding 4.2. The change management process in place within NNSA is promising—it has addressed many foundational elements, such as obtaining top-level direction and involving participants from across the subcultures of the nuclear security enterprise. But the first steps of change are not yet fully embedded.

Recommendation 4.1. The NNSA Administrator should define an effective mission-focused operating model as the vision for implementing the changes called for in reports of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise and the Commission to Review the Effectiveness of the National Energy Laboratories and elsewhere. NNSA should continue to embrace the concept that change is an iterative process, requiring the sustained attention of leadership and the institution of a mature change management process. NNSA and the management and operating contractors should identify meaningful metrics that can be used to facilitate the identification, measurement, and tracking of change. Results from early change successes should become the foundation for subsequent, iterative actions that support the enterprise in achieving its important mission.

The focus for the panel's next semi-annual report, Report 2, is being developed in coordination with Congress and NNSA.

Appendixes

A

Biographical Sketches of Panel Members

JILL DAHLBURG, *Co-Chair*, is superintendent of the Space Science Division at the Naval Research Laboratory (NRL). In this Senior Executive Service position she leads conception, planning, and execution of space science research and development programs toward assuring robust access to space-based capabilities. Dr. Dahlburg served as NRL Senior Scientist for Science Applications from June 2003 to December 2007, with a focus on the highly multidisciplinary area of distributed autonomous systems. From 2001 to mid-2003, she left NRL to work for General Atomics (GA) in San Diego as the GA director of the Division of Inertial Fusion Technology and co-director of the Theory and Computing Center. Dr. Dahlburg began her federal career at NRL in 1985 as a research physicist investigating laser-matter interactions and radiation transport hydrodynamics. She holds a B.A. in liberal arts (1978) from St. John's College in Annapolis and an M.S. in physics (1980) and a Ph.D. in plasma physics (1985) from William & Mary. Dr. Dahlburg is a fellow of the American Physical Society.

ROBERT SHEA, *Co-Chair*, is a principal at Grant Thornton LLP, an accounting and consulting firm. He is past chair of the National Academy of Public Administration and a member of the Commission on Evidence-based Policymaking. Before joining Grant Thornton, he was with the Office of Management and Budget (OMB) as associate director for administration and government performance, associate director for management, and counsel to the controller. Previously, he served as counsel to the Senate Committee on Governmental Affairs, legislative director in the Office of Representative Pete Sessions, and special assistant/professional staff member for the House Committee on Government Reform and Oversight.

ELIZABETH CANTWELL is vice president for research development at Arizona State University and professor of practice in its School for Engineering of Matter, Transport, and Energy. She was previously the director of Lawrence Livermore National Laboratory's (LLNL's) Economic Development and Engineering Mission Development Offices and, before that, deputy associate laboratory director for the National Security Directorate at Oak Ridge National Laboratory (ORNL). Prior to joining Oak Ridge, Dr. Cantwell was the division leader for the International, Space, and Response Division at Los Alamos National Laboratory (LANL). Her career began in building life support systems for human spaceflight missions with the National Aeronautics and Space Administration (NASA). She received an M.S. in mechanical engineering from the University of Pennsylvania, an M.B.A. in finance from Wharton School, and a Ph.D. in mechanical engineering from the University of California, Berkeley.

KEITH A. COLEMAN is currently assigned as a special project manager in Boeing Phantom Works working advanced weapon development. He has worked in the Boeing Military Aircraft production and Phantom Works advanced design organizations working production and prototype fighter and unmanned air vehicle aircraft and weapon systems for over 31 years. He was previously assigned as the division chief engineer for Boeing's cruise missile systems and direct attack weapons within Boeing Defense Systems. Mr. Coleman recently worked in Boeing's Special Pursuits Cell designing and building a special purpose Tier 2 class unmanned air vehicle. He was also the program manager for the Office of the Secretary of Defense Counter Electronics High Powered Microwave Advanced Missile Project Joint

Capability Technology Demonstration resulting in the world's first successful air launched high power microwave cruise missile.

DONA L. CRAWFORD recently retired as associate director for computation at LLNL, where she was responsible for the development and deployment of an integrated computing environment for petascale simulations of complex physical phenomena. This environment includes high-performance computers, scientific visualization facilities, high-performance storage systems, network connectivity, multi-resolution data analysis, mathematical models, scalable numerical algorithms, computer applications, and necessary services to enable laboratory mission goals and scientific discovery through simulation. Prior to her LLNL appointment in July 2001, Ms. Crawford had been with Sandia National Laboratories since 1976, serving on many leadership projects, including the Accelerated Strategic Computing Initiative, the Nuclear Weapons Policy Board, and the Nuclear Weapons Strategic Business Unit.

MARTIN C. FAGA is a retired president and chief executive officer of the MITRE Corporation. As a federally funded research and development center, MITRE's governance has parallels with the governance of National Nuclear Security Administration facilities. Before joining MITRE, Mr. Faga served from 1989 until 1993 as Assistant Secretary of the Air Force for Space, where he was responsible for overall supervision of Air Force space matters. At the same time, he served as director of the National Reconnaissance Office, responsible to the Secretary of Defense and the Director of Central Intelligence for the development, acquisition, and operation of all U.S. satellite reconnaissance programs. Mr. Faga is a member of the board of directors of the Association of Former Intelligence Officers. He served from 2006 to 2009 on the President's Intelligence Advisory Board.

PAUL A. FLEURY is the Frederick William Beinecke Professor Emeritus of Engineering and Applied Physics at Yale University. He is the founding director of the Yale Institute for Nanoscience and Quantum Engineering. He served as dean of engineering at Yale from 2000 until 2008. Prior to joining Yale, Dr. Fleury was dean of the School of Engineering at the University of New Mexico from January 1996, following 30 years at AT&T Bell Laboratories. At Bell Laboratories, he was director of three different research divisions covering physics, materials, and materials processing research between 1979 and 1996. During 1992 and 1993 he was vice president for research and exploratory technology at Sandia National Laboratories. He is a fellow of the American Physical Society, the American Association for the Advancement of Science, the American Academy of Arts and Sciences, and a member of both the National Academy of Sciences and the National Academy of Engineering.

DAVID GRAHAM is deputy division director in the Strategy, Forces, and Resources Division at the Institute of Defense Analyses (IDA). Since 1995, Graham has led several dozen studies addressing post-Cold War national security roles, responsibilities, and organizations for a variety of sponsors. His work on the Department of Energy (DOE) nuclear weapons complex includes coauthoring IDA's 1996 "120-Day Study" of the organization and management of the Nuclear Weapons Program; participating in Admiral Hank Chiles'1999 Presidential Commission on Nuclear Expertise; co-authoring the Chiles' studies of DOE security in the early 2000s; and serving as a member of the 2008 Defense Science Board Panel on nuclear deterrence skills. Graham served for four years (1999-2003) as the IDA study lead for the Panel to Assess the Reliability, Safety, and Security of the U.S. Nuclear Stockpile (the "Foster Panel"). In 2013-2014, he served as the executive director for the congressionally mandated Augustine-Mies Panel and assisted in preparing their 2014 report and testimony. Most recently, Graham led a congressionally mandated study on the management of security operations at DOE's Category I nuclear sites.

WILLIAM MADIA is a vice president at Stanford University and chairman of the board of overseers for the SLAC National Accelerator Laboratory. Until 2008, he was in charge of the Battelle Memorial Institute's Laboratory Operations business, including the management or co-management of five DOE

national laboratories: PNNL, Brookhaven, Idaho, ORNL, and the National Renewable Energy Laboratory and the Department of Homeland Security National Biodefense Analysis and Countermeasures Center. Previously, he served as the director of ORNL from 2000 to 2003 and, before that, of the PNNL. Before leading those national laboratories, Dr. Madia was the director of the Battelle Columbus Laboratories and president of Battelle Technology International, with major laboratories across Europe.

KATHLEEN A. PEROFF is president of Peroff and Associates and former deputy associate director of OMB's National Security Division. In that position, she served as OMB's senior career official responsible for the Department of Defense, Department of Veterans Affairs, the intelligence community, and DOE's nuclear weapons programs. She is a recognized expert in the field of national security budgetary and fiscal policy. Her previous positions with OMB include deputy associate director for Energy, Space, Science, and Water Division (responsible for DOE, NASA, and the National Science Foundation) and positions with the Housing Branch and the Division of Special Studies. Prior to joining OMB, she served as a deputy division director and visiting university fellow in Department of Housing and Urban Development's Office of Policy Development and Research and as assistant professor of political science and public policy at the University of Maryland.

BARBARA ROMZEK is dean of American University's School of Public Affairs and a professor of public administration and policy. Before joining American University, she held faculty and senior leadership positions at the University of Kansas, the last being interim senior vice provost for academic affairs. Dr. Romzek is recognized for her expertise in the area of public management and accountability with emphases on government reform, contracting, and network service delivery. Building on her research on formal accountability structures and processes, her recent work focuses on informal accountability in collaborative network settings. Her research has encompassed complex federal work settings, including NASA, Congress, and the U.S. Air Force, as well as state agencies, local governments, and nonprofit agencies. Dean Romzek has received research awards from the American Society for Public Administration and the American Political Science Association (APSA). Most recently, she received the John Gaus Award from APSA for lifetime achievement in political science and public administration. She is a fellow of the National Academy of Public Administration. She holds a Ph.D. in political science from the University of Texas, Austin.

TAMMY P. TAYLOR is chief operating officer of the National Security Directorate at DOE's PNNL. Prior to joining PNNL in 2013, she was acting deputy associate director for chemistry, life, and earth sciences at LANL and, prior to that, division director for nuclear engineering and nonproliferation at LANL. In 2007-2010, she was assigned to the White House Office of Science and Technology Policy. She began her LANL career as a postdoctoral researcher in 1999, advancing to group leader by 2004. Dr. Taylor holds a Ph.D. in environmental engineering from Georgia Tech. She is also a professional engineer and has authored over 70 papers, reports, and proceedings.

MERRI WOOD-SCHULTZ is a retired fellow and guest scientist at LANL. She is currently a member of the Nuclear Forensics Science Panel for the Department of Homeland Security, and in that capacity she is a part-time consultant for Noblis. Her work at LANL included the physics design of thermonuclear weapons, nuclear weapons-related laboratory experiments (above-ground experiments), the development of concepts and methods for certifying nuclear performance (the effects of code calibration on predictions and the quantification of margins and uncertainty), and nuclear intelligence. Before the end of nuclear testing, Dr. Wood-Schultz was responsible for the conceptual and physics design of numerous nuclear tests and add-on experiments. She holds a Ph.D. in physics from Georgia Institute of Technology.

B

Information Gathering

AUGUST 4, 2016
PANEL MEETING
WASHINGTON, D.C., AND WEBINAR

Overview of the Nuclear Security Enterprise
Steven Erhart, Director, Office of Policy, National Nuclear Security Administration

AUGUST 24, 2016
BRIEFING FOR PANEL STAFF
WASHINGTON, D.C.

Overview of Governance and Management Reform Activities Within the National Nuclear Security Administration
Steven Erhart, Director, Office of Policy, National Nuclear Security Administration
William (Ike) White, Chief of Staff and Associate Principal Deputy Administrator, National Nuclear Security Administration

AUGUST 26, 2016
PANEL MEETING
WASHINGTON, D.C. AND WEBINAR

Overview of the CRENEL Report
T.J. Glauthier and Jared Cohon, Co-chairs, Commission to Review the Effectiveness of the National Energy Laboratories

AUGUST 29, 2016
PANEL MEETING
WASHINGTON, D.C. AND WEBINAR

Overview of the Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise
Norman Augustine and Admiral Richard Mies, Co-chairs, Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise

SEPTEMBER 14, 2016
BRIEFING FOR PANEL STAFF
WASHINGTON, D.C.

Overview of Relevant Changes Under Way with Regard to Budget and Accounting and Defense Programs

Steven Erhart, Director, Office of Policy, National Nuclear Security Administration
William (Ike) White, Chief of Staff and Associate Principal Deputy Administrator, National Nuclear Security Administration
Ronald Sissel, Director of Budget and Accounting, National Nuclear Security Administration Policy and Analysis Division
John Evans, Office of Defense Programs, National Nuclear Security Administration
Mark Livesay, Y-12 Site Office, National Nuclear Security Administration

SEPTEMBER 15, 2016
BRIEFING FOR PANEL STAFF
WASHINGTON, D.C.

Overview of Relevant Work at the Government Accountability Office

David C. Trimble, Director, Natural Resources and the Environment, Government Accountability Office
Allison Bawden, Assistant Director, Natural Resources and the Environment, Government Accountability Office

OCTOBER 27, 2016
BRIEFING FOR PANEL STAFF
WASHINGTON, D.C.

Discussion of Mitigating Data Calls and A Systems Approach to Site Governance

Steven Erhart, Director, Office of Policy, National Nuclear Security Administration
William (Ike) White, Chief of Staff and Associate Principal Deputy Administrator, National Nuclear Security Administration
James McConnell, Associate Administrator for Safety, Infrastructure, and Operations, National Nuclear Security Administration
Frank Lowery, Deputy Associate Administrator for Defense Nuclear Security, National Nuclear Security Administration

JANUARY 24, 2017
PANEL MEETING
WASHINGTON, D.C.

Discussion of Roles, Responsibilities, and Authorities; Burdensome Practices; and Achieving and Sustaining Change

William Goldstein, Director, Lawrence Livermore National Laboratory
Jill Hruby, Director, Sandia National Laboratories
Charles McMillan, Director, Los Alamos National Laboratory

FEBRUARY 3, 2017
PANEL MEETING
CONFERENCE CALL

Discussion of Roles, Responsibilities, and Authorities; Burdensome Practices; and Achieving and Sustaining Change

Jeffrey Harrell, Manager, Sandia Field Office
Kim Davis Lebak, Manager, Los Alamos Field Office
Nicole Nelson-Jean, Manager, Livermore Field Office

FEBRUARY 1-8, 2017
BRIEFINGS FOR PANEL STAFF
WASHINGTON, D.C.

Glenn Podonsky and William Eckroade, Office of Enterprise Assessment, Department of Energy (Feb. 1)
Bruce Diamond, General Counsel, National Nuclear Security Administration (Feb. 2)
Rachel Urquhart, Laboratory Operations Board, Department of Energy (Feb. 3)
Barbara Stearrett and Kim Gallegos, Office of Acquisition Management, National Nuclear Security Administration (Feb. 6)
Douglas Dearolph, Manager, Savannah River Field Office (Feb. 7)
Ingrid Kolb, Office of Management, Department of Energy (Feb. 7)
James McConnell, Associate Administrator for Safety, Infrastructure, and Operations, National Nuclear Security Administration (Feb. 7)

FEBRUARY 10-11, 2017
PANEL MEETING
WASHINGTON, D.C.

Status from National Nuclear Security Administration Headquarters

William (Ike) White, Chief of Staff and Associate Principal Deputy Administrator, National Nuclear Security Administration
Steven Erhart, Director, Office of Policy, National Nuclear Security Administration

Discussion with Congressional Staff

Jonathan Epstein, Counsel, U.S. Senate Committee on Armed Services
Andrew "Drew" Walter, Professional Staff Member, U.S. House Committee on Armed Services

Summary of Information Gathering: Clarifying Roles, Responsibilities, and Authorities

Larry Novey, Senior Advisor, National Academy of Public Administration

Summary of Information Gathering: Mitigating Burdensome Practices

Scott Weidman, Deputy Executive Director, Division on Engineering and Physical Sciences, National Academies of Sciences, Engineering, and Medicine

Summary of Information Gathering: Achieving and Sustaining Change

Myra Howze Shiplett, Senior Advisor, National Academy of Public Administration

Discussion of Issues with Selected Individuals from the Field and from Headquarters

Douglas Dearolph, Manager, Savannah River Field Office
Tom Gioconda, Deputy Director, Lawrence Livermore National Laboratory
Randy Hendrickson, Associate Administrator for Management and Budget, National Nuclear Security Administration
Rick Kacich, Deputy Laboratory Director, Los Alamos National Laboratory
Ingrid Kolb, Director, Office of Management, U.S. Department of Energy
Nicole Nelson-Jean, Manager, Livermore Field Office
Kim Sawyer, Deputy Laboratories Director and Chief Operating Officer, Sandia National Laboratories

Insights of the SEAB Working Group Tracking Progress on Governance and Management Reform
Admiral Richard Mies, Co-chair, Secretary of Energy Advisory Board Working Group

Plenary Discussion of Progress to Date in the Nuclear Security Enterprise

C

Extract from the Fiscal Year 2016 National Defense Authorization Bill

SEC. 3137
GOVERNANCE AND MANAGEMENT OF NUCLEAR SECURITY ENTERPRISE

(a) Sense of Congress
It is the sense of Congress that
(1) correcting the longstanding problems with the governance and management of the nuclear security enterprise will require robust, personal, and long-term engagement by the President, the Secretary of Energy, the Administrator for Nuclear Security, and leaders from the appropriate congressional committees;
(2) recent and past studies of the governance and management of the nuclear security enterprise have provided a list of reasonable, practical, and actionable steps that the Secretary and the Administrator should take to make the nuclear security enterprise more efficient and more effective; and
(3) lasting and effective change to the nuclear security enterprise will require personal engagement by senior leaders, a clear plan, and mechanisms for ensuring follow-through and accountability.

(b) Implementation Plan
(1) IMPLEMENTATION ACTION TEAM.
(A) The Secretary and the Administrator shall jointly establish a team of senior officials from the Department of Energy and the National Nuclear Security Administration to develop and carry out an implementation plan to reform the governance and management of the nuclear security enterprise to improve the effectiveness and efficiency of the nuclear security enterprise. Such plan shall be developed and implemented in accordance with the National Nuclear Security Administration Act (50 U.S.C. 2401 et seq.), the Atomic Energy Defense Act (50 U.S.C. 2501 et seq.), and any other provision of law.
(B) The team established under paragraph (1) shall be co-chaired by the Deputy Secretary of Energy and the Administrator.
(C) In developing and carrying out the implementation plan, the team shall consult with the implementation assessment panel established under subsection (c)(1).

(2) ELEMENTS.—The implementation plan developed under paragraph (1)(A) shall address all recommendations contained in the covered study (except such recommendations that require legislative action to carry out) by identifying specific actions, milestones, timelines, and responsible personnel to implement such plan.

(3) SUBMISSION.—Not later than March 31, 2016, the Secretary and the Administrator shall jointly submit to the appropriate congressional committees the implementation plan developed under paragraph (1)(A).

(c) Implementation Assessment Panel
(1) AGREEMENT.—Not later than 60 days after the date of the enactment of this Act, the Administrator shall seek to enter into a joint agreement with the National Academy of Sciences and the National Academy of Public Administration to establish a panel of external, independent

experts to evaluate the implementation plan developed under subsection (b)(1)(A) and the implementation of such plan.
(2) DUTIES.—The panel established under paragraph (1) shall
(A) provide guidance to the Secretary and the Administrator with respect to the implementation plan developed under subsection (b)(1)(A), including how such plan compares or contrasts with the covered study;
(B) track the implementation of such plan; and
(C) assess the effectiveness of such plan.

(3) REPORTS.
(A) Not later than July 1, 2016, the panel established under paragraph (1) shall submit to the appropriate congressional committees, the Secretary, and the Administrator an initial assessment of the implementation plan developed under subsection (b)(1)(A), including with respect to the completeness of the plan, how the plan aligns with the intent and recommendations made by the covered study, and the prospects for success for the plan.
(B) Beginning February 28, 2017, and semiannually thereafter through 2020, the panel established under paragraph (1) shall brief the appropriate congressional committees, the Secretary, and the Administrator on the efforts of the Secretary and the Administrator to implement the implementation plan developed under subsection (b)(1)(A).
(C) Not later than September 30, 2020, the panel established under paragraph (1) shall submit to the appropriate congressional committees, the Secretary, and the Administrator a final report on the efforts of the Secretary and the Administrator to implement the implementation plan developed under subsection (b)(1)(A), including an assessment of the effectiveness of the reform efforts under such plan and whether further action is needed.

(4) COOPERATION.—The Secretary and the Administrator shall provide to the panel established under paragraph (1) full and timely access to all information, personnel, and systems of the Department of Energy and the National Nuclear Security Administration that the panel determines necessary to carry out this subsection.

(d) Definitions
In this section:

(1) APPROPRIATE CONGRESSIONAL COMMITTEES.—The term "appropriate congressional committees" means (A) the Committee on Armed Services, the Committee on Appropriations, and the Committee on Energy and Natural Resources of the Senate; and (B) the Committee on Armed Services, the Committee on Appropriations, and the Committee on Energy and Commerce of the House of Representatives.

(2) COVERED STUDY.—The term "covered study" means the following:
(A) The final report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise established by section 3166 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239; 126 Stat. 2208); and (B) Any other study not conducted by the Secretary or the Administrator that the Secretary determines appropriate for purposes of this section.

(3) NUCLEAR SECURITY ENTERPRISE.—The term "nuclear security enterprise" has the meaning given that term in section 4002(6) of the Atomic Energy Defense Act (50 U.S.C. 2501(6)).

(e) Rules of Construction
Nothing in this section shall be construed to authorize any action (1) in contravention of section 3220 of the National Nuclear Security Administration Act (50 U.S.C. 2410); or (2) that would undermine or weaken health, safety, or security.

D

Acronyms

CAS	contractor assurance system
CRENEL	Commission to Review the Effectiveness of the National Energy Laboratories
DOE	Department of Energy
FOM	field office manager
FY	fiscal year
GAO	Government Accountability Office
M&O	management and operating
MSD	Management System Description
NAPA	National Academy of Public Administration
NDAA	National Defense Authorization Act
NNSA	National Nuclear Security Administration
SEAB	Secretary of Energy Advisory Board
SIAP	Site Integrated Assessment Plan