

# Report 3 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 Consensus Study Report of

*The National Academies of*

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

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## Acknowledgment of Reviewers

This Consensus Study Report was 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 National Academies of Sciences, Engineering, and Medicine in making each published report as sound as possible and to ensure that it meets the institutional standards for quality, 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:

David S.C. Chu, Institute for Defense Analyses,  
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Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations of this report nor did they see the final draft before its release. The review of this report was overseen by Stephen M. Robinson, NAE, University of Wisconsin, Madison. He was responsible for making certain that an independent examination of this report was carried out in accordance with the standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the authoring committee and the National Academies.

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## Executive Summary

As noted in a number of external studies over two decades—more than 50 by one count—the nuclear security enterprise has long been criticized for its management. For example, the congressionally mandated report *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report), released in November 2014, concluded, “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.”<sup>1</sup>

The National Nuclear Security Administration (NNSA) is undertaking a number of activities to address concerns raised by the Augustine-Mies report and others like it. The Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise was established by congressional direction in 2016 to monitor progress by carrying out the charge described in Box ES.1.

### BOX ES.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 will issue interim reports every 6-12 months 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.

The past year brought important changes to NNSA and the nuclear security enterprise. The 2018 release of the *Nuclear Posture Review* provided a renewed clarity of purpose, and ambitious goals and timelines, which in turn led to an increase in overall funding. A new Administrator was sworn in late in February 2018, as was a new Deputy Administrator for Defense Programs (NA-10) more recently. The Administrator has taken a number of steps that appear to have placed NNSA on a promising path toward remedying the governance and management problems that have been flagged by so many reports. She has pushed energetically for partnership and mission focus throughout the enterprise, modeling healthy

<sup>1</sup> 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](http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934), p. ix.

relationships between the government and its management and operating partners, which in turn may be reducing some transactional oversight. She has worked toward healthier relationships with the Department of Defense (DoD) and with the rest of the Department of Energy. In accordance with the panel's 2018 recommendation for better strategic planning, she is working to improve practices in that area. It now appears that the building blocks for essential change are slowly coming together.

However, the panel remains concerned with the lack of urgency, metrics, and institutionalization; progress is heavily dependent on the individuals involved. NNSA leadership has yet to put in place the institutional structures needed for further progress and to sustain success, starting with documentation and directives. Some of this is in preparation but not available for the panel's examination. NNSA has yet to identify the metrics that will be needed to monitor and drive progress over time.

The management and governance reforms needed in NNSA constitute a culture change, and culture change requires consistent, sustained leadership in order to take root and to last. An appointed focal point for change management other than the Administrator is essential for NNSA.

The panel makes the following recommendations in this report:

**Recommendation 1.** DoD and NNSA leadership should continue to promote transparent exchange of information about program plans and operations and to encourage teamwork at all levels, and they should institutionalize the current practices that are contributing to a healthy relationship.

**Recommendation 2.** NNSA should quickly designate a senior executive as the accountable change management leader for the next few years. The change leader should drive management and governance reform with urgency and a cadence focused on mission success. The time, resources, and authority needed to fulfill that responsibility should be provided and not be underestimated.

In addition to these new recommendations, the panel's recommendations in its first two reports are still relevant and timely. The change management leader should revisit those recommendations and the panel's other guidance as a foundation for action.

# 1

## Introduction

The congressionally mandated report *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report), released in November 2014,<sup>1</sup> identified five “systemic problems in both management practices and culture that exist across the nuclear enterprise”<sup>2</sup>:

1. A lack of sustained national leadership focus and priority;
2. Overlapping Department of Energy (DOE) and National Nuclear Security Administration (NNSA) headquarters staffs and blurred ownership and accountability for the nuclear enterprise missions;
3. Lack of proven management practices, including a dysfunctional relationship between line managers and mission-support staffs;
4. Dysfunctional relationships between the government and its management and operating (M&O) site operators, which has encouraged burdensome transactional oversight rather than management focus on mission execution; and
5. Insufficient collaboration between DOE/NNSA and Department of Defense (DoD) weapons customers, resulting in misunderstanding, distrust, and frustration.

These serious concerns relate to five dimensions of governance and management that are important to *any* complex enterprise: (1) clear direction (from Congress and the Administration, in this case), (2) a well-functioning governance structure, (3) good management practices, (4) efficient and effective leveraging of the various entities within the enterprise, and (5) strong relationships with customers (primarily the DoD, in this case). Because all five of these dimensions contribute to the health of an enterprise, the panel put greater focus in 2018 on evaluating the nuclear security enterprise<sup>3</sup> against these five topics.<sup>4</sup>

The panel believes that the first and fifth of these concerns have lessened, although continued vigilance is warranted to ensure that these aspects—national leadership and relationships with the primary “customer”—remain healthy. The release of the *Nuclear Posture Review* (NPR), and subsequent planning, has given the nuclear security enterprise a strong mandate and clearer high-level guidance. However, the current circumstances could easily change under a different political climate, and new

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<sup>1</sup> 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](http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934), p. ix.

<sup>2</sup> *Ibid.*, p. x.

<sup>3</sup> The “nuclear security enterprise” consists of NNSA, which is the government agency in charge, and laboratories, plants, and sites that are owned by the government but operated under contract to the NNSA by non-governmental management and operating corporations.

<sup>4</sup> Summaries from the panel’s first two reports are included in Appendix A.

circumstances could easily return the nuclear security enterprise to a situation where its mission-focus is hampered by the inattention of national leadership.

As is detailed later in this report, the panel engaged in discussions with a range of senior DoD staff to assess the health of the NNSA–DoD relationship, and it believes the relationship is currently functioning well. Certainly, it has improved since the time of the Augustine-Mies study. The panel notes that major disagreements, missed deliverables, funding tensions, or external stressors have not tested this relationship recently.

In response to the second concern, the Augustine-Mies report recommended a number of governance changes to ensure adequate authority and accountability for the NNSA Administrator while strengthening the DOE Secretary’s commitment to and ownership of the nuclear security mission. Some of these changes would require congressional action that has not been pursued. Therefore, the panel has continued to look into non-statutory aspects of the governance structure—roles, responsibilities, authorities, and accountability—including how they are apportioned between NNSA and DOE.

The NNSA Administrator, also a DOE Under Secretary, has told the panel that she intends to use that “dual-hatted” nature of her position to improve NNSA–DOE relations.<sup>5</sup> In the past year, the panel took a first step in exploring those relations by examining two management processes in which both NNSA and DOE have some degree of involvement: the assignment of budget and accounting codes, and the process used to approve annual compensation-increase plans submitted by NNSA’s M&O contractors. The latter process was identified in an earlier report<sup>6</sup> as being unduly complicated. Among the insights gained through its examination of these two areas, the panel found no indication that they were affected by problems in the relationship or the complementarity between NNSA and DOE. Details of the examination appear in Chapter 2 of this report.

The third and fourth concerns in the aforementioned list pertain to relationships and trust, and the adjective used in the Augustine-Mies report—“dysfunctional”—is quite strong. Therefore, the panel will continue to devote attention to these multifaceted matters, which strongly influence day-to-day operations across the complex.

However, the enterprise may not meet its ambitious NPR goals if it continues to run its business in the same way it has in the past, a point that some NNSA executives have stressed to the panel. It needs to be more efficient and to work more effectively toward continuous improvement. Both of those challenges call urgently for improvements to governance and management. The enterprise needs a well thought out plan to orchestrate all its work, and it needs a mission-focused model (as recommended in the panel’s 2017 report<sup>7</sup>) to implement governance and management reforms. This mission-focused model would make clear what reforms are necessary, why they are needed (i.e., how the particular reforms support mission accomplishments), how to execute them, and how to know when they have been successful.

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<sup>5</sup> However, the panel recognizes the importance of direct interactions with DOE leadership. Its attempts to arrange a meeting with the Secretary of Energy or a second meeting with the Deputy Secretary have so far not been successful.

<sup>6</sup> Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, [https://www.energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final\\_0.pdf](https://www.energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf), Recommendation 2.2.1, p. 22.

<sup>7</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2017, *Report 1 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press.

This vision was stressed in the panel’s 2018 report<sup>8</sup> as being much more effective than tackling issues and tasks tactically and opportunistically. In response to that need, the panel has been told that NNSA is creating three interrelated strategic documents—a strategic vision, an integrated strategic roadmap for the nuclear security enterprise, and a governance and management framework—as the foundation for a subsequent set of tactical plans. The panel looks forward to seeing these strategic documents.

The facts that support the impressions presented in this introduction, and a summary of the panel’s information gathering during the past year, are in Chapter 2. Chapter 3 evaluates that information and develops judgments regarding the ongoing reform of governance and management in the enterprise.

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<sup>8</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press.

## 2

## Observations from the Panel's Information Gathering

During the past year, the panel's inquiries into the health of the nuclear security enterprise and progress in reforming its governance and management included multiple interactions with key leaders in the National Nuclear Security Administration (NNSA), a meeting with the Deputy Secretary of Energy, and the following:

- "Pulse checks" with the head managers of all seven of NNSA's sites and each site's field office manager (FOM),
- A pair of detailed examinations of specific management practices,
- Two group discussions with Department of Defense (DoD) managers responsible for nuclear security,
- Seven pilot discussion groups at NNSA Headquarters (HQ),
- A site visit to the Kansas City National Security Campus, and
- Meetings with the NNSA Administrator and her principal deputies.

The following sections summarize what the panel learned in connection with the aforementioned information gathering. The panel's analysis and conclusions in Chapter 3 are based on the following information.

### PULSE CHECKS WITH LEADERS ACROSS THE ENTERPRISE

From late November through mid-December 2018, selected members of the panel and its staff conducted pulse-check interviews with NNSA field office and management and operating (M&O) leadership from six sites: Lawrence Livermore National Laboratory, Nevada National Security Site, Kansas City National Security Campus, Y-12 National Security Complex and Pantex Plant, Savannah River Site, and Sandia National Laboratories. The panel as a whole carried out a pulse check with the Los Alamos National Laboratory director and his associated FOM on January 7, 2019. The pulse checks were designed to gather current perspectives on the health, functioning, and culture of the enterprise; assess the level of understanding of priorities, roles, and responsibilities; and hear about relationships among the field offices, M&O partners, and HQ. They were exceptionally helpful as an indicator of the degree to which change is taking root.

Interviewees were given specific discussion prompts about their understanding of, and alignment with, the Administrator's priorities; their thoughts on working relationships throughout the nuclear security enterprise; their awareness of, and involvement with, strategic planning; and any other insights about governance, management, and culture. Overall, the interviewees provided consistent comments in response to these discussion prompts. Generally, they recounted a sense of improvement almost across the board. It is important to temper that with the caveat that these interviews involved only high-level leaders,

who are in positions that allow them to see the vanguard of change. The degree to which improvements in management and collaboration have penetrated their organizations and become ingrained remains to be seen.

The pulse-check interviewees feel that the enterprise is moving in the right direction, and a number of them believe that relationships and operations have improved in recent years. However, the interviewees see the need for continued improvement—for example, in making the laboratory/plant/site strategic planning exercises more useful and in continuing to emphasize integration across the enterprise.

Following are some key takeaways organized by topic.

### **Administrator’s Communication on Change and Priorities**

Most leaders offered positive remarks about the Administrator’s communication—through one-on-one conversations and NNSA Council meetings, for example—regarding governance and management and her priorities. They said that the Administrator has been clear and consistent with her messages. She communicates progress that has been made on governance and management and work that remains to be done.

The interviewees reported hearing the following priorities from the Administrator: teamwork, clarification of roles and responsibilities, workforce development, investment in infrastructure, improved governance, and improved leveraging of capabilities across the enterprise. Teamwork and leveraging capabilities were the two messages mentioned most often. Two sites also noted her operational priorities related to life-extension programs (LEPs) and defense programs more generally.

Several interviewees reported that the Administrator has communicated directly with personnel throughout the enterprise through social media and town hall meetings during site visits as a means of disseminating her priorities more broadly. Field office and M&O leaders believe employees have a general understanding of the Administrator’s priorities. Those leaders reported different methods of reinforcing the Administrator’s messages, ranging from talking about them in all meetings (including field office all-hands meetings and laboratory operational meetings) to including them in individuals’ performance measures.

### **Cross-Enterprise Relationships and Trust**

All sites reported a good working relationship between field offices and M&O personnel. For example, one laboratory director emphasized the value of the field office providing an “independent set of eyes” on laboratory activities that can help the laboratory identify needed course corrections.

Three field offices reported that they have been working on improving their relationships with HQ. They have achieved some success, but more needs to be done. One field office reported participating in a variety of activities with HQ, including executive forums and Management Council meetings, to maintain alignment.

Three sites reported that HQ oversight is becoming more collaborative and less transactional. One laboratory noted in particular a good partnership with HQ program offices, and an improving relationship with HQ functional offices, while observing that there is some unevenness across NNSA in terms of teamwork. There were reports that portions of the Albuquerque Complex exhibit less of a spirit of partnership and seem less aligned with the Administrator’s priorities, as evidenced by slow responses to some inquiries and a high level of risk aversion in some decision making. The panel will examine this topic further in 2019.

Four sites reported an improvement in cross-enterprise relationships in terms of communication, sharing of best practices, and transparency. In particular, some of the interviewees mentioned

improvements in cross-enterprise integration, though they added that more needs to be done. Two interviewees noted the value of temporary details from HQ to the field and vice versa.

### **Enterprise-Wide Strategic Planning**

All interviewees except one reported being engaged to some extent in the enterprise strategic planning process, with two field offices being very engaged, including participating in working groups. Most of the M&O partners noted that their site strategic plans had been used to inform the strategic vision, and most reported seeing and commenting on *Strategic Vision* drafts. Four sites observed that NNSA is in a time of dynamic change, and looking at things from a strategic perspective will foster integration and build on the strengths across the enterprise.

### **Laboratory/Plant/Site Strategic Planning**

Some sites reported field office involvement in the development of the site strategic plans, and it was noted that discussions during the presentation of these plans are becoming more strategic from year to year. One field office said that briefings of the plan revealed that some NNSA offices were surprisingly uninformed about the work of the sites, while others were surprisingly well informed. There is more integration across the enterprise than some had realized. To strengthen integration, it was suggested that the plans be shared among the seven M&O partner organizations before presenting them to NNSA. It was also suggested that metrics should be developed, that the plans should look further out, and that the laboratories and plants should attend one another's presentations to improve understanding of each other's challenges and plans.

Overall, there is a sense that the components of the enterprise are moving toward an increased sense of shared mission and that management and governance have improved. It was widely felt that the ability of the FOMs to report directly to the Administrator has been beneficial.

## **BUDGET AND REPORTING CLASSIFICATION CODES AND OTHER BUDGETARY CONTROLS**

Both *A New Foundation for the Nuclear Enterprise* (the "Augustine-Mies" report) and *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories* (the "CRENEL" report) noted a proliferation of budgetary categories and controls at NNSA that imposed undue burdens and constraints on the ability of NNSA and its M&O partners to manage.<sup>1</sup> Those reports recommended that the numbers of these budgetary categories and controls, both those established by NNSA and the Department of Energy (DOE) as well as some by Congress through appropriation, be pared down and loosened where possible.

The panel examined these issues through a series of interviews with officials in HQ offices, their M&O partners, and at the White House Office of Management and Budget (OMB). NNSA has demonstrated a significant reduction over the past several years in the numbers of budget and reporting (B&R) codes under its direct control, largely by eliminating categories that contain only small amounts of

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<sup>1</sup> Budgetary categories and controls define blocks of appropriated funding and specify the purposes for which such funding may be used, such as for labor or construction under particular programs or at particular sites. Such controls may also limit use of the funds to particular fiscal years or other periods and may impose other limits on permissible use. Moreover, spending must be reported in terms of these categories.

money left over from earlier appropriations. However, in many cases it appears that the reduction in numbers has had little effect on the burden felt across the enterprise, because the elimination of these seldom-used leftover accounts affects few people at the sites. Thus, while NNSA made some progress on one of the specific “budget atomization” recommendations made in the Augustine-Mies and CRENEL reports, that progress may have actually yielded little improvement in efficiency or reduction in burden.

NNSA is undertaking a multiyear financial integration project to develop and apply a cost-collection tool intended to enable direct and indirect costs to be determined and compared across all sites and programs.<sup>2</sup> According to some officials at both HQ and its M&O partners, the initiative also would enable NNSA to consolidate its reporting categories down to fewer B&R codes for each congressional control category.

### EXAMINATION OF THE APPROVAL PROCESS FOR MANAGEMENT AND OPERATING CONTRACTOR ANNUAL COMPENSATION INCREASES

The Secretary of Energy Advisory Board (SEAB) Task Force identified the annual process to approve M&O contractors’ compensation-increase plans (CIPs) as an example of “duplicative oversight layered onto laboratory operations in response to process lapses” resulting in “a reduction of laboratory authority for decision making.”<sup>3</sup> DOE and NNSA began making process improvements in 2015, and—working with M&O partners—continue to make improvements today. The panel decided in spring 2018 to review these changes as an example of how effectively NNSA is working with its M&O partners to identify and address burdensome practices and unnecessary oversight and, in this instance, to determine whether “laboratory authority for decision making” was restored.

To perform this assessment, the panel reviewed directives and guidance issued by NNSA and DOE, analyzed data and results of the 2017 and 2018 increase plans by site, and conducted interviews with NNSA officials in the acquisition and procurement office who are responsible for the annual CIP approval process. Panel members and staff also interviewed human capital officials at two laboratories to understand their partnership with NNSA and its impact on the elimination of burdensome practices.

NNSA established a working group with representatives from each M&O partner to collaboratively discuss the CIP steps, the complicated process of comparing categories of M&O employees’ salaries against market rates for comparable categories in the private sector, and the needs of M&O partners to be able to attract, pay, and retain leading candidates, especially in hard-to-fill skill areas. The M&O contractors rightfully emphasize that their ability to be competitive is critical to their ability to accomplish their goals. NNSA leaders understand this need and have emphasized the importance of attracting top talent. To do so, NNSA’s Office of Contract Human Resources has indicated a willingness to partner with M&O personnel to develop special programs to meet laboratory-specific challenges, if and as needed.

Additional improvements have been made to streamline and reduce the burden noted by the SEAB Task Force. New procedures, developed in collaboration with the M&O partners, allow CIPs that fall within well-documented third-party thresholds (specified by NNSA based on OMB guidance) to get approval without needing to submit extensive background/supporting data. In 2018, two M&O

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<sup>2</sup> The Government Accountability Office recently issued a report about NNSA’s financial integration effort: “National Nuclear Security Administration: Additional Actions Needed to Collect Common Financial Data,” January 2019, <https://www.gao.gov/assets/700/696683.pdf>.

<sup>3</sup> Secretary of Energy Advisory Board (SEAB) National Laboratory Task Force, 2015, *Report of the Secretary of Energy Task Force on DOE National Laboratories*, [https://www.energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final\\_0.pdf](https://www.energy.gov/sites/prod/files/2015/06/f23/SEAB%20Lab%20Task%20Force%20Interim%20Report%20Final_0.pdf), Recommendation 2.2.1, p. 22.

contractors exercised this option, and they reported that they filed CIP submissions of about five pages in length to document their circumstances. This is in contrast to the previous paperwork requirement that often resulted in CIP submissions of 100-page Excel spreadsheets to document and justify compensation requests.

The panel found that NNSA has met the goal specified by the SEAB Task Force recommendation and has made several additional changes to decrease the burden and standardize the timeliness of the annual CIP process. Specifically during the past years, NNSA has been meeting the November deadline for final approval of CIPs.

With better collaboration between NNSA and the M&O contractors on compensation, new questions are now arising about the kinds of total compensation packages—pay and benefit combinations—that M&O contractors can offer candidates and their employees. M&O contractors point out that to attract top talent, industry leaders with whom they compete increasingly offer job candidates and employees packages that include more flexible working arrangements, profit sharing, employee-choice benefit programs, and other innovative combinations of pay and benefits.

## **RELATIONS BETWEEN THE NATIONAL NUCLEAR SECURITY ADMINISTRATION AND THE DEPARTMENT OF DEFENSE**

The panel met with personnel from HQ, field offices, M&O partners, and various organizations within the DoD during 2018 to explore relationships between DoD and NNSA.<sup>4</sup> The panel heard from most of these sources that the partnerships and working relationships have improved significantly since the 2013–2014 time period of the Augustine-Mies study. Although some concerns were raised, most personnel are optimistic about the future of the relationship.

A common sentiment from both DoD and NNSA personnel is that these relationships have improved in part due to shared objectives and increased opportunities to work together. The NNSA Administrator told the panel that meeting *Nuclear Posture Review* (NPR) requirements is her top priority and that she has repeatedly emphasized the need for NNSA personnel to work effectively with their DoD counterparts. While there are written directives regarding the NNSA and DoD relationship,<sup>5</sup> they do not appear to be well understood or highly valued by many of the individuals with whom the panel interacted. Instead, individuals credited the personal relationships they had built with their counterparts across organizations.

Personnel interviewed largely noted clarity in their organizational processes and an improved understanding of processes within their collaborating organizations. NNSA has established a new Program Executive Office for weapons in Albuquerque, which works closely with DoD. Long-standing formal structures for collaboration, including the Nuclear Weapons Council, its subordinate Standing and Safety Committee, and the weapon-specific Project Officers Groups, are active, meeting regularly, and deemed to be effective. These mechanisms should encourage the transparent exchange of information about program plans and operations and should also foster teamwork.

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<sup>4</sup> See Appendix B for the complete list of interviewees.

<sup>5</sup> Some selected examples include “Procedural Guideline for the Phase 6.X Process”; the Federal Program Managed Weapon Acquisition Guidebook; NNSA’s “DP Program Execution Instructions”; DoD Instruction 5030.55, “DoD Procedures for Joint DoD-DOE Nuclear Weapon Life Cycle Activities”; AFI 63-103, “Joint AF-NNSA Nuclear Weapons Life Cycle Management; Development, Production, and Standardization of Atomic Weapons Agreement”; “Interagency Agreement between Department of Navy, Strategic Systems Programs, and DOE, NNSA”; and a memorandum of understanding between the Energy Research and Development Administration and the DoD on Nuclear Weapons Development Liaison Procedures.

While most participants believe their partnerships could weather possible future stresses, several potential concerns were raised, including rates of progress on building and maintaining facilities, options for replacing obsolete components, rate of technology maturation, common cybersecurity strategies, and sufficient funding for the increasing workloads required by the NPR. Both DoD and NNSA personnel suggested that more opportunities to share staff, perhaps through rotations among DoD and NNSA offices, would further improve relationships and increase understanding.

### **HEADQUARTERS DISCUSSION GROUPS**

The panel and its staff built on the discussion groups held with field office and M&O personnel during site visits in 2017 and 2018 by conducting seven “pilot” discussion groups at HQ with the following offices:

- Materials and weapons, a mix of program senior and middle managers (due to scheduling issues, this group was split into two discussion groups);
- A mix of program senior and middle managers who interact with the laboratories and scientists;
- Contracting leadership;
- Safety leadership;
- Safety experts; and
- Programs and projects (infrastructure), senior and middle managers.

The groups were small and involved fewer than 30 participants in total. In addition, the topics discussed and perspectives offered by each group varied widely. As such, the observations reported here should be taken as suggestive only, not definitive or generalizable; the discussion groups are referred to as “pilots” because they served as a way to explore topics, but they are not necessarily representative of the full staff. Since the discussion groups provided useful insights, the panel will use these results to identify issues to explore further in 2019, and it intends to conduct more discussion groups with HQ offices during that period.

### **Governance and Management Initiatives**

The participants’ awareness of governance and management initiatives in the past 5 years or so, and of their effectiveness, varied. Some participants were vaguely aware of the NNSA’s Special Directive on Site Governance (SD 226.1B) and the site governance peer reviews, while others had detailed knowledge of these and other governance and management directives and initiatives. Not surprisingly, those with little or no awareness of management and governance initiatives could not pinpoint improvements in that area. Those with awareness could identify improvements, and improved transparency, communication, collaboration, integration, and mission focus and alignment were named as outcomes. Only one or two participants were aware of these initiatives but had not observed improvements.

Other governance and management issues raised include institutionalized risk aversion that has created an environment where it is difficult to operate and the need for greater integration across HQ offices.

### **Relationships with Field Offices**

HQ interviewees reported widely varying relationships with the field offices. Some feel that relationships with field offices have improved, while others have relationships they describe as stagnant or even nonexistent (one participant noted a reluctance to even interact with field offices). There is also a wide range of variance in the level of contact and coordination with field offices. Some HQ offices communicate regularly with field offices through institutionalized and informal pathways, including annual planning meetings, biweekly and monthly calls, and sharing of lessons learned. Others have no formal ties with field offices and little to no informal communication. Some comments indicate that clarity on the role of the field offices is lacking. There is consensus that the quality of relationships with field offices depends on the site and is driven by both personality and culture.

### **Relationships with M&O Partners**

There was an overall consensus across all discussion groups that relationships with M&O partners are strong, collaborative, and have improved within the past 5 years. Participants emphasized that there is an open line of communication and trust between the M&O contractors and HQ and a strong partnership mentality with well-defined lines of accountability. M&O contractors were repeatedly deemed to be essential to NNSA's work. There was no negative feedback on relationships with M&O contractors; however, one participant indicated that his office does not have relationships with M&O contractors because the field office serves as the intermediary.

### **Adequacy of Decision-Making Authority**

HQ personnel appeared comfortable, in general, that they have the authority needed to make decisions. Those in senior positions were quite clear about their responsibility and how to wield it. In several instances, authority per se is invested in their responsibility to carry out specific requirements that have been fully documented or which they are to report to a "higher authority" (e.g., DOE or Congress). On the other hand, some participants reported an abundance of caution and checking of decisions, with multiple decision makers involved before final approval is obtained, resulting in a lengthy process in some instances. In addition, multiple layers of decision making and approval sometimes result in conflicting opinions that are difficult to adjudicate—especially if the source of one of the opinions is DOE. However, programs that coordinate with DOE on their area of responsibility reported that communication and coordination with DOE to work out questions or decisions is typically collegial and routine, especially in cases where NNSA needs DOE's advice but not its permission.

### **Burdensome Practices**

In general, participants continue to observe several areas where there are burdensome practices. This issue seems to be strongly correlated with the culture of risk aversion (and related to decision making per the preceding paragraph), and it is difficult to disentangle the issues. Oversight, second guessing, and multiple requirements for reporting by and to internal and external groups are among the areas that were mentioned most frequently. Interaction with DOE on requirements can reportedly lead to burdensome practices; for example, DOE seemingly sometimes issues regulations with far-reaching implications without consulting NNSA. However, in at least one instance, NNSA has worked with DOE intensively to coordinate and avert some practices that would have been burdensome and unnecessary.

Some participants noted that burdensome practices such as reporting requirements, once initiated, were rarely if ever retracted.

### **Accountability and Cooperation**

In general, participants felt that there is a shared responsibility to get the work done and that considerable effort is being expended to work collaboratively across the enterprise. However, there is still progress to be made. The issue raised by multiple program groups was the need to integrate from the design phase onward to production, which requires collaboration across multiple locations from early on in the project or program. This also requires those involved to recognize that successful completion means interdependency, such as weapon designers being equally accountable for success as the end-point production organization, and vice versa. Further investigation by the panel into the effectiveness of product realization teams may be useful.

Functional offices recognize that—in accordance with SD 226.1B—defining their roles and then successfully operationalizing those definitions will take ongoing cooperation and attention across multiple sites, depending extensively on transparency as a mechanism for building trust, as well as open communication around the end goal. The Office of Defense Programs has formally spelled out accountability, and some participants felt that that model could and should be used by other parts of the organization.

### **SITE VISIT TO THE KANSAS CITY NATIONAL SECURITY CAMPUS**

The panel made a 1-day site visit to the Kansas City National Security Campus (KCNSC) in early July 2018. It came away with a very favorable impression of the site, particularly with regard to the following aspects.

#### **Communications and Shared Responsibility**

Communications among the plant, the field office, and HQ is good. Communications with federal HQ program managers (e.g., for particular LEPs) are consistent and occurring regularly. The field office and plant staff regularly meet to discuss performance measures and to ensure that the channel of communication is clear and open. The site has a culture in which everyone feels they own the outcome and share common goals. There is good communication up and down the organizations. If M&O staff are unclear about something, they are comfortable going to a counterpart in the field office with a question or problem. This relationship was developed over the years, and several people at the site emphasized that their level of mutual trust was built by spending time together over a long period and working on their relationship.

#### **Tier System/Honeywell Management System**

Honeywell's tiered-review management system supports the concept of continuous improvement. Surfacing problems is easy and encouraged. They are addressed quickly, at the lowest level possible, and rapidly elevated to a higher level (tier) if necessary. Dashboards are posted in public spaces within KCNSC to show measures of performance, from which anyone can discern emerging or remedied issues.

Field office personnel are involved in many tier meetings and have access to all the posted performance information. The field office recognizes that M&O staff are their eyes and ears, and the field office encourages M&O staff to bring their self-identified problems. To protect this relationship, the field office tends to write up self-identified problems in a positive light; for example, if a cell phone is inadvertently brought into a secure area, it may be reported as an “incident” rather than as an “infraction” to encourage staff to feel free to report minor lapses. One field office official relayed that when the Honeywell Model was implemented, the field office realized quickly that it must celebrate, rather than penalize, when the M&O contractor finds problems. This in turn leads to a shared spirit of continuous improvement, to finding ways to adjust the context and system so that mistakes will be less likely. This trusting relationship also means that M&O employees are broadly willing to tell the field office what it *needs* to hear rather than what they think it *wants* to hear.

Metrics and data are important at KSNNSC. KSNNSC has put together classes to teach employees how to create meaningful metrics, and employees are constantly evaluating whether or not their metrics or data are providing value.

### **Culture and Expectations**

At KSNNSC, leaders stated that no one is criticized for escalating problems. A continuous improvement culture has existed at the site since the late 1980s. The panel was told that people at the site expect change, as opposed to the resistance to change that seems common in some organizations. The M&O staff have a culture of rallying around problems to establish a clear statement of what they want to accomplish, and then developing milestones and driving toward resolution. The staff is generally very serious and committed to meeting quality standards, and they recognize that no one can do the job alone. The general manager of the plant emphasizes that he is not afraid of sharing a red number (a problem) on a dashboard because that helps everyone see an opportunity for improvement.

The panel and others have raised the question of how much of the operating system and culture of KSNNSC can be adapted in other parts of the enterprise, and how much NNSA is doing to take broader advantage of the successful practices seen in Kansas City. Those processes no doubt need adaptations to fit the work at other sites, and they need not be applied to all aspects of other sites’ work.

### **The Site’s Exemption from Some Regulations**

Because of the Kansas City plant’s demonstrated commitment to continuous improvement, as evidenced, for example, by its achievement of ISO 9001 certification, former NNSA Administrator Linton Brooks exempted the site from certain NNSA and DOE regulations when the plant could demonstrate that it adhered to other relevant federal, state, local, or commercial or industrial standards. This has provided occasional relief from some federal oversight requirements. Some HQ personnel have resisted that exemption and push the field office to exert greater oversight. In general, the field office protects this special exemption, but time can be lost in the process. It does not appear that this practice has been adopted elsewhere in the enterprise. The panel questions the reluctance to replicate this model and management approach.

## 3

## Progress and Continuing Concerns

During the recent leadership pulse checks summarized in Chapter 2, most interviewees described progress in teamwork between the government and its management and operating (M&O) partners, as well as improvement in the laboratories, plants, and sites working collaboratively when needed. The laboratory/plant/site strategic planning, even if it is still rather operational, seems to be succeeding in encouraging various entities to talk with one another and gain a better understanding of one another's responsibilities and challenges. The site governance peer reviews also appear to be having some success in getting the National Nuclear Security Administration (NNSA) and its M&O contractors to understand one another's roles, perspectives, and constraints. The current focus on contractor assurance systems might be leading to greater transparency and partnership. These opportunities for various parts of the enterprise—government employees and contractors, program and functional staffers—to work together and get to know one another appear to be leading to greater appreciation of one another's roles, and consequently improved partnering. The first two sections of this chapter provide the panel's evaluation of these and other signs of improvement. Its final section contains a discussion of continuing concerns.

### PROGRESS IN ADDRESSING LONG-STANDING CONCERNS OF GOVERNANCE AND MANAGEMENT

The panel observed apparent improvement regarding the five major concerns from *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report) listed at the beginning of Chapter 1, which are as follows.

#### Clarity of Direction from Congress and the Administration

As noted in Chapter 1, issuance of the 2018 *Nuclear Posture Review* (NPR), with commensurate increases in budgets, is an indicator of top-level national guidance of the nuclear security enterprise, and people across the enterprise are well aware of this. Among other things, the NPR establishes clear priorities, expectations, and timelines by which the nuclear enterprise is to accomplish specific objectives. Over the years, management literature has stressed the importance to virtually any organization of having a clear purpose and set of expectations.

The Augustine-Mies report recommended that the Department of Energy (DOE) Secretary provide annual testimony on the nuclear security mission to Congress as a means of strengthening top-level oversight. DOE Secretary Perry did provide testimony in April 2018 on the FY2019 DOE budget request to both the Energy and Water Subcommittee of Senate Appropriations and the Energy Subcommittee of House Energy and Commerce, and this step constitutes progress in strengthening top-level guidance.

The enterprise receives attention from the House and Senate Armed Services Committees, and the NNSA Administrator told the panel that she has made interactions with Congress a priority.

### **Adequacy of the Governance Structure**

Under this topic, the Augustine-Mies report recommended a variety of structural and governance reforms to solidify the DOE Secretary's ownership of the mission. These generally require revision of the NNSA Act and other actions by Congress and are therefore not under the panel's purview. However, the panel has begun examining whether NNSA's oversight of the enterprise is hindered or complicated by its position within DOE, and it will address this topic in 2020.

### **Adoption of Proven Management Practices**

The third general dimension in need of attention, per the Augustine-Mies report, is improving some basic management capabilities while building a culture of performance and accountability. The Augustine-Mies report recommended some improvements in management practices that include the following:

- Providing a clear line management structure,
- Clarifying that functional staff should be actively supporting the mission,
- Improving career development and rotational assignments,
- Strengthening cost analysis and resource management,
- Improving construction management discipline,
- Strengthening budget and staff authority of the life-extension program (LEP) managers, and
- Simplifying the budget structure by reducing the number of budget and reporting codes.

The panel has seen some action on all of these except for the next-to-last bullet, which it has not yet examined.

### **Providing a Clear Line Management Structure**

The realignment a few years ago, which has field office managers (FOMs) reporting directly to the Administrator, is generally supported both by laboratory/plant/site leaders and FOMs. During its recent series of pulse checks (see Chapter 2), the panel heard that this is largely seen as a clear improvement. During its site visits in 2017–2018, the panel was told that attention is also being paid to more predictably routing information and instructions through the FOMs so that lines of communication, and responsibilities, are unambiguous. The panel has also been told that communication throughout the enterprise has improved, owing to new, or reactivated, boards, councils, and working groups, and that has in turn produced some improvements in alignment and functional integration. The relations between M&O contractors and field offices need monitoring and vigilance to ensure that any stress or deterioration is addressed proactively, because their sharing of responsibilities can produce tensions that may build over time.

Clear line management is particularly important with regard to the goals established by the NPR. NNSA needs to ensure that a senior manager has responsibility for each of the key goals, especially the most challenging goals like pit production. The responsible manager ensures that plans are adequate,

needed resources are requested, and progress is monitored. The panel intends to review the clarity of responsibility in 2019, especially with respect to the NPR.

### **Clarifying the Role of Functional Offices**

This topic is a priority of the current Administrator, although it is too early for the panel to be able to assess progress. At the panel's May 2018 meeting, the Administrator said that functional offices like safety, security, and information technology are sometimes brought too late into discussions and decision making. This can cause them to be seen as disruptive when they finally get involved. She suggested that better communication and decision making that involves all relevant offices is needed in such cases, and she is encouraging program offices to involve the functional offices earlier.

As an example of a welcome culture shift with regard to the role of functional offices, the head of NNSA's Office of Safety, Infrastructure, and Operations described his approach to the panel. He noted that, for example, actions to reduce safety risks may have unintended consequences on the programs, such as upending schedules or costs. He does not want safety professionals to lose sight of the overall balance of risks. He also advocates a transition from a focus on "being safe" to one of "operating safely." The latter keeps the emphasis on program performance, whereas the task of "being safe" is open-ended and can become a priority on its own. It remains to be seen how well these valuable messages are internalized throughout the organization and in the day-to-day prioritizations and decisions by NNSA safety professionals, and whether the influence of DOE, the Defense Nuclear Facilities Safety Board, and other entities providing oversight raise complications.

### **Improving Career Development and Rotational Opportunities**

Leaders from several sites and NNSA Headquarters (HQ) mentioned the value of rotational assignments in providing individuals with very useful understanding of the functions and priorities of different offices. This suggests that some actions may emerge in relation to this topic. The panel will follow up in 2019 and will also study other human capital initiatives in the enterprise.

### **Improving Cost Analysis, Construction Management Discipline, and Budget Structure**

NNSA's Office of Cost Estimating and Program Evaluation was established in 2014, so the capabilities for cost estimation may have already improved from the time of the Augustine-Mies study. In 2019, the panel will learn more about this office and its contributions. NNSA's smaller construction projects (i.e., those with cost estimates below \$750 million) have already been removed from the Government Accountability Office's (GAO's) "High Risk" report<sup>1</sup> after years of being included. Other signs of management improvement appear from the panel's examinations of accounting codes and the annual approval process for M&O contractors' compensation plans (see Chapter 2).

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<sup>1</sup> Government Accountability Office, 2017, "High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others," GAO-17-317, <https://www.gao.gov/products/GAO-17-317>.

### **Leveraging of the Various Entities within the Enterprise**

The NNSA Administrator has stated consistently that there should be no distinction between contractors and government employees in their roles to accomplish the mission of the enterprise—all should be working as a team. An example of progress in this direction is that the annual laboratory/site/plant strategic planning increasingly involves leadership from both sides. This is helping to build relationships between sites and between sites and HQ. Furthermore, the relatively small working group that was set up to draft early versions of the Administrator’s strategic vision included representatives from a few laboratories, plants, and sites, demonstrating her commitment to enterprise-wide partnership.

The Administrator has told the panel of at least three ways in which she is actively promoting a more integrated enterprise:

1. She has asked NNSA’s Contractor Human Resource group and human resource teams from all the sites to jointly develop a strategy for enterprise-wide recruitment and retention, to share best practices and resources, and to increase the options available to attract and retain highly desirable employees.
2. She has instituted regular meetings with the three laboratory directors, and she has weekly meetings with all of her direct reports (“Dash-1s”), both program and functional.
3. At the May 2018 panel meeting, the NNSA Administrator told the panel that she had spoken to contractors, field offices, and HQ staff to emphasize that there should not be an “us versus them” mentality. To move in that direction, she included the laboratories, plants, and sites in the early engagement strategy for building the FY2020 budget.

Also, as mentioned earlier, various coordinating boards, councils, and working groups provide opportunities to build relationships and create a spirit of shared mission or partnership as they address their particular charges. The comments received from FOMs and laboratory/plant/site leadership during the panel’s recent pulse checks support this anecdotally, though NNSA has not tracked or measured it. The site governance peer reviews have also reportedly been helpful in encouraging better teamwork at individual sites, as explained in the panel’s 2018 report. They also create the potential for sharing best practices, although procedures for systematically sharing and institutionalizing those practices across sites are not yet established. The Administrator’s clear focus on the mission, and on aligning the various parts of the enterprise, are key to her approach to improving governance and management. The degree to which these efforts succeed depends substantially on how well those messages are accepted and ingrained throughout the enterprise—that is, whether there is true culture change. In one step toward carrying that through, NNSA has developed an online course that will be required of all federal employees and available to M&O personnel to spread best practices and elements of common culture.

### **Reducing Burdensome Practices and Unnecessary Oversight**

NNSA leadership reports that it has reduced data calls and some other burdensome practices, including some aspects of oversight. However, there is no information on how or whether this has been done systematically or what its effect has been. The panel was told that some directives have been revised with the goal of being less burdensome, it has heard about work to streamline the approval of the M&O contractors’ compensation-increase plans, and, in one of the discussion groups, NNSA employees said that they have gone back to DOE to request that new directives be changed to eliminate duplicative data collection and reporting. However, the panel has not seen any metrics or other specific indicators of progress, and it is not clear whether any analysis was done to determine which elements of oversight are

felt to be most burdensome or if some “low-hanging fruit” was addressed in hopes that an improvement would be felt.

Other steps to reduce burdensome practices include the following:

- The Office of Safety, Infrastructure, and Operations has begun developing a risk-based method for determining when to exercise oversight steps on safety matters, which could reduce the degree of federal intervention in managing safety or at least make its application more transparent and predictable.
- The Site Integrated Assessment Planning process was adopted to compile audits, inspections, etc., into one consolidated list, which makes it easier to manage them.
- The reduction in scope of DOE’s Office of Enterprise Assessments a few years ago potentially reduced the number of audits and inspections conducted by that office.
- The panel was told that the NNSA Operations and Efficiencies Board is currently concluding a congressionally mandated survey of the sites to catalogue regulatory practices that should be changed. This could make it much easier to build the case for eliminating some layers of oversight by compiling data on their burden and value.

### **Relationships with NNSA’s Major Stakeholder, the Department of Defense**

As noted in Chapter 2, the relationship between NNSA and the Department of Defense (DoD) at the time of the Augustine-Mies study was strained. Since then, the two organizations appear to have worked successfully to substantially improve that relationship. At present, the two organizations appear to trust one another to carry out their respective responsibilities in support of their shared mission, and the NNSA Administrator states that she is putting a priority on ensuring good relations with DoD.

The panel’s meetings with staff from DoD and NNSA’s Office of Defense Programs provided evidence of this improvement, but they also demonstrated that today’s ability to work constructively together is shaped by current leadership and guided by personal relationships and has not recently been tested by serious budgetary or programmatic stresses. Some potential concerns raised by people interviewed by the panel (as recounted in Chapter 2) include delays in building facilities, replacing obsolete components, advancing technology maturation, ensuring common cybersecurity strategies, and attaining sufficient funding for increasing workloads. The Augustine-Mies report suggested the creation of a joint DoD–NNSA roadmap through the Nuclear Weapons Council mechanism, and a step like that might institutionalize the current exchange of needed information, identify resource issues that require joint resolution, and serve to keep DoD and NNSA programs synchronized. Institutionalization of good practices is necessary to ensure a healthy and functioning relationship during times of stress.

The panel recently learned that NNSA’s Office of Defense Programs is beginning to baseline the enterprise’s current production capabilities and capacity as a necessary first step before NNSA can create reliable plans for accomplishing the ambitious goals of the NPR. The panel applauds this difficult exercise. As this baselining unfolds, NNSA’s Office of Defense Programs intends to work toward an enterprise-wide consensus about current capabilities and how they need to be extended and then broaden that discussion to include DoD as well. This could set the stage for important and productive joint planning with DoD, which could help NNSA ensure that it has a strong programmatic structure with clearly defined authorities, responsibilities, and accountability.

**Recommendation 1.** DoD and NNSA leadership should continue to promote transparent exchange of information about program plans and operations and to encourage teamwork at all levels, and they should institutionalize the current practices that are contributing to a healthy relationship.

## **OTHER SIGNS OF PROGRESS**

### **Employee Engagement**

Based on publicly available results from the annual Federal Employee Viewpoint Survey,<sup>2</sup> overall morale (satisfaction and engagement) among NNSA federal employees improved from 2015 to 2016, and again from 2016 to 2017. In the 2018 results, improvement was seen in 71 measurements—almost every metric. While morale and employee satisfaction of NNSA employees was not raised as an issue by the Augustine-Mies report, employee satisfaction and engagement are generally seen as important indicators of organizational health. Thus, this improvement is an encouraging indication of chances of success for change initiatives.

This survey covers only federal employees, but most NNSA employees work for the M&O partners. In its 2018 report, the panel recommended that NNSA survey employee engagement (or leverage results from the M&O partners' ongoing surveys where they exist) throughout the enterprise, and the panel reiterates the value of obtaining survey data on the total workforce. The FY2019 National Defense Authorization Act (Section 3136) calls for NNSA to study the feasibility and benefits of such a step. The panel has been told that NNSA's report to Congress is in preparation.

### **Infrastructure Rebuilding**

The head of NNSA's Office of Safety, Infrastructure, and Operations told the panel in September 2018 that NNSA's rebuilding of infrastructure across the enterprise continues to enjoy congressional support. Congress gives NNSA some latitude for spending decisions in this area, which may indicate increased congressional confidence in NNSA's handling of these projects. NNSA now uses a risk-based process to prioritize its many deferred maintenance and construction projects, and the panel was told that the resulting decisions are widely accepted across the laboratories, plants, and sites.

### **Sharing of Best Practices**

As mentioned in Chapter 2, NNSA's Chief Learning Officer told the panel in September about two training courses in the late stages of development that are aimed at disseminating best practices for site governance and partnering and promoting the culture desired for NNSA. One course is required for all federal employees and is available to M&O personnel. It will be available online and will be part of the training for all new hires. The other course is designed as executive training for M&O personnel, parent organizations, and FOMs. Through face-to-face instruction, this training aims to impart best practices and the Administrator's major messages around trust, respect, accountability, and transparency.

### **Annual Laboratory/Plant/Site Strategic Planning**

The pulse checks summarized in Chapter 2 revealed fairly strong support for the annual laboratory/plant/site strategic planning. The process used has helped improve information sharing and communication. M&O leaders and FOMs interviewed by the panel noted that they particularly value the

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<sup>2</sup> Survey reports are available at <https://www.opm.gov/fevs>.

opportunity to make a coherent, complete presentation about their operations and their futures to functional leaders and personnel from HQ, many of whom did not have a big picture perspective on the sites. It is also notable that the process has been improved over the past 3 years as lessons are learned, and interviewees had several suggestions about how these planning sessions could be more valuable and strategic. Overall, these strategic planning exercises are a promising step toward developing and institutionalizing an enterprise-wide shared vision and trusting relationships. It should not be forgotten, though, that part of the process of institutionalization is to formalize roles, responsibilities, authorities, and accountabilities to the degree that best enables accomplishment of the mission.

### **Enterprise Strategic Planning**

The panel’s 2018 report argued that “it is essential for NNSA to shift from a tactical to a strategic focus,” and it recommended that “the new NNSA Administrator should urgently and personally lead the development of a mission-focused enterprise strategic plan that defines where the nuclear security enterprise needs to be in 10 years and what will be needed to get there.”<sup>3</sup> The panel explained at that time that such a step would naturally identify governance and management challenges that impede progress, but that an enterprise-wide strategy “needs to go further and articulate an effective concept of operations for addressing the mission—a clear picture of how roles and responsibilities, functions, and processes will work within the enterprise. This picture enables NNSA to delegate authorities, through rules and processes, for carrying out its mission while maintaining its accountability.”<sup>4</sup>

The panel’s staff was told that this message was heard and accepted by NNSA leadership and that the panel’s concept will be reflected in three interrelated planning documents—a strategic vision, an integrated strategic roadmap for the nuclear security enterprise, and a governance and management framework—that, as of this writing, are still under development.

## **CONTINUING CONCERNS**

Although there has been some apparent improvement in governance and management of the nuclear security enterprise, this section explains what the panel sees as gaps that must be addressed in order for helpful changes to spread and take root. The current state of improved governance and management is fragile, depending greatly on the NNSA Administrator and her team, as well as on recent support from Congress and the Executive Branch. Key individuals will inevitably move on, and stresses will tax today’s progress. The changes made to date must be institutionalized with speed and on a regular cadence. While the panel is encouraged to see some progress since the release of the Augustine-Mies report, and especially over the past year, it worries that the window of opportunity may close.

### **The Continuing Need for Data and Other Objective Evidence**

The purpose of improving governance and management is to enable program success. NNSA’s Acting Deputy Administrator told the panel recently that the ability of the enterprise to meet its work requirements is one of the proxies that NNSA leadership relies on to evaluate how much progress is being

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<sup>3</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press, p. 10-11.

<sup>4</sup> *Ibid.*, p. 10.

made to reform governance and management. While successful accomplishments by the program do not necessarily mean that governance and management are trouble-free, trends in measures of accomplishment—for example, improvements in meeting milestones, or reductions in surprises or deviation from expectations—could be useful indicators. In that light, the completion of an important milestone in the B61-12 LEP four months ahead of schedule<sup>5</sup> and completion of the W76-1 LEP “under budget and ahead of schedule”<sup>6</sup> are encouraging signs and could indicate important management change if similar accomplishments follow.

NNSA tracks many aspects of program accomplishment, including through such means as quarterly program reviews and reviews of M&O performance. Experienced managers may be able to gain insight about the levels of operational efficiency from such information, and they can certainly discern if efficiency takes a downward turn. The panel is not charged with assessing the enterprise’s performance against its mission, and so it has not asked to see measures of program accomplishment. But because the panel has repeatedly urged NNSA to measure its progress in reforming governance and management, and NNSA has said that program accomplishment is a proxy for management effectiveness, it is puzzling that the panel has not been told (in cases where unclassified measures are available) about trends in program accomplishment or other analyses derived from program reviews. The tentativeness with which the panel has to speak in this report—as evidenced by the frequent use of words like “apparently” and “seems” or the phrase “the panel was told”—is indicative of how little hard data has been shared with the panel. The panel’s primary concern is that these data—these reliable measures of progress—may not exist or are not analyzed with a focus on enterprise efficiency and effectiveness.

As a rule, though, NNSA does not gather data to inform its management processes. As the panel wrote in its 2018 report,

Data and other objective evidence . . . are necessary in order to (1) effectively characterize situations that need corrections and (2) track whether changes under way are producing the desired effect. There is a fundamental need for NNSA to characterize its progress and demonstrate success in addressing the serious problems raised by the Augustine-Mies report and other reports. Currently this need, however, is often thwarted by a lack of data and other objective evidence needed . . . . Absent a solid base of evidence, NNSA appears to be relying on piecemeal and anecdotal information.<sup>7</sup>

That section of the 2018 panel report contains other suggestions about data and metrics that are still timely.

The panel is not alone in its emphasis on evidence and documentation. For example, the following quote from a recent GAO report about NNSA’s oversight of the MOX project also recommends that NNSA needs to do more to document lessons learned as management practices are improved and to develop ways to evaluate the effectiveness of corrective actions:

GAO is making three recommendations, including that DOE and NNSA develop requirements for defining how and where project management lessons learned for capital asset projects should be documented and shared routinely and in a timely manner, and for

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<sup>5</sup> NNSA, 2019, “Major milestone achieved for B61-12 Life Extension Program,” press release, <https://www.energy.gov/nnsa/articles/major-milestone-achieved-b61-12-life-extension-program>.

<sup>6</sup> DOE, 2019, “DOE AND NNSA Celebrate W76-1 Life Extension Program,” press release, <https://www.energy.gov/articles/doe-and-nnsa-celebrate-w76-1-life-extension-program>.

<sup>7</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2*, p. 20.

evaluating the effectiveness of corrective actions taken in response to lessons learned. DOE agreed with GAO's recommendations.<sup>8</sup>

The panel agrees with NNSA that it can be difficult to measure the efficiency of governance and management of the enterprise. But quantitative metrics are not necessary; the goal is to better characterize processes, identify root causes of problems, and not be satisfied with unverified assumptions or piecemeal tracking of progress.

### Culture Change

The Augustine-Mies report found that “a major cultural overhaul will be needed [at DOE/NNSA] to align the structure, resources, and decision processes with mission priorities.”<sup>9</sup> While the panel has seen some signs of positive change, as discussed in Chapter 2, NNSA still appears to tackle issues and tasks tactically and opportunistically, and a sustained, methodical push to change culture is essential.

The panel, based on its experience carrying out the current study and the past experience of many of its members, has the sense that many of NNSA's management processes take longer than they should. This may be indicative of a pervasive aspect of NNSA's culture: that “it takes too long to do anything,” as expressed with frustration by one of the panel's pulse-check interviewees. Other aspects of NNSA culture that may limit its ability to evolve its practices to meet current demands include a limited sense of urgency, a tendency toward overly bureaucratic processes, and risk aversion. The panel has observed that while NNSA follows the good practice of assembling a mix of staff to work on management changes, it is not evident that these staff groups follow a methodical process for planning improvements. In order to improve any management process or system, the following attributes are needed:

- *Identification* of the outcomes and outputs desired from the process, and agreement that change is necessary;
- *Sufficient transparency* so that managers and staff can see how well a process is functioning and discern any problems that develop;
- *Diagnostic measures* so that problems and inefficiencies can be characterized, and their manifestations, magnitude, and root causes can be understood properly;
- *Analysis* to develop options for amelioration and to prioritize among them;
- *Metrics and feedback loops* to monitor progress and improvement; and
- *Clear accountability* so that responsibility for improvement of the process is clearly allocated.

These steps are not evident in most of the individual actions NNSA has undertaken to improve governance and management of the nuclear security enterprise. In the experience of panel members, NNSA's culture tends toward limited transparency, lengthy processes, and a lack of metrics—which are antithetical to good management. The improvements cited in this report do not give the panel confidence that there is a systematic, strategic plan to promulgate them, and there is certainly a lack of metrics to document the improvements attained.

<sup>8</sup> GAO, 2018, “Project Management: DOE and NNSA Should Improve Their Lessons-Learned Process for Capital Asset Projects,” report GAO-19-25, <https://www.gao.gov/products/GAO-19-25>.

<sup>9</sup> 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](http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934), p. 37.

One of the Administrator’s strengths seems to be her ability to talk credibly and in a relatable fashion to a wide range of people across the enterprise. She uses this ability to implant key messages that are memorable, and that action is apparently increasing the common awareness of mission and also clarifying roles. For example, one aspect of the culture change desired for NNSA is for each worker to know why and how their work contributes to the overall mission, and attention to this has been one of the Administrator’s emphases. But institutionalization of individual improvements and overall culture change are necessary so that the state of the enterprise is not dependent on individuals.

In its 2018 report, the panel wrote that foundational elements of change management were in place at NNSA, but that it “has become increasingly concerned about other important foundational elements of change management . . . which have not been established and promulgated.”<sup>10</sup> Those seven elements are

- (1) A well-articulated statement of the intended concept of operations and goals . . . and what the intended result will be;
- (2) A plan for how to achieve the goals and intended results;
- (3) Active commitment to the goals and vision by senior-most leadership . . . ;
- (4) A plan for how to accomplish the change . . . ;
- (5) Active involvement and engagement of personnel across the enterprise in planning and achieving the change;
- (6) Regularly scheduled reviews of progress against predetermined measures of effectiveness—with a visible cadence and a sense of urgency—that are conveyed across the enterprise and course corrections to be made as needed to accomplish the pre-set goals; and
- (7) A plan for communication and reinforcement of the desired attributes of the change . . . .

NNSA is working on most of these elements. The strategic documents nearing release are meant to address numbers 1 and 2, and the new training courses that are being rolled out partly address number 7. But a good deal of work remains. The panel raises this topic now because NNSA currently lacks a senior executive who can provide sustained, concentrated attention to change management, and change will not happen without stewardship. The change leader, who should report directly to the Administrator, would be responsible for ensuring that management and governance reform is focused on mission success and spread successfully throughout the enterprise with urgency and a clear cadence. This person needs access to key staff and data, and a budget that can support meetings, travel, and the development and execution of initiatives to implement and sustain change, such as communication plans and training. The change leader should also have access to adequate resources to develop and monitor metrics and other measures of improvement and identification of remaining challenges. The full range of elements above must be accomplished in order to institutionalize management and governance changes, embedding those changes in the culture so that the enterprise can better withstand stress.

**Recommendation 2.** NNSA should quickly designate a senior executive as the accountable change management leader for the next few years. The change leader should drive management and governance reform with urgency and a cadence focused on mission success. The time, resources, and authority needed to fulfill that responsibility should be provided and not be underestimated.

It is particularly important to governance and management reform that a Deputy Administrator be brought on board.

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<sup>10</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2*, p. 14.

The two recommendations in this report complement, but do not supplant, the recommendations contained in the panel's previous reports (see Appendix A for the precise wording). Those latter recommendations are still relevant and timely. It is hoped that Recommendation 2.1 from Report 1<sup>11</sup> and Recommendations 2.1 and 3.1 from Report 2<sup>12</sup> will be addressed by several documents that NNSA is developing, as discussed in Chapter 2 of this report. The continuing and troubling lack of measures of effectiveness necessary to define, track, and guide progress toward governance and management reform is discussed in this chapter and echoes Recommendation 3.2 from Report 2.<sup>13</sup> Recommendation 2, above, ties in with Recommendation 4.1 in Report 1.<sup>14</sup>

The panel has seen little or no action on two of its other past recommendations: (1) characterizing "burdensome" so that mitigation steps can be well targeted (Recommendation 3.1 in Report 1), and (2) surveying the workforce across the entire enterprise to gain a fuller understanding of attitudes and engagement (Recommendation 3.3 of Report 2). Congress subsequently charged NNSA with preparing a report on the latter topic, although it has not yet been delivered.

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<sup>11</sup> Calling for the Administrator to demonstrate urgency in clarifying roles, responsibilities, authorities, and accountability.

<sup>12</sup> Calling for a mission-focused enterprise strategic plan and an associated implementation plan to guide governance and management reform.

<sup>13</sup> Calling for measures of effectiveness to be defined and tracked, and using the site governance peer review process to communicate and reinforce desired values, behaviors, and processes.

<sup>14</sup> Calling for the development of an operating model to guide improvements to governance and management.

## **Appendixes**

## A

## Summaries from the Study's First Two Reports

SUMMARY FROM THE STUDY'S FIRST REPORT<sup>1</sup>

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.”<sup>2</sup> 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.

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<sup>1</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2017, *Report 1 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press, reprinted from pp. 1-4.

<sup>2</sup> 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](http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934), p. ix.

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),<sup>3</sup> 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)<sup>4</sup> 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

### **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

<sup>3</sup> 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://www.energy.gov/labcommission/downloads/final-report-commission-review-effectiveness-national-energy-laboratories>.

<sup>4</sup> Section 3137 of the National Defense Authorization Act for Fiscal Year 2016, P.L. 112-92 (Nov. 25, 2016).

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.”<sup>5</sup> Thus, an 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

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<sup>5</sup> National Defense Authorization Act for Fiscal Year 2016, H.R. 1735, 114th Cong. (2015-2016).

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.

## SUMMARY FROM THE STUDY'S SECOND REPORT<sup>6</sup>

A number of external studies over two decades have identified serious concerns about the operations of the nuclear security enterprise. For example, 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.”<sup>7</sup>

The National Nuclear Security Administration (NNSA) has embarked on a number of activities to address concerns raised by the Augustine-Mies report and others like it. The Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise was established in 2016 to monitor progress by carrying out the charge described in Box S.1.

### 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 will issue interim reports every 6-12 months 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.

While the panel sees promise in several of the activities it reviewed, it strongly concludes that those activities are not rooted in an adequate foundation of strategic thinking. With the release of the 2018 *Nuclear Posture Review* and the appointment of a new NNSA Administrator, NNSA is faced with an excellent opportunity—and challenge—to move from a tactical to a strategic approach for executing the critical mission of the enterprise. This report calls for NNSA to create two plans expeditiously: (1) an integrated strategic plan for the entire nuclear security enterprise, focused on mission execution, and (2) a more complete and better-grounded plan to guide the ongoing program of governance and management reform. The emphasis in both cases must be on creating a strategic vision that is clearly connected to mission. This is not a call to develop new processes and reports per se, which should follow only once clear and well-rationalized direction has been set.

<sup>6</sup> National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press, reprinted from pp. 1-3.

<sup>7</sup> 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](http://cdn.knoxblogs.com/atomiccity/wp-content/uploads/sites/11/2014/12/Governance.pdf?_ga=1.83182294.1320535883.1415285934), p. ix.

**Recommendation 2.1.** In response to the 2018 *Nuclear Posture Review* and other policy statements, the new NNSA Administrator should urgently and personally lead the development of a mission-focused enterprise strategic plan that defines where the nuclear security enterprise needs to be in 10 years and what will be needed to get there.

One of the goals of the strategy should be to ensure that the strategies of the various organizations in the enterprise are integrated and aligned. The strategy should focus on mission-related issues but should also address management issues such as those raised in the Augustine-Mies report. The Administrator should “own” the resulting strategy and take responsibility for promoting it throughout the enterprise by articulating what it means for each organization and encouraging discussions that lead to a shared vision and culture.

Ongoing governance and management improvements should continue while the enterprise strategic plan is being developed. The panel found, however, that the current implementation plan that is meant to steer governance and management reform is inadequate for that task:

**Finding 3.1.** The panel considers the December 2016 DOE-NNSA report to Congress, *Governance and Management of the Nuclear Security Enterprise*, to be inadequate in several dimensions. Rather than following a careful process of specifying goals and then articulating a plan to achieve them, NNSA has laid out actions it would take without linking them clearly to desired outcomes or explaining why the actions were selected. It does not consider how the various activities will interact to effect the needed changes nor does it convey how the activities will impact mission success. Of equal concern, it gives little indication of how change will be measured—there are no baselines—or how one would know that success has been attained. Furthermore, there is no plan for communicating and socializing the overall goals and progress throughout the enterprise. Such communication is necessary in order to promulgate changes, embed responsibilities for carrying out steps in the plan, and prepare for necessary adjustments to the culture across the enterprise.

An adequate plan to steer governance and management reform should include the following elements:

1. A well-articulated statement of the intended concept of operations and goals (e.g., mission focus, simplicity, and clarity, as well as alignment of resources, organizations, and incentives) and what the intended result will be;
2. A plan for how to achieve the goals and intended results;
3. Active commitment to the goals and vision by senior-most leadership (at both NNSA and DOE);
4. A plan for how to accomplish the change, including centralized leadership and decentralized implementation;
5. Active involvement and engagement of personnel across the enterprise in planning and achieving the change;
6. Regularly scheduled reviews of progress against predetermined measures of effectiveness—with a visible cadence and a sense of urgency—that are conveyed across the enterprise and course corrections to be made as needed to accomplish the pre-set goals; and
7. A plan for communication and reinforcement of the desired attributes of the change through training, leadership activities, performance reviews, and ongoing continuous improvement programs.

**Recommendation 3.1.** NNSA should expeditiously create an implementation plan to enable achievement of the governance and management changes driven by NNSA’s enterprise-wide strategic goals. This new implementation plan should link proposed actions explicitly to specific goals, including a timeline associated with each action, specification of who is responsible for which parts of the execution and who is accountable for the outcome, and measures to be used to gauge progress and impact.

This implementation plan and the activities described in it will combine to create a path toward major change.

Of the many actions under way to improve governance and management, the new process to improve site governance appears quite promising:

**Finding 3.2.** Although measures of effectiveness have not yet been established to assess the benefits of the site-governance and management peer review process, the panel believes it represents a useful and promising approach that is already contributing to improved communication, better-defined roles and responsibilities at individual sites, and cross-enterprise learning.

**Recommendation 3.2.** The NNSA Administrator should ensure that measures of effectiveness are defined and tracked, and then use the site governance and management peer review process across NNSA as a mechanism for communicating and reinforcing shared values/behaviors, strengthening processes and relationships at each site, and improving the usefulness of the sites’ contractor assurance systems.

However, overall the efforts to reform governance and management are greatly hampered by a lack of data and other objective evidence:

**Finding 3.3.** NNSA lacks systematic data collection—tailored to inform well-specified questions in order to assess the scope and severity of its governance and management challenges and the effectiveness of its improvement efforts.

The panel makes one specific recommendation regarding data collection, both because knowledge of workforce attitudes is fundamental and because relevant survey information may already exist:

**Recommendation 3.3.** As a first step toward meeting the need for objective evidence and data, NNSA should begin surveying the entire workforce of the nuclear security enterprise (possibly by leveraging existing surveys) so as to gain understanding of attitudes and engagement throughout the enterprise and insight about specific worker concerns.

These recommendations should be acted on quickly and aggressively.

## B

### Individuals Interviewed for This Report<sup>1</sup>

#### National Nuclear Security Administration

Senior officials are listed; other employees of NNSA headquarters were also interviewed but are not listed here.

- Lisa Gordon-Hagerty, Administrator
- William White, Chief of Staff and Associate Principal Deputy Administrator
- Steven Erhart, Director, Office of Policy
- James McConnell, Associate Administrator for Safety, Infrastructure, and Operations
- Robert Raines, Associate Administrator for Acquisition and Project Management
- Charles Verdon, Deputy Administrator for Defense Programs
- Kathleen Alexander, Assistant Deputy Administrator for Research, Development, Test, and Evaluation, Office of Defense Programs
- Raymond Baca, Supervisory Contractor Industrial Relations Specialist, Contractor Human Resources
- Linda Cordero, Director, Office of Budget Formulation and Execution, Defense Programs
- Claire Dunne, Acting Deputy Associate Administrator of Emergency Operations
- Stephanie Duran, Deputy Director, Office of Policy
- Vincent Fisher, Assistant Deputy Administrator, Office of Secure Transportation
- Christine Gibbs, Policy Advisor, Office of Policy
- Scott Handy, Assistant Deputy Administrator for Stockpile Management
- Daniel Hotochin, Senior Program Advisor, Quality Management
- Joshua Jiricek, Executive Action Officer to the Nuclear Weapons Council Standing and Safety Committee
- Kent Jones, Assistant Deputy Administrator, Office of Systems Engineering and Integration
- Brig. Gen. Michael Lutton, Principal Assistant Deputy Administrator for Military Application, Office of Defense Programs
- Patrick Rhoads, Acting Deputy Director, Office of Policy
- David Rude, Chief Learning Officer, Office of Human Capital
- Brooke Samples, Director of International Programs, Office of Defense Programs
- Ken Sheely, Deputy Associate Administrator for Infrastructure, Office of Safety, Infrastructure, and Operations
- Daniel Sigg, Deputy Associate Administrator for Safety
- Ronald Sissel, Deputy Associate Administrator for Financial Management
- Michael Thompson, Assistant Deputy Administrator for Major Modernization Programs

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<sup>1</sup> Titles and positions listed were accurate at the time of the panel's contact.

- Pamela Villegas, Industrial Relations Specialist, Contractor Human Resources
- Oliver Voss, Director, Office of Acquisition Management
- Christopher Yeaw, Chief Scientist, Office of Intelligence, Defense Programs

Discussion Group Participants

- Mark Anderson, Director, Office of Advanced Simulation and Computing and Institutional Research and Development
- Na'ilah Bowden, Program Manager, Office of Infrastructure Planning and Analysis
- Dave Bowman, Deputy Associate Administrator, Office of Counterterrorism and Counterproliferation
- Pat Cahalane, Principal Deputy Associate Administrator, Office of Safety, Infrastructure and Operations
- Sheila Feddis, Acting Director, Office of Infrastructure Operations and Modernization
- Monty Fritts, Project Manager, Material, Recycle and Recovery/Storage Programs, Office of Defense Programs
- Fana Geveyehu-Houston, Director, Office of Cost Performance and Analysis
- Tim Gipe, Program Manager, Office of Advanced Simulation and Computing
- Daniel Gonzalez, Recapitalization Program, Office of Safety, Infrastructure and Operations
- Brian Hooper, Deputy Assistant for Science and Engineering
- Brian Kanagaki, Acting Director, Defense Programs
- Anika Khanna, General Engineer, Office of Infrastructure and Operations
- Jessica Kunkle, Director, Office of Safety, Infrastructure and Operations, and Program Management Office
- David LaGrafte, Associate Assistant Deputy Administrator for Defense
- John Michele, Plutonium Program Manager, Defense Programs
- Johnny Navarus, Nuclear Safety Specialist
- James Peltz, Program Manager, Office of Advanced Scientific Computing and Institutional Research and Development
- Kaylyn Peters, Program Manager, Office of Infrastructure Planning and Analysis
- Kenneth Sheely, Deputy Associate Administrator for Infrastructure
- Becky Sipes, General Engineer, Office of Safety, Infrastructure and Operations
- Janice Stall, Program Management Office, Office of Safety, Infrastructure and Operations
- Conrad Valencia, Nuclear Engineer, Office of Safety, Infrastructure and Operations
- Stephen Wallace, Senior Advisor, Office of Safety, Infrastructure and Operations
- Tom Wilson, Program Management Office, Office of Safety, Infrastructure and Operations
- Jim Winter, Program Lead, Integrated Safety Management

**Kansas City National Security Campus (KCNSC)**

- Mark Holecek, Field Office Manager, Kansas City Field Office (KCFO)
- Jeff Shoulta, Deputy Field Office Manager, KCFO
- Paul Dieckmann, Weapons Quality Assurance Lead, KCFO
- John Ricciardelli, President, Honeywell Federal Manufacturing and Technologies (FM&T)
- Monica Vegge, Senior Manager, Finance, Honeywell FM&T

Discussion Group Participants

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- Shirley Baker, Principal Security Specialist, Honeywell FM&T
- Linda Batrick, Program Security, Honeywell FM&T
- Steve Beeler, Senior Finance Manager, Honeywell FM&T

- Josh Bevivino, Weapons Quality Assurance, KCFO
- Michelle Bright, Principal Mechanical Engineer, Honeywell FM&T
- Pat Cisper, Senior Manager, Honeywell FM&T
- Lillian Cooper, Senior Information Technology Manager, Honeywell FM&T
- Helena Covington, Lead Project Manager for Mission Assurance, Honeywell FM&T
- Tom Davis, Program Manager, Honeywell FM&T
- Paul Dieckmann, Lead, Weapons Quality Assurance, KCFO
- Natalie Elder, Senior Tech Manager Quality Engineering, Honeywell FM&T
- Laurel Fetterer, Security Director, KCFO
- Elizabeth Fossey, Senior Manufacturing Manager, Integrated Supply Chain, Honeywell FM&T
- Andrew Gibler, Assistant Field Office Manager for Environmental Safety and Health, Security, Business Systems, KCFO
- Albert Guarino, Field Office General Counsel, Honeywell FM&T
- Steve Halter, Senior Program Manager, Honeywell FM&T
- Rich Heim, Project Lead, Engineering, Honeywell FM&T
- Angelique Henry, Senior Weapons Quality Assurance Specialist, KCFO
- Tim Hogan, Program Manager, Honeywell FM&T
- Bradley Hughes, Senior Director, Nuclear Weapons Programs, Honeywell FM&T
- Keith Ice, Vice President of Integrated Supply Chain, Honeywell FM&T
- Jim Jamieson, Director, Strategy and Transformation, Honeywell FM&T
- David Jordan, Principal Program Manager, Honeywell FM&T
- John Jungk, Senior Technical Manager, Engineering, Honeywell FM&T
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- John Kendrick, Quality Team Manager, Honeywell FM&T
- Stefan Komarek, Operating Model Support, Mission Assurance, Honeywell FM&T
- Ryan Matthews, Chief Financial Officer, Honeywell FM&T
- Stuart McArthur, Senior Director, Mission Assurance, Honeywell FM&T
- David McMIndes, Chief Technology Officer, Honeywell FM&T
- Michelle Oakes, Program Manager, Honeywell FM&T
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- Matt Smith, Senior Program Manager, Honeywell FM&T
- Tanya Snyder, Communications Lead, Honeywell FM&T
- Edward Stimac, Senior Contracts Manager, Honeywell FM&T
- Beth Walker, Program Engineer, KCFO
- Michelle Walling, Program Management, Honeywell FM&T
- Scott White, Health, Safety and Environmental, Honeywell FM&T
- June Zhuang, Manufacturing Lead, Honeywell FM&T

**Lawrence Livermore National Laboratory (LLNL)**

- William Goldstein, Laboratory Director, LLNL

- Thomas Gioconda, Deputy Laboratory Director, LLNL
- Christopher Brannan, Chief Financial Officer, LLNL
- Peter Rodrik, Field Office Manager, Livermore Field Office
- Janis Parenti, Deputy Field Office Manager, Livermore Field Office

**Los Alamos National Laboratory (LANL)**

- Steve Goodrum, Field Office Manager, Los Alamos Field Office
- Thomas Mason, Laboratory Director, LANL
- Tim Babicke, Deputy Director, Human Resources, LANL
- Richard Fry, Program Manager, Human Resources, LANL
- James Paul Johnson, Chief Financial Officer and Division Leader, LANL

**Nevada National Security Site (NNSS)**

- Steven Lawrence, Field Office Manager, Nevada Field Office (NFO)
- John Benner, Vice President and Deputy Site Manager, NNSS
- David Bowman, (Incoming) Deputy Manager, NFO
- Juan Griego, (Outgoing) Deputy Manager, NFO

**NNSA Production Office (NPO): Y-12 National Security Complex and Pantex Plant**

- Geoffrey Beausoleil, Field Office Manager, NPO
- Morgan Smith, President and Chief Executive Officer, Consolidated Nuclear Security

**Sandia National Laboratories (SNL)**

- Stephen Younger, Laboratory Director, SNL
- Lyle Lininger, Senior Administrator, Business Management Professional, SNL
- John Myers, Senior Director, Human Resources and Communications, SNL
- Jeffrey Harrell, Manager, Sandia Field Office
- Tiffany Pegues, Manager, Compensation, SNL

**Savannah River Site (SRS)**

- Nicole Nelson-Jean, Savannah River Field Office Manager
- Wallis Spangler, Senior Vice President for NNSA Operations and Programs, SRS

**Government Accountability Office**

- Allison Bawden, Director, U.S. and International Nuclear Security and Cleanup Issues
- Quindi Franco, Assistant Director, Natural Resources and Environment
- Amanda Goolden, Analyst, Natural Resources and Environment
- Jason Holliday, Assistant Director, Natural Resources and Environment
- David Trimble, Director, Natural Resources and Environment

**Office of Management and Budget**

- Robert Nassif, Chief, Force Structure and Investment Branch
- Alex Reed, Program Examiner

**Department of Defense**

- Col. Clark Allred, Chief Scientist, Air Force Nuclear Weapons Center

- Steven Amburgey, Deputy Air Force Program Executive Officer for Strategic Systems, Air Force Nuclear Weapons Center
- James Colasacco, Division Chief, Global Strike Capabilities Division, U.S. Strategic Command
- Peter Fanta, Deputy Assistant Secretary of Defense (Nuclear Matters) and Nuclear Weapons Council
- Gen. Daryl Hauck, U.S. Air Force Program Executive Officer for Strategic Systems
- John Hill, Branch Head, U.S. Navy Strategic Systems Program
- Allen Marquis, U.S. Navy Strategic Systems Program
- Rodney Miller, Senior Leader Executive and the Chief Scientist for Air Force Global Strike Command
- Billy Mullins, Associate Deputy Chief of Staff, Strategic Deterrence and Nuclear Integration, Headquarters, A10, Air Force
- Joseph Oder, Director, Air Force Nuclear Weapons Center

**Department of Energy**

- Dan Brouillette, Deputy Secretary and Chief Operating Officer

**Defense Nuclear Facilities Safety Board**

- Col. Thomas Summers, Member, Defense Nuclear Facilities Safety Board

**Other**

- Richard Mies, Commander-in-Chief, U.S. Strategic Command (retired)
- Kathleen Peroff, Deputy Associate Director, National Security, Office of Budget and Management (retired)

## C

**Biographical Sketches of Panel Members**

**Jonathan D. Breul** (Co-Chair) is currently a member of the United Nations Educational, Scientific, and Cultural Organization's Oversight Advisory Committee. Previously, he was the executive director of the IBM Center for The Business of Government and a partner in IBM Global Business Services. Prior to joining IBM, Mr. Breul had a lengthy career in the federal government, concluding as senior advisor to the Deputy Director of Management in the Office of Management and Budget (OMB). He was an adjunct professor at Georgetown University's McCourt School of Public Policy, and received an M.P.A. from Northeastern University and a B.A. from Colby College. He is a fellow of the National Academy of Public Administration.

**Donald Levy** (Co-Chair) is the Albert A. Michelson Distinguished Service Professor of Chemistry Emeritus at the University of Chicago. For 1 decade ending in 2016, he was the university's vice president for research and national laboratories, with responsibility for the oversight of the Department of Energy's (DOE's) Fermi and Argonne National Laboratories. He earned a B.A. from Harvard University in 1961 and a Ph.D. from the University of California, Berkeley, in 1965. After 2 years at Cambridge University as a National Institutes of Health and then North Atlantic Treaty Organization Postdoctoral fellow, he joined the University of Chicago in 1967 and has spent his entire career there. Among his many honors, Professor Levy has served as editor of the *Journal of Chemical Physics* (1998-2007), chair of the American Institute of Physics Editors' Panel (2000-2002), chief executive officer and board member of the UChicago Argonne LLC (2007-2016), vice-chair of the Argonne National Laboratory Board of Governors and chair of its Science Policy Council (2007-2016), member of the Fermilab Board of Directors (2007-2016), and fellow of the American Physical Society, American Association for the Advancement of Science, Optical Society of America, American Academy of Arts and Sciences, and American Chemical Society. Professor Levy is an elected member of the National Academy of Sciences.

**Allan Burman** is president of Jefferson Solutions (Solutions), the government consulting company of the Jefferson Consulting Group. Under his leadership, Solutions provides analysis, evaluation, program management, and acquisition assistance and assessment services to many government departments and agencies. Dr. Burman had a lengthy career in the federal government, serving in policy positions in the Office of the Secretary of Defense and in the White House's OMB. In OMB he served in the Senate-confirmed position of Administrator for Federal Procurement Policy. Dr. Burman is chairman of the Procurement Round Table, a fellow and member of the Board of Advisors of the National Contract Management Association (NCMA), a member of the Partnership for Public Service, and an honorary member of the National Defense Industrial Association. In 2018 he was awarded NCMA's Lifetime Achievement Award, the association's highest honor.

**Keith A. Coleman** is currently assigned as the advanced weapons portfolio manager in Boeing Phantom Works. Mr. Coleman is responsible for new franchise weapon development including all missiles, direct attack, guided projectiles, and hypersonic strike weapons. Mr. Coleman 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 more than 33 years. He was previously assigned as the division chief engineer for Boeing's cruise missile systems and direct attack weapons within Boeing Defense Systems. He 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** is the retired associate director for computation at the Lawrence Livermore National Laboratory (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, multiresolution 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 (FFRDC), 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 served from 2006-2009 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), an FFRDC. Since 1995, Dr. 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 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. Dr. Graham served for 4 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, which led to the current study. Most recently, Dr. Graham led a congressionally mandated study on the management of security operations at DOE’s Category I nuclear sites.

**William Greenwalt** is an advisor and consultant to a range of government and private sector clients on defense and government matters. Previously, Mr. Greenwalt served as a professional staff member for the Senate Armed Services Committee focusing on acquisition, industrial base, and management reform issues. Prior assignments have also included serving as the Deputy Under Secretary of Defense for Industrial Policy, a visiting fellow at the American Enterprise Institute, the vice president for acquisition policy at the Aerospace Industries Association, deputy director for surveys and investigations for the House Appropriations Committee, and federal acquisition policy director at Lockheed Martin. He also served previously in professional staff positions with the United States Senate and the Government Accountability Office.

**Robert Hale** is a senior executive advisor at Booz Allen Hamilton and an adjunct senior fellow at the Center for a New American Security. The Honorable Robert Hale previously served as the Department of Defense comptroller and chief financial officer, and in that role he acted as principal advisor to three Secretaries of Defense on budgetary and financial matters. He also served as the Air Force comptroller. Prior to service in the Department of Defense, Mr. Hale was the executive director of the American Society of Military Comptrollers and held other private-sector positions. His career began as an active duty officer in the U.S. Navy. Mr. Hale received a B.S. with honors and an M.S. in operations research from Stanford University along with an M.B.A. from the George Washington University. Mr. Hale has provided valuable input in the National Academies, including contributing to the National Academies’ recent publication *Building a 21st Century SES: Ensuring Leadership Excellence in Our Federal Government*.

**Barbara Romzek** is a professor of public administration and policy at American University and former dean of American University’s School of Public Affairs. 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 the National Aeronautics and Space Administration, Congress, and the U.S. Air Force, as well as state agencies, local governments, and nonprofit agencies. Dr. 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.

**Merri Wood-Schultz** is a retired fellow and guest scientist at Los Alamos National Laboratory (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.

**Joan B. Woodard** is an independent consultant. She retired in 2010 from Sandia National Laboratories as executive vice president and deputy director. She served as the chief operating officer from 1999 to 2005. During her 36-year career at Sandia, she led the energy technology development programs as well as the national security programs and was the executive with oversight for human resources and compensation as well as budget and finance. She oversaw Sandia's Defense, Homeland Security, and Energy programs. She led several strategic initiatives, including strategies for energy, cybersecurity, and the future of science and technology. Dr. Woodard served as deputy laboratory director of nuclear weapons at Sandia Corporation. Dr. Woodard earned her doctorate degree in mechanical engineering from the University of California, Berkley, and a master's degree in engineering economics from Stanford University.

## D

### About This Study

The National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA)<sup>1</sup> called for a 4½-year study, joint between the National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration (NAPA), to track and assess actions in the nuclear security enterprise aimed at persistent problems of governance and management. In part, the study was intended to force continued attention to these matters that had been diagnosed many times over many years but not successfully addressed. This report is the third in a series of reports to be issued over 2017–2020 as part of that study.<sup>2</sup> The Summaries from the study’s first two reports are included in Appendix A. The overall charge for the National Academies–NAPA study is given in Box D.1.

#### BOX D.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 will issue interim reports every 6-12 months 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.

<sup>1</sup> Section 3137 of the National Defense Authorization Act for Fiscal Year 2016, Pub. L. 112-92 (Nov. 25, 2016).

<sup>2</sup> The study’s first report—National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2017, *Report 1 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press—was released in March 2017. The second report—National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2018, *Report 2 on Tracking and Assessing Governance and Management Reform in the Nuclear Security Enterprise*, Washington, D.C.: The National Academies Press—was released in February 2018.