

Report 2 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

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

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Preface

The Panel to Track and Assess Governance and Management Reform in the Nuclear Security Enterprise was jointly established by the National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration to carry out a 4½-year assessment of the National Nuclear Security Administration's (NNSA's) responses to longstanding problems affecting the nuclear security enterprise. This is the panel's second interim report.

The primary message of this report is that NNSA must quickly create two plans: (1) an integrated strategic plan for the entire nuclear security enterprise, focused on mission execution, and (2) a more complete and better-grounded implementation plan to guide the ongoing program of governance and management reform. With the release of the 2018 *Nuclear Posture Review* and the appointment of a new NNSA Administrator, such a move is entirely appropriate and represents a great opportunity to set effective direction and pace for the enterprise.

NNSA has a history of launching actions without adequate planning. In the course of our study, we were provided with a letter dated July 2, 2012, from NNSA Administrator Thomas D'Agostino to the Chair of the House Committee on Armed Services (Howard McKeon) and the Chair of the House Subcommittee on Strategic Forces (Michael Turner). They had written to President Obama regarding proposed legislation related to NNSA's governance, management, and oversight of the nuclear security enterprise. The D'Agostino letter recounted a long list of reforms that NNSA was undertaking to address governance and management concerns that had been raised by external reviews. We were struck by the similarity between this letter and the Department of Energy-NNSA report to Congress from December 2016, titled *Governance and Management of the Nuclear Security Enterprise*. Both describe multiple processes and activities with no analysis of what problems will be solved, what success would look like, and how progress is to be tracked.

Apparently, Representatives McKeon and Turner had the same response, because their subsequent letter of July 26, 2012, said, in part, "Your response contains a litany of efforts that you indicate will fix these problems—but many of these efforts have been tried in the past or are now several years old. We do not see in your response evidence of a *coherent strategy with a vision of the expected end-state, nor do we see mention of how the individual efforts you outline will help achieve that end-state* [emphasis added]."

Owing to the persistence of governance and management problems in the nuclear security enterprise, and the failure of past attempts to address them, this report calls strongly for a more strategic approach. We encourage the incoming NNSA Administrator to recognize that ongoing activities, while promising in many respects, are insufficient and that a new level of concerted planning, with leadership engagement, is urgently needed.

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

Donald Levy and Robert Shea, *Co-Chairs*
Panel to Track and Assess Governance and
Management Reform in the Nuclear
Security Enterprise

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:

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Elizabeth M. Robinson, NAPA, Air Line Pilots Association.

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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Summary

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.”¹

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.

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

1

Introduction

FIVE SERIOUS CONCERNS LEADING TO THIS STUDY

The congressionally mandated report *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report), released in November 2014, concluded that “the existing governance structures and many of the practices of the [nuclear security] enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term.”¹ That report identified five serious concerns, what it called “systemic problems in both management practices and culture that exist across the nuclear enterprise”²:

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.

The Augustine-Mies panel recommended urgent action to address issues in each of these areas, and that need for urgency is reinforced by the increased attention to the nation’s nuclear deterrent stimulated by the 2018 *Nuclear Posture Review* and related discussions. These concerns are neither merely vexations nor opportunities for improvement. Rather, as noted in the first quote above, together they represent a risk that, left unaddressed, could eventually erode the nation’s ability to provide adequate nuclear security. That erosion can come about from

- confused or competing goals and direction, hindering both the short- and long-term planning and stewardship;
- blurred accountability, which rests with DOE/NNSA (because they are empowered to promulgate rules and define processes), although they can delegate authority;

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

² *Ibid.*, p. x.

- inefficient use of resources, brought about particularly through unnecessary or redundant oversight;
- missed opportunities for scientific advancement owing to risk aversion and a bias toward transactional process and compliance over creativity;
- inconsistent interpretation of rules;
- inadequate information flows; and
- conflicting approval processes with unpredictable outcomes.

The Augustine-Mies report made 19 major recommendations, plus numerous sub-recommendations. Other reports, such as the 2015 study by the Commission to Review the Effectiveness of the National Energy Laboratories, *Securing America’s Future: Realizing the Potential of the Department of Energy’s National Laboratories* (the “CRENEL” report), provided additional recommendations targeting related concerns. However, the systemic summary of concerns listed above as 1–5 provides a useful, high-level basis for assessing whether and how NNSA is making progress to reduce the risk to the enterprise. It is important to stay mindful of those systemic concerns; resolving them—instead of addressing dozens of targeted recommendations—is the ultimate goal.

CHARGE FOR THIS STUDY

Following the release of the Augustine-Mies report, the National Defense Authorization Act for Fiscal Year 2016 (FY2016 NDAA)³ called for DOE to develop an implementation plan for responding to the recommendations in that and similar reports. The NDAA also 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 evaluate the implementation plan, to track the actions proposed in that plan, and to assess progress. This report is the second in a series of reports to be issued over 2017–2020 as part of that study.⁴ The Summary from the study’s first report is included in Appendix A. The overall charge for the National Academies–NAPA study is described in Box 1.1.

BOX 1.1
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.

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

⁴ 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, DC: The National Academies Press—was released in March 2017.

THE PANEL'S TRACKING AND ASSESSMENT OF PROGRESS SINCE ITS FIRST REPORT

Over the 10 months since its first report was released, the panel gathered information through several mechanisms, including site visits to Lawrence Livermore National Laboratory, the Y-12 plant (which included Pantex through a virtual connection), and Sandia National Laboratories in Albuquerque, New Mexico. All site visits involved open-ended and frank discussions with contractor and field office personnel from various levels. Panel members and staff met with field office personnel and laboratory/plant employees both separately and together. (The panel did not attempt to visit Los Alamos National Laboratory in 2017 because high-profile safety and security incidents dominated the laboratory's attention during this period.) The panel also reviewed numerous relevant internal documents, directives, and reports and interviewed senior NNSA personnel and a range of NNSA experts (see Appendix B).

The panel and its staff particularly focused on understanding and assessing two specific NNSA initiatives taken in response to the Augustine-Mies and CRENEL reports: (1) a revised process for laboratory strategic planning, begun in 2016 and expanded in 2017, and (2) a process begun in late 2016 to strengthen site governance and management and the sites' contractor assurance systems (CASs) through peer review and other techniques. More generally, the panel has continued to build its understanding of NNSA's multi-faceted approach to reforming governance and management, to the point where strategic, rather than just tactical, lessons are emerging.

The panel's first report included three recommendations. As part of its investigations leading up to this second report, the panel assessed the NNSA's response to them. Overall, the recommendations of the first report are not fully implemented, and thus there are echoes of them in this report.

The first of those recommendations called for the NNSA Administrator to "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."⁵ Chapter 3 of this report recounts ongoing efforts to improve governance and management, which include steps to clarify roles, responsibilities, authorities, and accountability. However, the panel did not conclude that "urgency" has been demonstrated.

The second recommendation from the first report called for the NNSA Administrator to "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 to establish feedback loops so that burdensome practices are recognized."⁶ This was intended to enable a more objective standard for deciding when some practice is "burdensome" and might be re-engineered. While NNSA does monitor the number of audits and inspections, as discussed in Chapter 3 of this report, the full intent of this recommendation is not yet being appropriately addressed.

The final recommendation of the panel's first report called for the NNSA Administrator to "define an effective mission-focused operating model as the vision for implementing the changes called for in [the Augustine-Mies and CRENEL reports] 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."⁷ Conversely, failure or lack of success should prompt new approaches to achieve desired change. While NNSA has begun to consider measurement and tracking of change, the panel has not seen concrete

⁵ National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2017, *Report 1*, p. 18.

⁶ *Ibid.*, p. 26.

⁷ *Ibid.*, p. 34.

progress or significant attention to change management. And while a focus on mission has been repeatedly emphasized by Administrator Klotz, more work is required to achieve mission focus throughout the enterprise as inseparable from the operations. These topics are discussed more fully in Chapter 3.

STRUCTURE OF THIS REPORT

Chapter 2 of this report recounts one of the promising actions arising from NNSA's attention to strengthening governance and management of the nuclear security enterprise—a new process for laboratory strategic planning. While metrics of improvement are generally absent, and the efforts are still too new to have fully resolved the five serious concerns listed previously in this chapter, this is an example of an activity that appears to be a step in the right direction.

However, it is very clear to the panel that the piecemeal and operational nature of the “strategic” planning initiative is inadequate for building the necessary integrated vision covering the entire nuclear security enterprise. The CRENEL report makes this point strongly with respect to the full portfolio of DOE laboratories, but it also holds specifically for the components of the nuclear security enterprise. The bulk of Chapter 2 argues for the necessity of such an enterprise-wide strategy, explaining what it must encompass and making the case that it can and should be created in a matter of months.

Chapter 3 recounts other signs of progress against persistent governance and management concerns. However, it concludes that the current portfolio of activities to address them is not adequately planned. It argues for a new plan to guide the reform efforts, describing what attributes it must have in order to succeed. To illustrate the persistence of problems, some anecdotal evidence collected during the panel's site visits is described; concerns and frustrations similar to those voiced to the Augustine-Mies panel and others are still heard. The leaders of NNSA's governance and management improvement efforts acknowledge that awareness of those actions has not yet spread widely beyond top management. In addition, the panel and NNSA are aware that change at the scale being attempted by NNSA can take years, as embedded attitudes and processes adjust. In order to inform the ongoing efforts and those yet to come, Chapter 3 also describes the need for data and other objective evidence that will both clearly characterize suboptimal situations and track progress as mitigating actions are taken.

A Strategic Plan Is Needed for the Nuclear Security Enterprise

LABORATORY STRATEGIC PLANNING HAS IMPROVED

Now in its third year, the National Nuclear Security Administration (NNSA) initiative to improve strategic planning at its three laboratories is a promising step toward developing the integrated, enterprise-wide shared vision that is needed to rebuild the federally funded research and development center (FFRDC) relationship. However, because the process is still relatively new and measures of effectiveness have not been established, it is impossible to say how or whether the process has affected the FFRDC relationship or achieved other objectives.

The initiative was set up in partial response to Recommendation 17 in *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report), which calls for the Secretary, Administrator, and National Laboratory Directors to “adopt management practices that serve to rebuild the strategic Government-FFRDC relationship.”¹ Sub-recommendations add that the Secretary and Administrator should “continue to reinvigorate the strategic dialog with the Laboratory Directors,” and leaders in both government and management and operations should “prescribe and enforce behaviors that rebuild credibility and trust.”² Reacting to that recommendation, Section III.C.2 of the December 2016 Department of Energy (DOE)-NNSA report to Congress, *Governance and Management of the Nuclear Security Enterprise*, states that

NNSA has established a laboratory strategic planning function in the NNSA Office of Policy NNSA will work with each of the laboratory directors, headquarters program managers, and NNSA FOMs [field office managers] to establish this new process . . . [which is meant to] strengthen the partnership and trust between NNSA and the national security laboratories, facilitate high-level discussions on the health of the laboratories to enable joint understanding and advocacy for long-term lab stewardship, and close the gaps in the current program and functional planning processes Over time this practice should improve communication and problem identification and result in more focused, timely solutions to problems, including aging infrastructure. NNSA may expand this process to the other NNSA sites in the future.³

NNSA’s laboratory strategic planning initiative was adapted from the strategic planning process used by the DOE Office of Science. In NNSA’s process, each laboratory director engages annually in high-level discussions with headquarters program managers, with the dual purpose of developing joint

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

² *Ibid.*, p. xxiii.

³ DOE and NNSA, 2016, *Governance and Management of the Nuclear Security Enterprise*, Report to Congress, <http://www.osti.gov/scitech/servlets/purl/1357927>, p. 24.

strategy for long-term laboratory stewardship while also strengthening partnership and trust between NNSA and the laboratories.⁴ It is worth noting, though, that increasing mission focus is not explicitly included as an objective.⁵ It is also worth noting that the attendance by headquarters leaders at the in-person presentations of the laboratory strategic plans appears to have been inconsistent, thus reducing the effectiveness of what is meant to be a strategic dialogue. Moreover, this annual process actually has a fairly short-term and operational focus—as evidenced by the process guidelines, discussions with the laboratories, and the plans that have resulted so far—in contrast to what the panel would expect from true “strategic planning,” which is described at the beginning of the next section of this chapter.

The laboratory strategic planning initiative has value in terms of improving information-sharing and communication. Laboratory directors and FOMs interviewed by the panel noted that they particularly valued the opportunity to make a coherent, complete presentation about their laboratories and their futures to headquarters functional leaders and personnel, many of whom did not have a big picture perspective on the laboratories’ potential, needs, and future. NNSA told the panel that the laboratory strategic planning process has improved communication.

EXPANDING STRATEGIC PLANNING TO COVER THE ENTIRE ENTERPRISE

However, the strategic planning initiative described above, while reported to be productive, is only for the three NNSA laboratories and does not yet extend to other elements of the nuclear security enterprise. Furthermore, this laboratory strategic planning is not guided by an NNSA-wide strategic plan, nor does NNSA use the laboratory strategic plans as a foundation for integrative planning. (The closest approximation to an NNSA strategic plan—DOE’s and NNSA’s *Enterprise Strategic Vision* document from 2015—is primarily an operational plan focusing on specific projects, which does not truly provide the necessary strategic vision.⁶) The panel conceives of a strategic plan in the way that that term is used widely, especially in business—as a high-level description of an organization’s priorities for achieving objectives to ensure successful execution of its mission. Typically, a strategic plan is developed after an organization or its leadership develops and promulgates a vision for what the organization aspires to and how it might attain that state. Effective strategic plans refer to or build on that vision and/or objectives developed by leadership, possibly in collaboration with others.⁷ At present, a strategic plan that covers the entire nuclear security enterprise does not exist.

The Augustine-Mies report concluded that “a major cultural overhaul will be needed [at DOE/NNSA] to align the structure, resources, and decision processes with mission priorities.”⁸ That report noted that DOE/NNSA compares poorly with successfully managed organizations where a “[s]ingle strategic planning reference document guides all decisions.”⁹ Moreover, many of the concerns and recommendations in the Augustine-Mies report call for DOE/NNSA to better align organizational resources with mission. Effective strategic planning can be a mechanism to help do that. For example, the Augustine-Mies panel found that the failure to provide clear direction nationally and within the enterprise

⁴ NNSA memorandum, from Administrator Frank G. Klotz, for Office of Policy Director Steven C. Erhart, “2016 Governance and Management Priorities” (March 22), p. 2; DOE and NNSA, 2016, *Governance and Management*, pp. 23-24.

⁵ DOE and NNSA, 2016, *Governance and Management*, p. 24.

⁶ DOE and NNSA, 2015, *Enterprise Strategic Vision*, https://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/Strategic_Vision_2015_8-21_screen%20quality.pdf.

⁷ Note that this concept of a “strategic plan” differs somewhat from how the term is used in the Government Performance and Results Act of 1993, which requires federal agencies to develop strategic plans regularly.

⁸ Congressional Advisory Panel, 2014, *A New Foundation*, p. 37.

⁹ Congressional Advisory Panel, 2014, *A New Foundation*, pp. 38, 89, and 152. The CRENEL report (vol. 1, page 49), also called for strategic planning jointly between NNSA and DoD and between DOE/NNSA and the agencies that procure laboratory services, but such interagency strategic planning is not addressed in this discussion.

has left individuals and groups competing for resources and attention, which has contributed to the lack of a “unifying focus on mission deliverables.”¹⁰

The panel feels that it is essential for NNSA to shift from a tactical to a strategic focus, because of recent major policy-determining events such as the release of the 2018 *Nuclear Posture Review*, possible significant funding increases, and the installation of a new NNSA Administrator. Developing a clear enterprise-wide strategy—a step the panel has been told is already under consideration within NNSA—will naturally identify governance and management challenges that impede progress. But that 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.

The development of an enterprise strategic plan is both a challenge and an opportunity. It is a challenge because it is clearly an ambitious task. In addition to addressing how the multiple components of the enterprise will pull together to accomplish a demanding (perhaps expanding) mission, the enterprise strategic plan also needs to reflect the constraints and uncertainties surrounding the enterprise. The nuclear security enterprise has multiple stakeholders who jointly set its goals and budgets while introducing unpredictable elements. The enterprise strategic plan, which the panel suggests could have a time horizon on the order of a decade, has to be developed with their buy-in. Developing such a plan is a great opportunity, not only to introduce a fresh, stronger vision for the enterprise, but also to address persistent problems that have resisted past efforts at solution.

The process for developing and implementing an integrated, enterprise-wide strategy consists of three discrete steps:

1. *Formulate strategy.* This is best done by leaders from across the nuclear security enterprise, both government and contractor. They must first (as noted above) establish a vision for what the enterprise aspires to and how it might attain that state. Strategy-making should be collaborative, to include participation by other organizations, including service-delivery partners and stakeholders. Such an approach not only produces a better strategy, but also fosters communication and buy-in throughout the enterprise. Formulation of a strategy by leaders and managers is essential if a large enterprise is to be accountable to its mission and meet difficult challenges successfully. The goal of this first step is conceptual, not to produce a document.
2. *Articulate and transcribe the strategy—in plain English—and communicate it widely.* This step helps to sharpen the thinking, is important for accountability and transparency, and serves as a record of the foundations of the strategy. At this point, each part of the strategy should describe how it contributes to the overall vision and what success will look like.
3. *Make the strategic goals operational.* Elaborate the strategies into implementation plans—detailed programs and action plans with assigned responsibilities, schedules, budgets, control systems, measures or indicators of success with real-time organizational feedback, communication plans, and other elements as needed. The implementation plans should facilitate active tracking of progress on a regular basis, using the agreed-upon indicators of success, and sharing of progress data with those affected.

Creation of this enterprise strategic plan needs to be carried out with urgency. The 2018 *Nuclear Posture Review* cannot be effectively implemented until the enterprise strategic planning is developed, and so the nuclear security enterprise needs the guidance this strategy will provide. Development of such

¹⁰ Congressional Advisory Panel, 2014, *A New Foundation*, pp. xiv, 37, and 40.

a strategy should be accomplished in months, not years. Once the new Administrator has settled in, building an enterprise strategic plan will create a common understanding across leadership of the top-level goals and a vision for how the components of the enterprise will work together. With the appropriate degree of urgency, the enterprise strategic plan should be in place within 6 months.

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 is to advance top-down, bottom-up, and lateral integration and alignment across the enterprise. The strategy should focus on mission-related issues, but it also needs to 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 are tools to accomplish the vision in the enterprise strategic plan, and they should continue while that plan is being developed. For example, NNSA’s leadership of and engagement with the governance and management reform work has begun to improve communication substantially among the key components of the weapons complex, which represents a critical step toward rectifying the breakdown in communications and trust highlighted in the Augustine-Mies report. However, these steps alone are insufficient; they need to be tied to a mission-focused, enterprise-wide concept of operations and strategic plan. In addition, NNSA should continue its current laboratory strategic planning initiative to develop a process with the laboratories that is truly strategic, rather than operational. Those high-level strategy discussions could occur annually, with major revisions of the laboratory plans on a less frequent basis (every 4 or 5 years). The plans resulting from these discussions should be shared throughout the nuclear security enterprise to improve communication, transparency, and accountability.

Progress, but Continuing Concerns

The National Nuclear Security Administration (NNSA) has made progress in implementing changes aimed at addressing some of the concerns raised by *A New Foundation for the Nuclear Enterprise* (the “Augustine-Mies” report) and other reports. In these areas it should continue building on the progress achieved. The necessary change will be impossible without leadership commitment. The panel has been impressed by the people who have played important roles in improving governance and management of the nuclear security enterprise, including former Administrator Klotz, Acting Deputy Administrator White, Acting Administrator Erhart, and several of the top staff members. This group is capable, positive, thoughtful, and forward-thinking. In addition, the panel was generally impressed by the level of partnering and collegiality between management and operating (M&O) contractor leadership and the field office managers (FOMs) at the three sites visited in 2017. Field offices appeared empowered to perform a good degree of localized decision making, and lines of authority seem to be clearer than what was described in previous studies. These encouraging changes were partially attributed to the elevation of FOMs to report directly to the Administrator, putting them on the same level with other senior NNSA officials. Communications between the FOMs and M&O leadership, and between FOMs and the Administrator, appear to be strong at the sites visited. The nascent work to improve site governance, and thereby a healthier relationship between the government and its M&O contractors, is an example of a promising step. This is discussed further in this chapter.

However, in spite of the signs of progress reported, there continue to be reports of ongoing frustrations and inefficiencies of the kind that the Augustine-Mies panel and other groups identified. The panel heard a number of such reports during its site visits, evidencing persistent concerns about NNSA’s management of the large-scale change necessary to implement the Augustine-Mies report’s recommendations. Some of these concerns are discussed later in this chapter. More generally, though, there is an urgent need for NNSA to develop a true vision to guide its efforts to reform governance and management and adjust some aspects of culture throughout the nuclear security enterprise. A much improved implementation plan for governance and management reform can be developed once such high-level planning has occurred.

NNSA’S DECEMBER 2016 GOVERNANCE AND MANAGEMENT IMPLEMENTATION PLAN IS INADEQUATE

NNSA has undertaken a number of activities aimed at responding to the recommendations of the Augustine-Mies report and other studies, as detailed in the December 2016 Department of Energy (DOE)-NNSA report to Congress, *Governance and Management of the Nuclear Security Enterprise* (the “Implementation Plan”), and elsewhere. Many of these activities appear to be constructive and useful. However, the panel concludes that this collection of activities, and its documentation in the Implementation Plan, is not sufficient to address the major systemic concerns identified by the Augustine-Mies report. Specifically, DOE/NNSA have not provided clear statements of how one would know that success has been achieved, nor why these and other ongoing activities are promising means for achieving

the desired outcomes. In addition, the panel finds that despite Administrator Klotz’s personal focus on “Mission First,” successful mission performance is not clearly and consistently articulated as a goal or constraint in the discussions of some key activities included in the Implementation Plan.

The Augustine-Mies report and *Securing America’s Future: Realizing the Potential of the Department of Energy’s National Laboratories* (the “CRENEL” report), along with others, have said that the nuclear security enterprise urgently needs some fundamental changes, not mere adjustments to management processes. (The panel believes the word “foundation” was chosen deliberately for the title of the Augustine-Mies report.) Long-term problems require a long-term strategic approach. However, the December 2016 Implementation Plan instead provides primarily a set of activities to address discrete issues. NNSA did not articulate a comprehensive view of the problems and of the necessary crosscutting changes, nor did it adequately describe how or why specific proposed activities will in fact address the concerns raised by the Augustine-Mies report. The Implementation Plan does not describe how NNSA will determine whether the steps it takes are successful. The panel is reminded that the Augustine-Mies report said, “If action is reasonably prompt, measurable progress should be observed very quickly—in a matter of a few months,”¹ and it went on to suggest 15 “concrete indicators of change” that should be observable within 2 years.

It is reasonable to ask whether it is even possible for DOE/NNSA to correct the problems identified by the Augustine-Mies report and elsewhere, given their long persistence. The panel has seen some evidence of improvement, but leadership needs to continue to give a high priority to reform of governance and management. Those in charge of reform efforts need to avail themselves of the best practices used by other organizations that have successfully changed their practices and culture, including for the strategic planning emphasized in this report. The panel has not examined whether a structural change in the organization is necessary.

Any attempt to create an operational plan for reforming governance and management needs to build on an overall vision of what success would look like—addressing the five serious concerns revisited in Chapter 1 in a way that is informed by the enterprise strategy recommended in Chapter 2 of this report. NNSA leadership should devise and own a clear strategy and plan for addressing long-term systemic governance and management problems. It is important that both the strategy and plan be recognized as crucial to the success of the nuclear security enterprise and to overall mission success.

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.

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

NNSA has already embarked on useful activities aimed at reforming governance and management in response to the serious concerns identified by previous reports, but it still lacks a concept of operations and a real implementation plan, which would 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.

The panel's first report included the following Finding: "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."² This Finding reflected the panel's recognition of the following foundational steps toward successful change: strong support from the NNSA Administrator and the previous DOE Secretary, appointment of a senior person (the head of the NNSA Office of Policy) to lead the change-management efforts, and that person's success in enlisting several strong senior leaders to play key roles. However, in the time since its first report, the panel has become increasingly concerned about other important foundational elements of change management, items 1–7 above, which have not been established and promulgated. The absence of these elements after 2 years of effort is a major concern.

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 is distinct from, but connected to, the enterprise strategic plan discussed in Chapter 2 and, specifically, Recommendation 2.1. Successful development of this plan, and execution of the actions described in it, will combine to create a path toward major change.

² 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, DC: The National Academies Press, pp. 33-34.

SOME PROMISING DEVELOPMENTS ON WHICH TO BUILD

Improvements to Site Governance

One of the most promising initiatives to date has been NNSA's work to improve site governance, particularly improving communication and transparency so that federal oversight can be applied most effectively and efficiently. This helps address the fourth serious concern of the Augustine-Mies report: "Dysfunctional relationships between the government and its [M&O] site operators, which has encouraged burdensome transactional oversight rather than management focus on mission execution."³

One step toward improving site governance was the NNSA Administrator's decision to give NNSA FOMs direct reporting lines to the Administrator. This step seems to be well targeted to the goals of Augustine-Mies Recommendation 9, which calls for the establishment of a simple, clear line-management operating structure that both synchronizes activities across programs, mission-support functions, and operating sites and provides leadership focus for key programs. (The Implementation Plan does not make that connection.) The text in the Augustine-Mies report that directly follows that recommendation provides an apt description of the purpose of that change: "An effective mechanism would solidify the decision authority of the Director and coordinate the efforts of all the key officials accountable for executing the program An effective mechanism will permit the participants to share information regularly across sites, programs, and functions. It will provide a clearinghouse for raising issues in the execution of programs and for considering strategies for resolving them."⁴

To the extent that communication is coordinated through the FOMs, these goals may be met. As stated in that same text, "Over time, the discipline of exercising leadership and management roles through this mechanism will reinforce the needed management culture by improving communications, understanding, and working relationships."⁵ That goal of adjusting management culture—to reestablish trusted relationships between government and its M&O contractors—is indeed the ultimate purpose of reform efforts.

Another promising step for site governance is NNSA's development of an initiative that uses peer review to improve practices at individual sites. In a memorandum dated March 22, 2016, the NNSA Administrator laid out his top five governance and management initiatives for transforming NNSA into a highly effective organization. One of those initiatives briefly outlined how site governance should be restructured. NNSA elaborated on and memorialized this vision by promulgating a supplemental directive on August 12, 2016, entitled "Site Governance" (NNSA SD 226.1B). On November 23, 2016, DOE issued a policy statement to further clarify various federal officials' roles and responsibilities in the governance of the National Laboratories across the Department (DOE P 112.1). Then, by memoranda issued on December 16, 2016, and June 7, 2017, Administrator Klotz established and chartered the Site Governance Executive Steering Committee to drive implementation of the NNSA's site governance initiative.

The vision for site governance reform, as laid out by Administrator Klotz and elaborated in subsequent materials, has the following key elements:

- The government, the M&O site operator, and the contractor's corporate parents are expected to work cooperatively to ensure mission performance.
- The roles of the federal personnel in headquarters program offices, functional support offices, and field offices in oversight of the site operation are clarified.

³ Congressional Advisory Panel, 2014, *A New Foundation*, p. x.

⁴ *Ibid.*, p. 55.

⁵ *Ibid.*, p. 55.

- Peer review will be used at each site to collaboratively review the contractor assurance system (CAS) and the effectiveness of the site governance arrangements there and to identify lessons learned and opportunities for improvement.

During its first year of operation, the Site Governance Executive Steering Committee developed guiding documents for its process, developed a design document for governance training for NNSA’s federal workforce (to be made available to the M&O workforce, too), set in motion the design for governance and leadership training to NNSA’s senior executives, and conducted two pilot peer reviews at Nevada National Security Site (NNSS) and Lawrence Livermore National Laboratory (LLNL). These are called peer reviews because the invited participants are explicitly asked to critique the CAS and its use so as to prompt improvements, and participants are likewise expected to contribute their varied perspectives to assess how effectively the partners at a given site are addressing typical governance challenges. Equally explicitly, these site reviews are not cast as “evaluations” or “assessments” wherein the site’s CAS is rated or ranked.

A report is developed by the peer review team in the weeks following each site’s session, highlighting notable practices and making recommendations for improvements. In some cases, these recommendations may apply across all sites or result in changes to the peer review process, or—as planned for 2018—lead to changes to key directives such as SD 226.1B. In addition, those involved are explicitly charged with improving the process each time, and interviewees explained that significant improvements were made between the first pilot peer review at NNSS and the second pilot peer review at LLNL.

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.

Other Promising Developments

Other actions taken in response to the Augustine-Mies report and other reports—as described in NNSA’s May 2015 Report to Congress on the final Augustine-Mies report, the December 2016 Implementation Plan, and elsewhere—are also promising. While the panel is unable to assess the efficacy of most of these actions because no initial goals were set and no measures of success have been developed, the steps described in the following sections appear to show progress, and they can be the foundation on which to build a more complete and strategic plan for change. The key step to ensuring that these actions result in the desired improvements is to implement the list of seven elements that follow Finding 3.1.

Sustained National Leadership

The first serious concern from the Augustine-Mies report, “A lack of sustained national leadership focus and priority,”⁶ is not within the control of NNSA. However, NNSA reports that it has taken steps to help raise the profile of nuclear security, by increasing the number of interactions it has with Congress.⁷ This effort, plus the recent release of the 2018 *Nuclear Posture Review*, should help raise the level of national attention to the nuclear security enterprise and its mission. However, NNSA’s actions cannot guarantee an increase in attention or involvement of national leadership.

Infrastructure and Project Management

Concern about infrastructure needs and the impact of deferred maintenance has been recognized within the nuclear security enterprise for years. Under the direction of the Associate Administrator of the Office of Safety, Infrastructure, and Operations (NA-50), an Infrastructure Roadmap was issued in March 2017 to improve NNSA infrastructure management.⁸ The panel was told that, using new data-driven, risk-informed infrastructure tools, NA-50 has made improvements and progress in tackling significant infrastructure needs, a fact that was also noted by field office and laboratory personnel during site visits.

The Infrastructure Roadmap is an encouraging development, in light of what the Augustine-Mies report said about NNSA’s infrastructure:

The nuclear enterprise is failing to provide for needed nuclear facilities and infrastructure modernization. Aside from capital investments in major nuclear facilities, discussed previously, there is an ongoing need to maintain, upgrade, and modernize facilities across the operational sites While customers of the enterprise widely recognize the need to recapitalize NNSA’s equipment and facilities, investments in infrastructure often do not receive the same consideration as program work. The enterprise’s deferred maintenance and long-delayed capital construction projects are looming problems. Current estimates place immediate deferred maintenance requirements at \$3.5 billion. Throughout the enterprise, the panel heard evidence of failing infrastructure, lack of sufficient funding, and practices that will inevitably increase future costs. Neglect of facilities also contributes to workforce morale and impacts hiring and retention.⁹

In addition, Augustine-Mies Recommendation 13 called for improvement in construction project management capabilities and adoption of improved practices. In 2013, before that report was released, the DOE Secretary began studying how to improve management of major projects, and certain practices were codified in policy in 2014–2015. According to Section III.B.8 of the Implementation Plan, “NNSA has been removed from the GAO high-risk list for projects under \$750 million for the fourth year in a row [2013–2016, and] . . . has evolved, on a portfolio basis, from delivering its projects over budget to delivering them 5 percent under budget”¹⁰

⁶ Congressional Advisory Panel, 2014, *A New Foundation*, p. x.

⁷ NNSA’s Office of External Affairs recorded more than 250 briefings, meetings, hearings, and Administrator or Principal Deputy Administrator engagements with Congress from January through November 2017.

⁸ National Nuclear Security Administration, 2017, *NNSA Infrastructure Roadmap: Safe Operations, Effective Infrastructure, Enterprise Services*.
https://nnsa.energy.gov/sites/default/files/nnsa/inlinefiles/nnsa_infrastructure_roadmap.pdf.

⁹ Congressional Advisory Panel, 2014, *A New Foundation*, p. 47.

¹⁰ DOE and NNSA, 2016, *Governance and Management of the Nuclear Security Enterprise*, Report to Congress, <http://www.osti.gov/scitech/servlets/purl/1357927>, p. 19.

Culture Change

In its first report, the panel suggested that NNSA should issue a clear statement of “commander’s intent” to provide guideposts for reforming and shaping behaviors across the enterprise. To date, the panel is not aware that this has been done, but it has learned that as part of developing training for the site governance and management peer review system, an online course is being developed that will include specified cultural behaviors for all governmental (and, ultimately, M&O) parties. This training, as it is made available, has the potential to help shape NNSA’s culture in beneficial ways.

Further, the head of the NNSA Office of Policy has used the panel’s observations from site visits to create a more uniform awareness among the Administrator’s direct reports that governance and management problems persist, which is a first step toward their recognizing that change is necessary.

The need for reconciling disparate attitudes and assumptions—workplace culture—was also illustrated anecdotally by a field office manager in reference to Administrator Klotz’s specific instruction that each field office should improve its relationship with its laboratory, to the extent of being “an advocate for the lab” when appropriate. Employees in that field office had mixed reactions to that goal, and the FOM had to work to develop a shared understanding among the staff with regard to their appropriate oversight roles. This FOM thus considered cultural change to be essential and worked with the staff to ensure that their working relationships with the laboratory were properly aligned with the Administrator’s values.

NNSA as a Desirable Workplace

Based on publicly available results from the annual Federal Employee Viewpoint Survey,¹¹ overall morale (satisfaction and engagement) among NNSA federal employees appears to have improved from 2015 to 2016, and again from 2016 to 2017. While morale and employee satisfaction of NNSA employees was not raised as an issue by the Augustine-Mies report, satisfaction and engagement are generally seen as important indicators of “organizational health.” Thus this improvement is an encouraging indication that may improve the chances of success for change initiatives.

Greater Involvement in Site Management and Operations by the Corporate Parents

NNSA has told the panel that it is working to encourage corporate parents of M&O contractors to take a more active and productive role in applying corporate methods of management, as was recommended by the Augustine-Mies report. NNSA’s Supplemental Directive on “Site Governance” (SD 226.1B) presents a conceptual framework that explicitly increases the role and visibility of corporate parents. As part of this, a representative of the site’s corporate parent participates in the peer review process for each site, and special attention is paid to identifying the strengths of CAS and management assurance systems that the corporate parent brings to the functioning of each location.

OPERATING CONCERNS IDENTIFIED FROM SITE VISITS AND INTERVIEWS

In addition to the crosscutting concern about NNSA’s change-management efforts, explained in the first section of this chapter, the panel observed some specific operating concerns from its site visits and interviews, broadly grouped into the following categories:

¹¹Survey reports are available at <https://www.opm.gov/fevs/>.

- Uneven awareness of leadership’s overall message and focus;
- Burdensome and uneven oversight, including from non-NNSA sources, and continuing concerns about data calls;
- Incomplete or confused understanding of roles and responsibilities;
- Narrow interpretations and or/enforcement of contract provisions or rules that frustrate M&O personnel;
- Risk aversion by some federal personnel;
- Loss of values underlying the federally funded research and development center model: Scientists and engineers report feeling that as “contractors” they must focus on short-term tasks and schedules instead of pursuing innovative solutions or advances with longer-term payoffs;
- Fragmentation of funding;
- Occasional human resources issues (e.g., constraints that hinder rotational assignments, delays obtaining clearances) that may limit laboratories’/sites’ ability to attract and maintain the caliber and quantity of needed scientific and research talent; and
- At field offices, tight staffing to meet responsibilities and potential impact of retirements.

Anecdotal accounts of concerns are only suggestive, and systematic data collection is needed to properly examine these topics. Here the panel cites two illustrative examples of such concerns:

Interpretation of contract provisions. At one location, multiple laboratory staff raised concerns about the stringency with which certain federal rules are interpreted, especially with regard to contractor decisions about purchasing and construction. Contractor personnel felt they had to jump through as many requirement “hoops” as they would if they were federal employees, which undercuts the intended advantage of a government-owned/contractor-operated facility.

In contrast, a senior headquarters official expressed doubt that more stringent contract interpretations were driven by NNSA. He said that the recent trend has been to delegate more and more decision making to the M&O contractors, and it was unlikely that the government was imposing extra requirements and oversight. This indicates the need to continue to improve communications between contractors and field offices and between field offices and headquarters in order to sort out such issues and mitigate this kind of frustration.

Audits and data calls. While NNSA reports that the number of audits and data calls is decreasing, employees at several sites told the panel that the number of data calls seems to be unchanged. At least one laboratory is working to make CAS information accessible to field office staff, which may help the latter access more information directly rather than having to issue a data call.

Frustration with external audits and oversight was reported by personnel at every location. The number of investigations launched by DOE’s Office of the Inspector General, the Government Accountability Office, the Defense Nuclear Facilities Safety Board, as well as by state and local regulators is outside of NNSA’s control and poses an ongoing challenge. Staff at multiple sites said that external reviews are time-consuming, uncoordinated, burdensome, inefficient, typically compliance-based, focused on process rather than outcomes, and not always of much use when completed because they take so long.

In spite of these and other operational concerns, staff members at the sites the panel visited are nevertheless clearly engaged in and proud of their work. They tend to describe the frustrations associated with governance and management as annoyances they can adjust to—at the loss of some efficiency—rather than roadblocks to success. But, as explained in Chapter 1, problems with governance and management pose a real risk to the nation’s ability to provide adequate nuclear security.

THE NEED FOR DATA AND OTHER OBJECTIVE EVIDENCE

Data and other objective evidence (e.g., from structured interviews) 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 to truly understand problems and evaluate progress. A specific illustrative example was mentioned in the panel's first report:

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.¹²

Absent a solid base of evidence, NNSA appears to be relying on piecemeal and anecdotal information. For example, the reduction in complaints raised to the Acting Deputy Administrator and counts of particular types of data calls and audits were cited as a way to assess whether burdensome practices have declined. But some activities that feel burdensome are not captured through these counts, and numbers alone are not sufficient in any case because "burden" can result from attributes that are not captured by tracking the number of instances. Thus, more informative metrics are needed.

Another opportunity for improved understanding exists in connection with decisions about risk. Data on instances of disagreements about the acceptable level of risk, as apparently occurs occasionally between federal employees and laboratory or plant employees, could provide insight into the frequency and nature of such disputes, the positions of individuals who tend to disagree, and the pathway and time frame by which disputes are handled and resolved. Absent such basic data in an accessible format, it is difficult to find policies and actions that can help forestall or simplify future disputes.

Data and metrics are necessary to inform understanding of at least the following aspects of the nuclear security enterprise:

- Is the enterprise meeting its commitments, such as for mission deliverables?
- Is it providing state-of-the-art research and intelligence support?
- Is the enterprise investing sufficiently and effectively to sustain infrastructure and other capabilities?
- Are workers engaged? Is the work environment attracting and retaining the right caliber of people?
- Are operations understood and controlled well?
- Are associated risks reported and managed appropriately?
- Are available resources used effectively and focused on the right objectives?

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.

¹² National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, 2017, *Report 1*, p. 26.

For example, the apparent improvements in communication within the nuclear security enterprise—between field offices and M&O contractors, between field offices and headquarters, and between laboratories and others involved in regular meetings of boards, councils, and working groups—might offer more opportunities for disputes and process inefficiencies to be shared and resolved. But the panel is not aware of any concerted effort to monitor trends or to draw links between such issues and the governance and management problems. NNSA does not know whether such activities have improved trust, increased collaboration, improved transparency, and so on. Such data and links are necessary in order to define metrics of success or to clarify whether and how success can be defined and monitored.

Further, because currently governance and management problems are largely revealed anecdotally—through individual experiences—NNSA needs to monitor the level of satisfaction of employees throughout the nuclear security enterprise regularly. Just as NNSA benefits from insights revealed through the annual Federal Employee Viewpoint Survey, it needs to learn about the attitudes and levels of satisfaction of non-federal employees across the enterprise. Many of the M&O contractors may already conduct such employee satisfaction surveys, so there could be ways for NNSA to tap into or augment existing data and questions. This is not to say that workforce data are all that needs to be collected. Rather, they are highlighted here because they appear to offer useful basic information that might be available with relative ease.

Because surveying is an art as well as a science, useful data collection may best be contracted out to an experienced professional firm. Such a firm can also navigate privacy constraints and policies and laws that aim to protect workers from intrusive burdens.

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.

Such an enterprise-wide survey would provide a foundation for tracking the effects of governance and management reform while helping to clarify what additional data are needed. In addition to gathering basic information about attitudes throughout the enterprise, NNSA should also routinely assess its own progress toward meaningful change. But this will be useful only to the extent that it reflects an insightful understanding of how much progress has been made against the ultimate goals. Merely indicating that a near-term action has been completed, for example, without also reflecting how effective that action has been against a meaningful element of change, is not helpful.

Any such regular, routine review and assessment also must be widely shared across NNSA so as to continue to engage all in achieving the strategic goals NNSA has set. Thus, it would be important that such scoring be rigorous if it is to be credible and effective in providing incentives that produce lasting results.

Appendixes

A

Summary from the Study's First Report

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

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

Similar issues were raised in another congressionally mandated report released in 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories* (the “CRENEL” report),² which examined all 17 of the DOE laboratories, including the 3 NNSA laboratories.

NOTE: Reprinted from “Summary,” pp. 1-4 in 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, DC: The National Academies Press, doi: <https://doi.org/10.17226/24749>.

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

² Commission to Review the Effectiveness of the National Energy Laboratories, 2015, *Securing America's Future: Realizing the Potential of the Department of Energy's National Laboratories: Final Report of the Commission to Review the Effectiveness of the National Energy Laboratories*,

Its 36 recommendations cover topics such as rebuilding trust, maintaining alignment and quality, managing effectiveness and efficiency, and ensuring lasting change.

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

BOX S.1
Statement of Task

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

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

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

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

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

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

visits, and data calls—fuels inefficiencies, per past reports. Balancing the burden and value of necessary oversight has not been approached systematically, and it could be.

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

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

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

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

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

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

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.

B

Interviewees

Association on Productivity and Quality Management

- Cindy Hubert, Executive Director of Client Solutions

Booz Allen Hamilton

- Ted Sniffin, Executive Vice President, Director of Business Development
- Richard Goffi, Vice President
- Patti Gaston, Senior Associate

Congressional Staff

- Augusta Binns-Berkey, Professional Staff Member, Senate Armed Services Committee
- Jonathan Epstein, Counsel, Senate Armed Services Committee
- Drew Walter, Professional Staff Member, House Armed Services Committee

Department of Energy

- Joseph McBrearty, Deputy Director for Field Operations, Office of Science
- Cherry Murray, former Director, Office of Science
- Daniel Wilmot, Deputy Chief of Staff

Government Accountability Office

- Allison Bawden, Acting Director, Natural Resources and Environment Team
- David Trimble, Director, Natural Resources and Environment Team

Lawrence Livermore National Laboratory (LLNL) (Senior officials are listed; numerous employees of the Livermore Field Office [LFO] and the laboratory were also interviewed but are not listed here.)

- William Goldstein, Laboratory Director, LLNL
- Thomas Gioconda, Deputy Laboratory Director, LLNL
- Peter Rodrik, Field Office Manager, LFO
- Janis Parenti, Deputy Field Office Manager, LFO

National Nuclear Security Administration

- Frank Klotz, Administrator (through January 19, 2018)
- William “Ike” White, Chief of Staff and Acting Deputy Administrator
- Steve Erhart, Director, Office of Policy, Acting Administrator (effective January 20, 2018)
- Faiza Akhtar, Support Service Contractor
- Oliver Bosch, Acquisition and Project Management
- Dean Childs, Director of Audits and External Reviews
- Doug Dearolph, Manager, Savannah River Field Office (retired)
- Christy Drewry, Authorization Basis Engineer and DELTA Chair

- Stephanie Duran, Deputy Director, Office of Policy
- Paul Jenkins, Office of Human Capital Management Programs
- Cindy Lersten, Senior Advisor, Office of Policy
- James McConnell, Associate Administrator for Safety, Infrastructure, and Operations
- Nicole Nelson-Jean, Savannah River Field Office Manager; Chair of the Site Governance Executive Steering Committee
- Melissa Otero, Governance Subject Matter Expert, Office of Human Capital Management Programs
- Robert Raines, Associate Administrator for Acquisition and Project Management
- David Rude, Chief Learning Officer, Office of Human Capital
- Carol Sohn, Deputy Manager, Nevada Field Office

Sandia National Laboratories (SNL)—Albuquerque (Senior officials are listed; numerous employees of the Sandia Field Office [SFO] and of SNL were also interviewed but are not listed here.)

- Steven Younger, Laboratory Director, SNL
- David Douglass, Deputy Laboratory Director, SNL
- Jeff Harrell, Manager, SFO
- Mike Duvall, Deputy Manager, SFO

Y-12 plant (Senior officials are listed; numerous employees of the National Production Office [NPO] and M&O contractor [CNS] were also interviewed but are not listed here.)

- Morgan Smith, President and Chief Executive Officer, CNS
- Michelle Reichert, Deputy Enterprise Manager, CNS
- Geoffrey Beausoleil, Field Office Manager, NPO
- Teresa Robbins, Deputy Field Office Manager, NPO