

A New Foundation for the Nuclear Enterprise

Report of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise

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Preface

Section 3166 of the Fiscal Year 2013 National Defense Authorization Act establishes the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise and tasks the advisory panel to offer recommendations “...with respect to the most appropriate governance structure, mission, and management of the nuclear security enterprise.” This report summarizes the panel’s findings on the current health of the enterprise, examines the root causes of its governance challenges, and offers the panel’s recommendations to address the identified problems. Appendix A contains the Section 3166 language on the panel’s charter; the panel members’ biographies are provided in Appendix B.

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Executive Summary

The course to improve the nation’s nuclear security enterprise seems clear...and the National Nuclear Security Administration has not been on it.

—Testimony to the panel (unattributed)

The Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise was tasked by the U.S. Congress to examine the mission, organization, and management of this enterprise and consider alternative governance models. The panel notes from the outset that there is no question as to the efficacy of the nuclear deterrent for the foreseeable future. The nuclear stockpile is safe, secure, and reliable, and the quality of science and research is undiminished. However, the panel finds that the existing governance structures and many of the practices of the enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term. These problems have not occurred overnight; they are the result of decades of neglect. This is in spite of the efforts of many capable and dedicated people who must nonetheless function within the confines of a dysfunctional system.

This is no time for complacency about the U.S. nuclear deterrent. Nuclear forces provide the ultimate guarantee against major war and coercion, and America’s allies depend on these forces and capabilities for extended deterrence. Other countries carefully measure U.S. resolve and technological might in making decisions on global and regional security matters, many of which are of vital concern to the United States. Hence, while the current viability of the U.S. nuclear deterrent is not in question, it will need to be sustained to meet future security needs and the long-term health of the enterprise is a critical necessity.

The panel’s review has encompassed the communities with essential responsibilities for the nuclear enterprise: the national leadership in the Executive Branch and Congress; the relevant policy and oversight organizations within the Department of Energy (DOE) and the National Nuclear Security Administration (NNSA); the operating sites in the nuclear weapons complex; and NNSA’s customers in the Department of Defense (DOD), the Department of State, the Intelligence Community, and the Department of Homeland Security.¹ Additionally, the panel

¹ The panel’s fact finding was largely completed between October 2013 and February 2014. While the panel received updates on specific issues through July 2014, and it has sought to recognize some of the important changes currently underway by DOE/NNSA, the findings are necessarily focused on the situation as of early

examined the proven management practices of several high-performing, high-technology organizations both in the private sector and in government. The panel reviewed previous studies, conducted on-site visits across the nuclear weapons complex (laboratories, plants, and the Nevada National Security Site), and benefitted from the views of dozens of expert witnesses. The panel focused its attention largely (but not exclusively) on the nuclear weapons stockpile mission. This focus reflects the fundamental importance of the mission and its associated capabilities, and the judgment based on initial fact finding that there were major challenges associated with defining and executing this mission.

The findings and recommendations detailed in this report have the unanimous support of the panel members. The common belief is that significant and wide-reaching reform is needed to create a nuclear enterprise capable of meeting the nation's needs. While panel members differ on certain details, there is deep agreement on the overall direction—and urgency—of the reforms outlined here.

One unmistakable conclusion is that NNSA governance reform, at least as it has been implemented, has failed to provide the effective, mission-focused enterprise that Congress intended. The necessary fixes will not be simple or quick, and they must address systemic problems in both management practices and culture that exist across the nuclear enterprise:

- First, a lack of sustained national leadership focus and priority, starting with the end of the Cold War, has undermined the foundation for nuclear enterprise governance and contributes to virtually all of the observed problems;
- Second, inadequate implementation of the legislation establishing NNSA as a separately organized subelement of DOE has resulted in overlapping DOE and NNSA headquarters staffs and blurred ownership and accountability for the nuclear enterprise missions;
- Third, the lack of proven management practices, including a dysfunctional relationship between line managers and mission-support staffs, has undermined the management culture within NNSA;
- Fourth, dysfunctional relationships between the government and its Management and Operating (M&O) site operators has encouraged burdensome transactional oversight rather than management focus on mission execution;
- Fifth, insufficient collaboration between DOE/NNSA and DOD weapons customers has generated misunderstanding, distrust, and frustration.

2014. Thus, this report does not reflect on the leadership of the new NNSA Administrator, Lt. Gen. (ret) Frank G. Klotz, who took office in May 2014. The panel also recognizes that U.S. Secretary of Energy Dr. Ernest Moniz has been in his position only a limited time and has been actively pursuing initiatives to improve some of the identified problems. Several DOE management initiatives begun since the panel's interim report was issued in April 2014 are reported in the relevant sections of the report.

To achieve the conditions for success, the panel recommends fundamental reforms that touch on every component of the enterprise. The current senior leadership of the DOE has taken some important initial steps to rectify failings, but the enterprise as a whole continues to struggle to meet commitments and the underlying problems will not be fixed without major reform. Given the fact that many of these problems are attributable to cultural shortcomings, the solution will not be easy and will inevitably transcend any one leadership team.

A brief summary of the needed improvements suggests the depth of the challenges facing the enterprise. The details of the panel's findings and recommendations are provided in Chapters One to Five in the body of this report. The Table of Recommendations lists the panel's specific recommendations.

Strengthen National Leadership Focus, Direction, and Follow-Through

(Recommendations 1 and 2)

At the root of the challenges faced by the nuclear enterprise is the loss of focus on the nuclear mission across the nation and within U.S. leadership as a whole since the end of the Cold War. Every aspect of the enterprise is colored by the fact that, bluntly stated, nuclear weapons have become *orphans* in both the Executive and Legislative branches. This has been reflected by the lack of an urgent and clear mission and lack of follow-through in assuring adequate performance to modernize the nuclear stockpile on schedule and on budget. Nowhere is this more evident than among those working in the nuclear enterprise, many of whom feel that they are in a declining career field. Although the national leadership has provided high-level policy statements and substantial sums of money to the enterprise, the results achieved by the enterprise have frequently been unacceptable. Sustained and focused national commitment is required.

The panel recommends that the President and Congress adopt a number of new mechanisms designed to set enterprise priorities and program expectations, demand feasible customer-driven plans for the enterprise, assure the adequacy of assigned resources, and advance needed governance reforms. The panel believes that expanding the existing annual Office of Management and Budget (OMB)/DOD budget/program review to include the nuclear weapons portfolio would reinforce this and could help synchronize the nuclear security programs and budgets across the two Departments. The panel further recommends that Congress adopt mechanisms to strengthen committee oversight and unify support for the enterprise. Such efforts should seek improved coordination across missions as well as between authorizers and appropriators, and thus synchronize the work of the multiple cognizant subcommittees to provide a more focused jurisdiction.

Solidify Cabinet Secretary Ownership of the Mission

(Recommendations 3–5)

Despite the intent of the NNSA Act to create a *separately organized* NNSA *within* DOE, the Act as implemented did not achieve the intended degree of clarity in enterprise roles and mission ownership. NNSA was not provided the line-management authority necessary to integrate safety, security, and environmental concerns into the decision making for executing NNSA’s missions; nor was an effective policy implementation framework established. The Act, as implemented, made organizational changes designed to insulate NNSA from DOE headquarters without specifying the Secretary’s roles, without stipulating the relationships between NNSA and DOE headquarters staffs, and without requiring actions to shift the Department’s culture toward a focus on mission performance. The panel concludes that the relationships among NNSA, the Secretary of Energy, and the DOE headquarters are not properly aligned with mission needs today and are therefore in need of major reform.

As directed by Congress, the panel explored a range of options for an organizational structure that would address the problems created in establishing NNSA. The panel concludes that the nuclear enterprise would be most effective in performing its missions if it were led by a knowledgeable, engaged Cabinet Secretary and if ownership of the mission were Department-wide. Hence, the solution is not to seek a higher degree of autonomy for NNSA, because that approach would only further isolate the enterprise from needed Cabinet Secretary leadership. Instead, it is recommended that Congress place the responsibility and accountability for the mission squarely on the shoulders of a qualified Secretary, supported by a strong enterprise Director with unquestioned authority to execute nuclear enterprise missions consistent with the Secretary’s policy direction.

Every alternative to this approach has significant weaknesses:

- The panel first considered the option of reorganizing DOE/NNSA to strengthen NNSA’s autonomy within the Department of Energy (effectively, an improved status quo). This was rejected because numerous studies and the panel’s own fact-finding revealed that DOE’s current *separately-organized* approach is fundamentally flawed, and that adjustments would not be sufficient to correct either the structural or cultural problems.
- The panel also explored the model of NNSA as an independent agency. The panel concluded that a mission this important to U.S. national security requires Cabinet-level ownership and support.
- The panel further evaluated three variants of a greater role for the Department of Defense. In each case, given the magnitude of DOD’s existing challenges, there is considerable uncertainty about DOD’s willingness and ability to integrate and support an organization with a very different scientific and civilian culture.

To achieve the right leadership structure—a Cabinet Secretary who sets policy and a Director who is empowered to implement the policy—the panel recommends amending the NNSA Act to replace the “separately-organized” NNSA with a new Office of Nuclear Security (ONS) within the Department charged with performing the missions currently performed by NNSA. (Proposed statutory language is provided in Appendix C.) The proposed legislation includes new confirmation and reporting requirements to underscore the Secretary’s enterprise leadership roles and accountability and to emphasize the qualifications needed to lead the enterprise. It also assigns a new name—The Department of Energy and Nuclear Security (DOE&NS)—to highlight the prominence and importance of the Department’s nuclear security missions (over 40 percent of the Department’s budget is for nuclear security) and to stress the importance of the needed cultural change.²

Central to this reform is to establish the Director of ONS as the unquestioned line-management authority for safe, secure, and environmentally responsible mission execution. The Director’s qualifications, authorities, and accountability must be carefully stipulated. In the panel’s proposed formulation

- The Director must possess strong technical management capabilities.
- For leadership and continuity, the Director’s position should be an executive schedule II with a tenure of at least six years (subject to Presidential review).
- The Director has direct access to the President on issues critical to ONS’s missions (nuclear stockpile safety, security and reliability, non-proliferation, etc.).
- The Director has direct access to the Secretary on all ONS matters.
- The Director is assigned risk acceptance responsibility and authority on ONS matters, taking full responsibility and accountability for executing the Secretary’s policies for the nuclear security missions safely, securely, and environmentally responsibly.
 - Mission-support staffs advise the Director on risk-acceptance decisions.
 - Any disagreements between line managers and mission-support staffs are quickly raised through a clearly defined appeals process.
- The Director has full authority to shape and manage the ONS technical staff.³

² In this report, when referring to the present, the terms DOE and NNSA are used. In the panel’s recommendations and in referring to the future, the panel’s recommended names, DOE&NS and ONS, are used.

³ Recognizing the constraints of the civil service system, all nonadministrative ONS personnel should be from the Senior Executive Service or the Excepted Service in order to permit the Director this necessary authority.

The panel judged these attributes of the Director to be paramount in empowering a leader capable of executing all aspects of the mission and reforming the enterprise's culture. The panel recommends that the Director serve concurrently as a second Deputy Secretary in the Department or as an Under Secretary. While the panel did not agree on the appropriate rank, it does agree that this question of rank is less essential for success than is establishing an effective working relationship with a knowledgeable, engaged Secretary and providing the Director all the necessary authorities as described above. As a result, the panel notes the potential options but offers no recommendation on this one specific issue.

The strengthened roles of the Secretary and Director will be enhanced by the complementary and combined effects of increased focus and follow-through from the White House and Congress and the adoption of proven leadership and management processes. If for any reason the nation's leadership is not prepared to require the Secretary to possess the qualifications demanded by the nuclear security mission, or to provide the Director the necessary mission execution authorities, then only one option remains: an autonomous organization to replace some or all of the functions of NNSA. This is viewed by the panel as a clearly inferior choice.

Adopt Proven Management Practices to Build a Culture of Performance, Accountability, and Credibility

(Recommendations 6–13)

NNSA, and associated policy and oversight organizations within the Department, reflect few of the characteristics of the successful organizations benchmarked for this study. Participants at all levels report that DOE/NNSA is an organization with many pockets of talented, technically competent people operating within a culture that lacks a unifying focus on mission deliverables, is risk averse, has poorly defined chains of command, and has inadequate personnel management. A major overhaul will be needed to transform the organization into one with a mission-driven management culture.

The panel identifies a number of management best practices, based on high-performing benchmarked organizations that, if implemented effectively, would bring about the needed reforms. Prominent among them are a capable, empowered leadership with well-defined roles and responsibilities; clear plans with careful analysis of the resources needed to succeed; a clear line-management structure; strong program managers focused on mission deliverables; effective communications; a focus on conveying effective incentives to suppliers; and clear accountability. The panel's recommendations would establish proven practices in each of these areas. Aggressive implementation would significantly improve performance in the near term, thus addressing well-known morale issues and, in time, reshaping the management culture.

Maximize the Contributions of the Management and Operating (M&O) Organizations to the Safe, Secure Execution of the Mission

(Recommendations 14–17)

The open communication and collaboration on program and technical matters that historically existed between the M&Os and Federal officials has eroded over the past two decades to an arm’s length, customer-to-contractor and, occasionally, adversarial relationship. In the case of the laboratories, this has led to a significant loss in their contributions historically stemming from the special Federally Funded Research and Development Center (FFRDC) relationship. The erosion of trust—a critical element in the FFRDC relationship—observed by the panel was also highlighted by a recent National Research Council of the National Academies study.⁴ The panel concurs that the special relationship of trust between the government and the three NNSA laboratories has been eroded by unclear accountability for risk and a fee structure and contract approach that invites detailed, tactical, and transactional oversight rather than a strategic, performance-based management approach. Excessive and fragmented budget control lines also confound effective and efficient programmatic management, erode flexibility, and undermine the sense of trust.

The panel recommends a major reform of existing incentives and relationships, building on steps already begun by the current leadership. Award fees have diverted substantial energy and resources from mission execution; these fees should be replaced by fixed fees that fairly compensate the M&O organizations for their investments in the enterprise and their risks (both financial and reputational). Contract term extensions should be the main vehicle used to encourage M&O performance. DOE must define a collaborative relationship that attracts the best performers and emphasizes taking full advantage of the M&Os’ ability to provide skilled personnel and strong management cultures, as well as proven systems, processes, and practices for effective and efficient mission execution.

Strengthen Customer Collaboration to Build Trust and a Shared View of Mission Success

(Recommendations 18 and 19)

The nuclear enterprise cannot succeed if participants are distrustful of one another and are seen to be divided on major goals and priorities. The trust issues identified by the panel are mainly with the Department of Defense nuclear weapons customers who have repeatedly seen NNSA over-promise and under-deliver. These DOD customers lack confidence in NNSA’s ability to execute warhead life extension programs (LEPs) and major nuclear facility

⁴ National Research Council, *The Quality of Science and Engineering at the NNSA National Security Laboratories* (Washington, DC: National Academies Press, 2013), 72.

modernization projects. This is both a cultural and communications divide. A fundamental void is the lack of an affordable, executable joint DOD-DOE vision, plan, or program for the future of nuclear deterrence capabilities. Although the customers in other mission areas from DOD, the Intelligence Community and elsewhere appear to be satisfied, here, too, a more strategic approach would strengthen both capabilities and the services provided.

The Secretary and Director must take a strong lead in building a culture focused on meeting customer needs. The panel recommends steps to strengthen DOE-DOD collaboration at the level of the Secretaries to align the planning, programming and execution of sustainment and modernization programs for nuclear weapons and their delivery platforms. More generally, the process for NNSA *Interagency Work* should be simplified and streamlined to enhance efficiency.

Conclusion

The panel concludes that the needed leadership for executing this mission is best provided by an engaged Cabinet Secretary with national security qualifications, and with effective execution led by a qualified, empowered Director focused on mission deliverables. After an extended gap in the permanent leadership team, the NNSA now has two very experienced top executives in place. The panel's report outlines a vision and reform agenda for the Secretary and this new team. Given that the disorders observed are more cultural than structural, organizational reform and revision of the NNSA Act, while essential, are only a first step in the actions needed to achieve success. Even with an effective Departmental team in place, success is imaginable only with the strong and active support of the White House and Congress. The panel, therefore, attaches great importance to sustained White House and Congressional focus in ensuring successful implementation of these reforms.

If action is reasonably prompt, measurable progress should be observed very quickly—in a matter of a few months. The panel's final recommendation, as described in Chapter 6, is that a follow-on review be conducted two years from now to assess the status of reform. This review should focus on certain concrete indicators of change such as the following:

- Presidential guidance is in place addressing an executable, funded long-term plan for modernizing the nuclear deterrent capabilities, aligned with DOE&NS and DOD and updated annually, for platform modernization, warhead life extension, and infrastructure recapitalization; DOE&NS and DOD programs are in place to execute this plan
- Highly qualified experts from the National Security Council staff are routinely engaged in policy development and nuclear enterprise oversight and strategic direction
- Congress supports the panel's approach by amending the NNSA Act to clarify the roles of the Secretary, and provide the Director, ONS with the authorities needed to succeed
- Congressional committees and associated staffs are well versed and routinely engage in matters pertaining to the nuclear security enterprise and they are working in a

collaborative manner that ensures consistent, efficient, and effective authorization, appropriation, and oversight

- A strong DOE&NS and ONS leadership team is in place; Congress agrees that political appointments for the Secretary and Director be confirmed by both the Senate Energy and Natural Resources and Armed Services Committees
- The DOE&NS has clearly delineated and documented the authorities of the Director, ONS and his or her relationship with other senior DOE&NS officials, including managers responsible for mission-support functions
- A *risk management* culture has replaced the existing *risk aversion* culture; technical competence is restored within the workforce to address safety issues raised by the Defense Nuclear Facilities Safety Board (DNFSB)
- Internal management reforms have substantially reduced excessively burdensome budgeting detail and transactional oversight, and have led to substantial staff realignments and a performance-based approach; a Federal staff right-sizing plan is in place and being executed
- Warhead Life Extension Program and Infrastructure Modernization Program Managers are established in ONS with control over program resources and accountability for delivering on agreed schedules
- Cost-estimating and resource management staffs are in place, and work is underway to develop needed management tools and data
- The Director, ONS has developed an executable plan to build needed new facilities, reduce maintenance backlogs, and eliminate outmoded facilities
- Mechanisms for strategic dialogue have been instituted and the government-M&O/FFRDC relationships have been restored
- Laboratory Directors, plant managers, and M&O leadership have developed, and are executing, plans that provide for clear identification of required technical work and infrastructure sustainment, accurate and transparent cost accounting, and initiatives to continuously improve value performance
- Contracts with the M&Os have been revised to provide incentives focused on mission success, replacing large award fees with fixed fees and the potential for contract extensions
- ONS customers express satisfaction with collaboration, information sharing, and business practices, as well as performance in delivering on their needs

Demonstrated performance is the ultimate measure of success and the foundation for credibility and trust. The panel believes that its recommendations, as summarized in the Table of Recommendations, if fully and effectively implemented, provide the best chance for a reformed Department and new Office of Nuclear Security to be able to carry out its mission and thus restore trust and credibility with customers and national leaders. If, based on independent oversight, attention to implementation is lacking, and significant progress is not made within the next two years, then the panel believes the only course of action—and a clearly inferior one—is to remove ONS from the Department and make it an independent, autonomous agency.

Table of Recommendations

Strengthen National Leadership Focus, Direction, and Follow-Through
<p>1. The President should provide guidance and oversight sufficient to direct and align nuclear security policies, plans, programs, and budgets across Departments.</p> <p>1.1 The President should reaffirm the importance of the mission and align DOE&NS and DOD priorities through an expanded President's annual stockpile guidance.</p> <p>1.2 The President should require annual OMB joint budget reviews to shape and align DOE&NS and DOD programs and budgets.</p> <p>1.3 The President should require annual NSC joint program reviews to shape and align DOE&NS and DOD programs and policies.</p>
<p>2. Congress should establish new mechanisms to strengthen and unify its leadership and oversight of the nuclear enterprise and its missions.</p> <p>2.1 Congress should add Senate Armed Services Committee approval to the confirmation and reporting requirements for the Secretary and Deputy Secretary of DOE&NS (and continue to have the Director, ONS be approved by the Senate Armed Services Committee).</p> <p>2.2 Congress should require the Secretary to testify annually on the health of the enterprise, and on progress in reforming its governance, to the Senate Energy and Natural Resources and Senate Armed Services Committees, and to the House Energy and Commerce and House Armed Services Committees.</p> <p>2.3 Congress should implement information sharing and collaboration mechanisms to unify and strengthen its mission-focused oversight across cognizant committees and to better harmonize direction and oversight across the enterprise's mission areas.</p>
Solidify Cabinet Secretary Ownership of the Mission
<p>3. Congress should amend the NNSA Act and related legislation to clarify Departmental leadership roles.</p> <ul style="list-style-type: none">• The Secretary “owns” the nuclear enterprise missions, sets Departmental policy for the nuclear enterprise, and is accountable to the President and Congress for the enterprise.• The Director, Office of Nuclear Security (ONS) has full authority to execute the nuclear enterprise missions consistent with the Secretary’s policy.• Departmental mission-support staffs advise and assist the Director in executing enterprise missions. <p>3.1 The amended legislation should specify the Secretary’s leadership responsibilities and define duties that underscore the Secretary’s accountability for the nuclear enterprise and its missions.</p> <p>3.2 The amended legislation should create the Office of Nuclear Security (ONS) within the Department to perform the missions currently assigned to NNSA.</p> <p>3.3 The amended legislation should designate a Director, Office of Nuclear Security with full authority to execute nuclear enterprise missions under the policy direction of the Secretary. The</p>

<p>Director should have tenure of at least six years, be compensated at the rate of Executive Schedule Level II, and hold the Departmental rank of a Deputy Secretary or Under Secretary.⁵</p> <p>3.4 The amended legislation should assign risk acceptance authority and accountability to the Director for ONS mission execution.</p> <p>3.5 The amended legislation should grant the Director authority to appoint senior officials in ONS, including the conversion of three Senate-confirmed direct-report positions (Principal Deputy, Assistant Secretary for Defense Programs, and Assistant Secretary for Non-Proliferation Programs) to Senior Executive Service or Excepted Service positions.</p> <p>3.6 The amended legislation should emphasize the importance of the nuclear enterprise missions, by changing the name of the Department to the “Department of Energy and Nuclear Security.”</p>
<p>4. The Secretary should implement Departmental management processes that specify the Director’s authorities for executing nuclear enterprise missions. These authorities include:</p> <ul style="list-style-type: none"> • Line management authority for the safe, secure, and environmentally responsible execution of nuclear security missions • Management authority for mission-support staffs assigned to the Office of Nuclear Security • Concurrence authority for Departmental rulemaking on ONS matters <p>4.1 The Secretary should establish decision-making practices among the senior headquarters staffs that codify the Director’s authority to execute the nuclear security missions consistent with the Secretary’s policies.</p> <p>4.2 The Secretary should establish a matrix management structure that</p> <ul style="list-style-type: none"> • Aligns and codifies roles, responsibilities, authority, and accountability • Specifies the Director’s leadership authority over line-management and mission-support (“functional”) staffs assigned to ONS • Eliminates overlapping headquarters staffs <p>4.3 The Secretary should adopt processes defining the Director’s role in ensuring applicable DOE&NS policies, rules, and orders are compatible with the operating circumstances of the nuclear security enterprise.</p> <p>4.4 The Secretary should designate those senior headquarters positions that have line-management decision authorities and those that are responsible for mission-support functions.</p>
<p>5. The Secretary and Director should reform DOE regulation to strengthen risk management.</p> <p>5.1 The Secretary should strengthen the Department’s analytical expertise and processes for assessing risks, especially for nuclear and other high-hazard functions.</p> <p>5.2 The Secretary should direct a comprehensive review and reform of the Department’s ES&H and Security Orders and Directives to reflect best industry practices.</p> <p>5.3 The Secretary (with Congressional concurrence) should establish a mechanism to improve the Department’s ability to respond to inquiries, findings, and recommendations of the Defense Nuclear Facilities Safety Board.</p>

⁵ The panel recommends the Director hold either the rank of Deputy Secretary or Under Secretary, but did not agree on a specific rank.

Adopt Proven Management Practices to Build a Culture of Performance, Accountability, and Credibility

- 6. To begin reforming the DOE&NS culture, the Secretary and Director should develop within six months a plan for continuous management learning and improvement, including an implementation plan for the panel's recommendations with milestone target dates.**
 - 6.1 The Secretary and Director should urgently develop a more robust, integrated DOE&NS/ONS-wide process to provide accountability and follow-up on findings and recommendations from studies and reviews, both internal and external.
 - 6.2 The Secretary and Director should establish management metrics for assessing and improving enterprise management.
 - 6.3 The Secretary and Director should routinely survey personnel to gauge morale, assess cultural changes, and identify the results of efforts to change management practices.
 - 6.4 The Secretary and Director should aggressively communicate reform plans and objectives.
- 7. The Secretary and Director should implement industry best practices for shaping and building the enterprise workforce.**
 - 7.1 The Secretary and Director should establish strong career and leadership development programs, require rotational assignments, and place greater emphasis on continuing education and professional certifications.
 - 7.2 The Secretary and Director should reshape staffs as needed to implement governance reforms.
 - 7.3 The Secretary and Director should conduct a zero-based personnel review to right-size government staffs consistent with recommended reforms and changing workload since the end of the Cold War; this review should include the consolidation of headquarters activities across DOE&NS's Forrestal headquarters, the Germantown campus, and the Albuquerque complex.
- 8. The Secretary should establish trusted Cost Analysis and Resource Management staffs, tools, and data; the Director should be responsible for this process in ONS.**
 - 8.1 The Secretary and Director should strengthen the Department's efforts to develop independent cost and resource analysis capabilities.
 - 8.2 The Secretary and Director should employ a rigorous Analyses of Alternatives process during program formulation as the basis for assessing and validating program requirements.
 - 8.3 The Secretary and Director should take advantage of established DOD resource analysis capabilities in establishing DOE's cost analysis and resource management capabilities.
- 9. The Director should establish 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.**
 - 9.1 The Director should create operational mechanisms to perform the key synchronization functions that used to be performed by the Albuquerque Operations Office.
 - 9.2 Deputy Directors should be designated to lead in the integrated planning and execution of programs in their mission areas of responsibility.
 - 9.3 The Deputy Director responsible for Life Extension Programs, working with DOD, should create a long-term operating plan to support the nation's warhead modernization strategy; this plan should be designed to create a relatively stable, long-term workload.

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| <p>10. The Director should establish program managers who are provided necessary authorities and resources, and who are held accountable for major mission deliverables.</p> <p>10.1 The Director, in coordination with the responsible Deputy Director, should designate program managers for each Life Extension Program and major construction project.</p> <p>10.2 Program managers should be held accountable to employ effective management practices.</p> <p>10.3 The Director should delegate to the program managers control of any funds identified as uniquely required to execute their programs.</p> <p>10.4 The Director should delegate control over personnel assigned to their programs to the program managers.</p> |
| <p>11. The Congress, Secretary, and Director should adopt a simplified budget and accounting structure (by reducing budget control lines) that aligns resources to achieve efficient mission execution while providing sufficient visibility to enable effective management oversight.</p> <p>11.1 Congress should reduce the number of Congressional budget control lines to the number of major programs plus major mission-support functions.</p> <p>11.2 The Director should reduce ONS's internal budget control lines to the minimum number needed to assign funding for major programs and mission-support activities across the sites.</p> <p>11.3 Infrastructure funding that is uniquely required for the execution of Life Extension Programs should be integrated into the portfolio of the Deputy Director for Defense Programs.</p> |
| <p>12. The Director should develop a strategy and plan to reshape the weapons complex to meet future needs.</p> <p>12.1 The Director should ensure that the strategy and plan identify and address the deferred maintenance backlog.</p> <p>12.2 The Director should ensure that the strategy and plan match (and, in many cases, reduce) the infrastructure needed to meet requirements.</p> <p>12.3 The Director should ensure that the strategy and plan identify investments in the needed skills in the workforce.</p> <p>12.4 The Director should ensure that the strategy and plan specify investments in capabilities, including the sites' use of internally directed research and development. The panel recommends Laboratory Directed Research and Development (LDRD) funding of no less than 6 percent, which is needed to sustain leadership in nuclear science, engineering, and manufacturing.</p> |
| <p>13. The Secretary and Director should continue ongoing efforts to improve construction project management capabilities (at all levels) by introducing disciplined management practices in order to recapitalize infrastructure on time and on budget.</p> <p>13.1 The Director should strengthen infrastructure project management skills, tools, and the collection and analysis of data.</p> <p>13.2 The Director should build on recent efforts to adopt best practices for managing infrastructure projects, especially the use of external peer review.</p> <p>13.3 The Secretary and Director should hold managers accountable for adopting the effective practices detailed in the Department's directive on project management (Order 413), consistent with the principles provided in OMB Circular A-11 in infrastructure projects.</p> |

Maximize the Contributions of the Management and Operating (M&O) Organizations to the Safe, Secure Execution of the Mission

- 14. The Director should reform M&O contracts, replacing the award fee structure with fixed fees for longer (multi-year) award terms and linking performance incentives to the contractual period of performance.**
 - 14.1 The Director should adopt market-based fixed fees for new M&O contracts commensurate with M&O-borne risks, M&O investments in the enterprise, and the scale of the undertaking.
 - 14.2 Where practicable, the Director should convert existing contracts to similar fixed fee arrangements.
 - 14.3 The Director should base decisions to extend an M&O contract's period of performance primarily on contributions to mission performance; unsatisfactory performance should lead to early termination.
 - 14.4 The Director should seek greater standardization of contract provisions across similar entities.
- 15. The Secretary and Director should reinforce the M&O parent organizations' obligations to contribute to enterprise management improvement initiatives.**
 - 15.1 The Director should create collaborative mechanisms to strengthen the joint contributions of the M&O organizations in improving the effectiveness and efficiency of enterprise operations.
 - 15.2 The Director should task M&O organizations to identify and assess management improvement opportunities, both for mission execution and for mission-support functions.
- 16. The Secretary and Director should eliminate wasteful and ineffective transactional oversight.**
 - 16.1 The Secretary and Director should direct a reduction in the number of audits, inspections, and formal data calls, and better synchronize those that remain.
 - 16.2 The Secretary and Director should eliminate transactional oversight in areas where there are better mechanisms for certifying contractor performance, to include reform of the field office's staffing levels and performance criteria.
- 17. The Secretary, Director, and the National Laboratory Directors should adopt management practices that serve to rebuild the strategic Government-FFRDC relationship.**
 - 17.1 The Secretary and Director should continue to reinvigorate the strategic dialog with the Laboratory Directors.
 - 17.2 Leaders in both the government and M&Os should prescribe and enforce behaviors that rebuild credibility and trust.
 - 17.3 The appropriate government officials (e.g., Deputy Directors, program managers) should meet at least monthly with the M&O leadership, and preferably have daily informal interactions.

Strengthen Customer Collaboration to Build Trust and a Shared View of Mission Success

- 18. The Secretary should collaborate with the Secretary of Defense to better align the planning, resourcing, and execution of sustainment and modernization programs for nuclear weapons and their supporting infrastructure with DOD's delivery platforms.**
- 18.1 The Department Secretaries should direct activities that foster collaboration and communications among the principals and staffs supporting the Nuclear Weapons Council (NWC).
- 18.2 The Department Secretaries, supported by the chairman and members of the NWC, should reinvigorate its working-level elements.
- 18.3 The Department Secretaries should establish transparent information sharing mechanisms and increase direct staff collaboration on a daily basis to address persistent communications and trust issues.
- 18.4 The Department Secretaries should confer on each Department's proposed co-chair to the Standing and Safety Committee (SSC), which reports to the NWC.
- 18.5 The Department Secretaries should involve the NWC in drafting and reviewing the annual assessment to the NSC of progress on meeting Presidential guidance.
- 18.6 The Director should strengthen the roles, responsibilities, and accountability of the senior military officer assigned to ONS in order to improve DOE&NS-DOD collaboration.
- 19. The Secretary and Director should align and streamline processes for collaboration with Interagency customers.**
- 19.1 The Secretary, working through the Mission Executive Council, should improve coordination for planning and executing Interagency Work.
- 19.2 The Mission Executive Council should annually conduct a review of the execution of Interagency Work across the nuclear security enterprise to identify improvement opportunities in working relationships, collaborative mechanisms, and management practices.

Introduction

There are few undertakings more important, more demanding, or less forgiving than those pursued on a daily basis by the Department of Energy and the National Nuclear Security Administration (NNSA) in addressing current and future U.S. nuclear security requirements. The consequences of failure are enormous, potentially placing large numbers of lives at risk and even changing the course of history. But concerns with the health of the enterprise, and notably the NNSA, are widespread and persistent; the basis of these concerns must be understood and the causes addressed with urgency.

Now is no time for complacency about this enterprise and the missions it supports. The United States and its allies are in a complex nuclear age, with several potential adversaries modernizing their arsenals, new nuclear technologies emerging, and potential new proliferants—as well as regional challenges—raising significant concerns. Each successive administration since that of President Dwight D. Eisenhower has reaffirmed the need to sustain a credible nuclear deterrent that is safe, secure, and reliable. America’s allies depend on U.S. forces and capabilities for extended deterrence. Other countries carefully measure U.S. resolve and technological might in making decisions on global and regional security matters, many of which are of vital concern to the United States. Nuclear forces provide the ultimate guarantee against major war and coercion, serving both to deter the use of weapons and to support nonproliferation initiatives. Hence, while the current viability of the U.S. nuclear deterrent is not in question, now would be a dangerous time for the enterprise to stumble.

While the United States has dramatically reduced the inventories of nuclear weapons since the end of the Cold War, the importance of maintaining a safe and secure stockpile has not diminished, and additional challenges have emerged. The missions of NNSA, established in the 1999 NNSA Act,⁶ highlight the broad range of critical national security needs that are served by this enterprise. These include

- To enhance U.S. national security through the military application of nuclear energy

⁶ NNSA Act, Title XXXII of the National Defense Authorization Act for Fiscal Year 2000, Pub. L. No. 106-65 (1999).

- To maintain and enhance the safety, reliability, and performance of the U.S. nuclear weapons stockpile, including the ability to design, produce, and test, in order to meet national security requirements
- To provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants
- To promote international nuclear safety and nonproliferation
- To reduce global danger from weapons of mass destruction
- To support U.S. leadership in science and technology

These statutory missions draw on a core set of science, engineering, manufacturing, and construction capabilities that have been developed through decades of investment, largely to meet the required competencies of the nuclear weapon programs. Indeed, NNSA is solely qualified to fulfill its missions to sustain the nuclear stockpile and provide naval nuclear power, while it is one of several contributors in the other mission areas. As illustrated in Figure 1, NNSA's missions are fundamentally interrelated: the core nuclear weapons capabilities (shown in the bottom row, along with nuclear propulsion) form the foundation of the nuclear enterprise, enabling the execution of the full range of NNSA missions. The middle rows provide examples of missions assigned to NNSA, such as intelligence support, nonproliferation, and control of nuclear weapons (to minimize the threat of “loose nukes”), which rely on these nuclear capabilities. The top row provides examples of other missions that benefit from these capabilities.

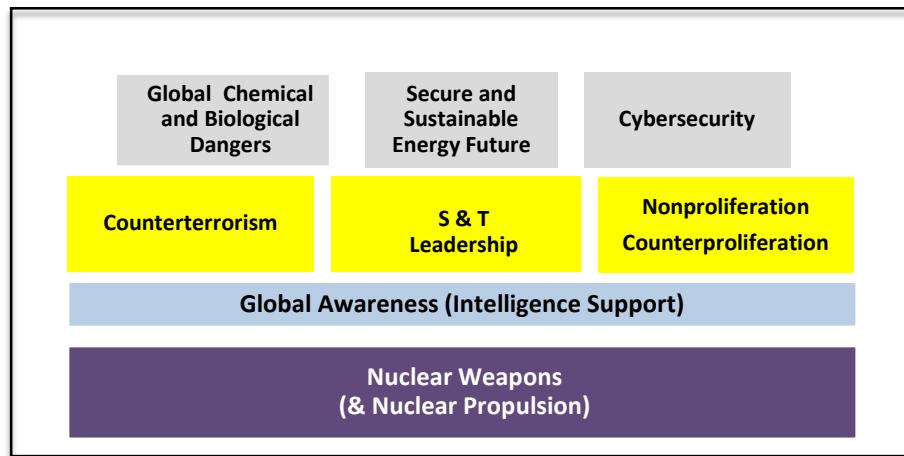


Figure 1. NNSA's Interrelated Missions

The panel focused its attention largely (but not exclusively) on the nuclear weapons stockpile mission. This focus reflects the fundamental importance of the mission and its associated capabilities, and the judgment based on initial fact finding that there were major challenges associated with defining and executing the needed program of work in this area. The

panel recognizes, however, that each of the assigned missions is vital to the nation's security—the enterprise must succeed with every mission and no mission can, or should, take exclusive priority over the others. In practice, the challenge is to balance the allocation of limited resources to address the nation's needs. The relative resource priorities assigned to the missions by the national leadership may shift over time; hence, ongoing strategy reviews and trade-offs across portfolios are appropriate and necessary.

Congress tasked this panel to examine current governance practices and to offer recommendations for, among other things, a significantly improved governance system. The panel's work has relied on its twelve members' broad experience as legislators, scientists, and senior military officers, as well as senior government and industrial executives. The findings and recommendations detailed in this report have the unanimous support of the panel members. The common belief is that significant and wide-reaching reform is needed to create a nuclear enterprise capable of meeting the nation's needs. While panel members differ on certain details, there is deep agreement on the overall direction—and urgency—of the reforms outlined here.

Since September 2013, the panel has examined the major components of the nuclear enterprise. Through fact-finding visits and testimony, the panel has heard from and examined the roles and contributions of national leadership activities in the Executive Branch and Congress, the Department of Energy (DOE) and NNSA (both headquarters and field), the operating sites of the weapons complex, and the major customers. (Table 1.)

The panel visited each of the facilities comprising the NNSA weapons complex (Figure 2) to gain the field-level perspectives of both the M&O operators and the NNSA field office personnel at each site. This fact finding provided important lessons regarding the interdependencies among the sites and across the missions of NNSA. It also provided perspectives on the government-M&O relationships at each site, as well as between the field and headquarters. The panel members heard testimony from a wide range of experts, both inside and outside of government (Appendix D). In addition, the panel examined the operations of several high-performing, high-technology organizations that promised to offer lessons for sound management. (This work is summarized in Appendix F.)

Table 1. Major Components of the U.S. Nuclear Enterprise

The Nuclear Enterprise	
National Leadership	<ul style="list-style-type: none"> • Executive Branch <ul style="list-style-type: none"> ◦ National Security Council (NSC) Staff ◦ Office of Management and Budget (OMB) ◦ Office of Science and Technology Policy • Legislative Branch <ul style="list-style-type: none"> ◦ Senate ◦ House of Representatives • Independent Agencies <ul style="list-style-type: none"> ◦ Nuclear Regulatory Commission ◦ Defense Nuclear Facilities Safety Board (DNFSB) ◦ Occupational Safety and Health Administration (OSHA)
DOE & NNSA	<ul style="list-style-type: none"> • DOE headquarters • NNSA headquarters • NNSA field activities
<i>The Weapons Complex (and their Management and Operating (M&O) organizations)</i>	<ul style="list-style-type: none"> • Laboratories (Los Alamos, Lawrence Livermore, Sandia) • Production Sites (Pantex, Kansas City, Oak Ridge [Y-12], Savannah River) • Nevada National Security Site (NNSS)
<i>Principal Customers</i>	<ul style="list-style-type: none"> • Department of Defense (DOD) • Intelligence Community (IC) • Department of State (DOS) • Department of Homeland Security (DHS) • Federal Bureau of Investigation (FBI)

Although the panel's purpose is to identify existing governance problems, examine options, and formulate recommendations for reform, it is important for context to acknowledge the achievements of the individuals and organizations working within the enterprise. Some of the noteworthy accomplishments include

- A Nuclear Stockpile Maintenance program that has delivered W87 and W76 Life Extension Program (LEP) warheads
- A Science-Based Stockpile Stewardship program that has yielded
 - Vigorous processes for two decades of successful annual certification of the stockpile
 - World-leading scientific advances, such as significantly improved understanding of weapons' physics, aging, and material properties
 - Leadership in high-performance computing
 - Successful completion of new manufacturing and experimental facilities
 - Dismantlement of thousands of warheads since the end of the Cold War

- Environmental cleanup and management of many Cold War facilities and sites
- Reduced footprints and redundant facilities across sites under the Complex Transformation initiative
- Tri-lab competition and collaboration (W76 dual-revalidation, Reliable Replacement Warhead competition)
- A Naval Reactors program that has successfully sustained and advanced technologies for ship propulsion
- Continued scientific and product development in the mission areas of non-proliferation, counter-proliferation, and nuclear counterterrorism

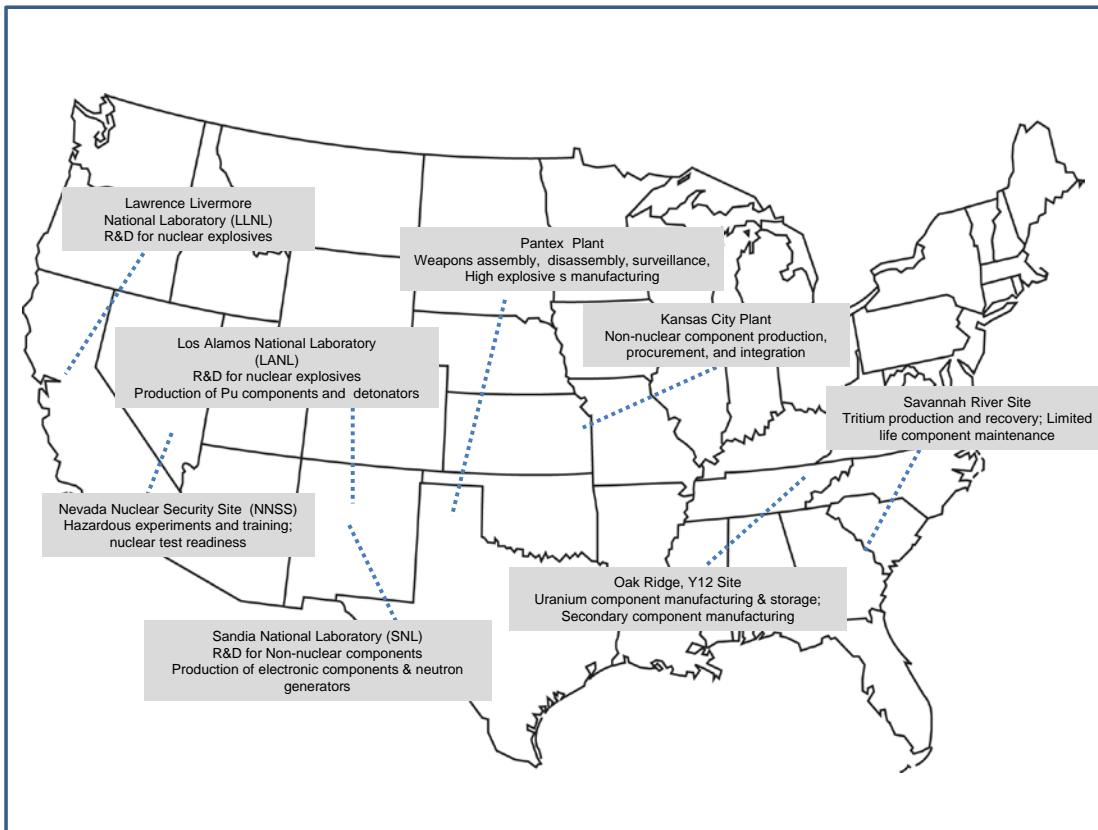


Figure 2. The NNSA Weapons Complex

Many customers report they are satisfied with their working relationships with the laboratories and plants, as well as with the products and services they obtain from the enterprise.

While these accomplishments are impressive, they do not excuse the significant governance and management shortcomings across the enterprise, nor do they diminish the risks of continuing with the same flawed management system. Concerns regarding the functioning of the enterprise are widespread and persistent. The first five chapters of the report describe the interrelated, systemic disorders impeding the enterprise along with the panel's recommended remedies:

- First, a lack of sustained national leadership focus and priority, starting with the end of the Cold War, has undermined the foundation for nuclear enterprise governance and contributes to virtually all of the observed problems;
- Second, inadequate implementation of the legislation establishing NNSA as a separately organized subelement of DOE has resulted in overlapping DOE and NNSA headquarters staffs and blurred ownership and accountability for the nuclear missions;
- Third, the lack of proven management practices, including a dysfunctional relationship between line managers and mission-support staffs, has undermined the culture for executing NNSA's missions;
- Fourth, dysfunctional relationships between the government and its M&O site operators has encouraged burdensome transactional oversight rather than performance-based management;
- Fifth, insufficient collaboration with DOD customers and the tendency of NNSA to promise more than it delivers has generated misunderstanding, distrust, and frustration.

The telling symptoms of distress described here were confirmed through many sources and are consistent with the findings of numerous earlier studies.⁷ Unfortunately, there is no perfect solution to all these challenges—but there are significant opportunities for improvement.

The concluding chapter briefly addresses implementation issues. It is the panel's judgment that lasting solutions require fundamental reform from the top to the bottom of the enterprise. The panel's recommendations, if implemented, will unleash the talented individuals and entities found within the current nuclear security enterprise to effectively carry out their extraordinarily important responsibilities to the nation. But, the viability of the recommended approach will depend significantly on the capabilities and experience of the individuals assigned to leadership positions, and their ability to follow through with the necessary changes. Structural change through an amended NNSA Act represents an essential step, but only an initial step, toward the

⁷ Appendix G identifies a number of important prior studies. Among the major findings and recommendations of these earlier studies: Congress's inability to rely on cost and schedule estimates when it provides funds; major customers' lack of information and access to decision making; costs that are excessive and estimates that are unreliable; and mission needs that are not being filled in a timely fashion. In addition, earlier studies note that national leadership has not delineated clear program direction. The consequent lack of mission focus has resulted in unjustified risk-averse behavior within DOE, which is exacerbated by vague roles and responsibilities within the Department. Effective resource management is significantly hindered by budgetary fragmentation, which is worsened by excessive costs for compliance-focused and duplicative monitoring. Oversight too often consists of perfunctory checks of compliance with regulations rather than assessments of mission outcomes. All of the above has led to the erosion of the traditional collaborative relationship and trust between NNSA and its field components (the national security laboratories, production facilities, and the NNSS) and between NNSA and its DOD weapons customers.

cultural change necessary for success. This enterprise is in dire need of sustained, bold leadership.

1. Strengthen National Leadership Focus, Direction, and Follow-Through

Vision without action is a daydream. Action without vision is a nightmare.

—Japanese proverb

CHALLENGES

Since the end of the Cold War, the need for strong national leadership for the nuclear enterprise has grown as the global security environment has evolved and the complexity of nuclear security missions has increased. Despite this growing need for leadership, many factors have served to weaken the focus, direction, and follow-through of the leadership provided to the nuclear enterprise.

Every aspect of the enterprise is colored by the fact that, bluntly said, nuclear weapons have become *orphans* in both the Executive and Legislative branches. Interest, understanding, and support across the U.S. government have grown increasingly weak and diffuse. The decline in national leadership attention flows down, eroding the attention given to nuclear security issues by senior executive leadership, both civilian and military—across both past and present Administrations and Congresses. In recent years, Presidential program guidance and resource direction has not been sufficient to resolve prioritization issues among the customers of the enterprise. Within Congress, there are multiple challenges. A dwindling number of Members of Congress advocate for the needs of the enterprise or involve themselves in the enterprise’s mission. In both the Senate and the House of Representatives, the panel found varied and disparate perspectives and uneven communication among legislators, as well as among their staffs. These communication challenges are further compounded by multiple committee jurisdictions over the missions assigned to the enterprise, in addition to the different perspectives and approaches of authorizers and appropriators. Despite these impediments, a number of committed legislators and staffs continue to seek to bring focus to these issues—and they need support.

In addition, the failure of Congress to confirm nominees to important leadership positions in a timely manner is extremely damaging. NNSA was without a permanent Administrator from

January 2013 until April 2014—some fifteen months—when Lieutenant General Frank G. Klotz (USAF, ret.) was confirmed for the position.⁸ Madelyn Creedon was nominated to be Principal Deputy Administrator on 7 November 2013, and was not confirmed until 23 July 2014. Such gaps in leadership positions, unimaginable in industry, hinder others already working within the organization to effect necessary changes pending the arrival of new leadership, and ultimately risk reducing the number of well-qualified leaders who are willing to subject themselves to this process.

There remains a relatively small community of experts focused on nuclear deterrence matters. These entities and individuals tend to be isolated in organizations with broad portfolios. DOE has a broad span of civilian responsibilities in addition to the nuclear security programs, and few principals in DOE headquarters, outside of NNSA, focus on nuclear weapon issues.⁹ As for DOD, key senior staffs and analytical activities focused on these issues have been eliminated, significantly reduced, or assigned additional responsibilities (e.g., chemical and biological).¹⁰ This has resulted in serious erosion of advocacy, expertise, and proficiency in the sustainment of these capabilities.

Absent strong national leadership, the nuclear enterprise has been left to “muddle through.” Numerous reports over the last decade have documented the erosion in institutional capabilities resulting from the significant decline in leadership focus on nuclear strategy and security.¹¹ Studies and after-action reviews of operational lapses, too, find that oversight mechanisms, leadership decisions, and workforce attitudes have been undermined over time by the weakened leadership focus on nuclear weapons.¹²

⁸ Former Administrator Tom D’Agostino departed in January 2013; Neile Miller, the former Deputy Administrator, served in an acting capacity from January to June of 2013, at which point Bruce Held took over and served, again, in an acting role from July 2013 to April 2014.

⁹ As also noted in the Executive Summary, this report refers to DOE and NNSA when addressing the present day; when discussing the future, it refers to the Department of Energy and Nuclear Security (DOE&NS) and the Office of Nuclear Security (ONS), the panel’s recommended new names.

¹⁰ DSB, *Report of the Defense Science Board Task Force on Nuclear Deterrence Skills* (Washington, DC: DOD, 2008).

¹¹ Earlier studies, spanning more than a decade, have underscored this problem, including: Chiles Commission, *Report of the Commission on Maintaining United States Nuclear Weapons Expertise* (Washington, DC: DOE, 1999); DSB, *Report of the Defense Science Board Task Force on Nuclear Capabilities* (Washington, DC: DOD, 2006); and DSB, *Report of the Defense Science Board Task Force on Nuclear Deterrence Skills*.

¹² Examples include the July 2012 Y-12 security incident in DOE (when three people, including an octogenarian nun, penetrated the Y-12 security barrier) and, in DOD, the unauthorized, inadvertent transfer of nuclear-armed Advanced Cruise Missiles from Minot Air Force Base (AFB) to Barksdale AFB, the mistaken shipment of Intercontinental Ballistic Missile (ICBM) warhead non-nuclear components to Taiwan and recently reported cheating in Air Force and Navy nuclear proficiency tests. Two major reviews following the unauthorized movement of nuclear weapons from Minot AFB to Barksdale AFB drew connections between the specific incident and the broader national environment. See Larry D. Welch, Chairman, The Defense Science Board

The panel finds that the governance of the nuclear enterprise suffers from this lack of strong, focused political leadership in at least three ways.

Lack of a Unifying Narrative Clarifying Resource Priorities

The nuclear enterprise depends on the national leadership to perform the essential roles of establishing strategy, guidance, and resources, as well as communicating a consistent narrative to shape relationships among the Departments responsible for executing the enterprise missions. To be sure, high-level policy guidance has been articulated, for example through the 2010 *Nuclear Posture Review*,¹³ subsequent work leading to the Nuclear Weapons Employment Policy in June 2013,¹⁴ Presidential speeches, the 2014 *Quadrennial Defense Review*,¹⁵ and the annual *Nuclear Weapons Stockpile Memorandum*. Such policy statements and guidance provide needed top-level support and policy for NNSA's missions, but they do not resolve and delineate program and resource priorities among those missions.

Consequently, the panel has found there is no actionable direction and little agreement on priorities across the government regarding the roles of the nuclear enterprise.¹⁶ For many, the core mission is nuclear weapons stewardship. Others place non-proliferation programs as the top priority.¹⁷ Another view is that leadership in nuclear security science and engineering, not the nuclear force itself, is the core capability that underwrites deterrence. These views compete in setting programmatic and resource priorities. Priorities are matters that must be resolved among the most senior leaders in the Executive Branch and Congress. As further discussed in Chapter 5 on NNSA's collaboration with its customers, Agency-level coordinating mechanisms such as the Nuclear Weapons Council (NWC) and the Mission Executive Council (MEC) cannot substitute

Permanent Task Force on Nuclear Weapons Surety, *The Unauthorized Movement of Nuclear Weapons* (Washington, DC: DOD, April 2008 (revised)), and James R. Schlesinger, Chairman, Report of the Secretary of Defense Task Force on Nuclear Weapons Management, *Phase II: Review of the DOD Nuclear Mission* (Washington, DC: DOD, December 2008).

¹³ DOD, *Nuclear Posture Review Report* (Washington, DC: DOD, 6 April 2010).

¹⁴ An overview of this policy is provided in Office of the Press Secretary, The White House, "Fact Sheet: Nuclear Weapons Employment Strategy of the United States," 19 June 2013, <http://www.whitehouse.gov-the-press-office/2013/06/19>, accessed April 30, 2014.

¹⁵ DOD, *2014 Quadrennial Defense Review* (Washington, DC: DOD, 4 March 2014).

¹⁶ The most wide-ranging and comprehensive recent document on the lack of consensus can be found in Stephanie Spies and John K. Warden, *Forging a Consensus for a Sustainable U.S. Nuclear Posture* (Washington, DC: Center for Strategic and International Studies, April 2013). See, in particular, pages 10 and 11 on the need for a unifying, lasting consensus among America's national leadership. See also Strategic Posture Commission, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, DC: United States Institute of Peace, 2009).

¹⁷ For example, non-proliferation objectives are highlighted in the 2006 *National Security Strategy*, as pointed out in Schlesinger, *Phase II: Review of the DOD Nuclear Mission*, 5.

for national leadership in setting priorities, defining the national enterprise's needs, and identifying resources to support those needs.

Lack of an Executable Plan

Lacking national direction and clear priorities, there has been no mechanism for NNSA and its customers to converge on executable plans to chart the path ahead within or across mission areas. With respect to the nuclear stockpile, the DOD-DOE Nuclear Weapons Council's evolving *baseline* plan and DOE's *Stockpile Stewardship and Management Plan* (SSMP) describe the overall direction, but these plans are not reconciled to be mutually consistent. What is essential now and into the future is to establish executable plans and programs that reconcile customer needs, NNSA plans and capabilities, and, importantly, resources—and thus serve to harmonize efforts within and across mission areas.

Whatever funds are planned, they must match the objectives. Today, the nuclear forces modernization plans in both DOD and DOE/NNSA are significantly underfunded relative to identified needs. A rough estimate, based on assessments by DOD's Cost Assessment and Program Evaluation (CAPE) Office and the Congressional Budget Office, is that the aggregate NNSA program, as was structured in its *FY2014 Stockpile Stewardship and Management Plan*, was at least \$10 billion under-funded over the coming decade.¹⁸ Either a new plan, additional funding, or both, are needed. The recently released *FY2015 Stockpile Stewardship and Management Plan* adjusts schedules to more accurately reflect reduced funding over the next decade, and as a result, proposes significant delays in the delivery of several major LEPs and nuclear facilities, as depicted in Figure 3 (drawn from that document).¹⁹

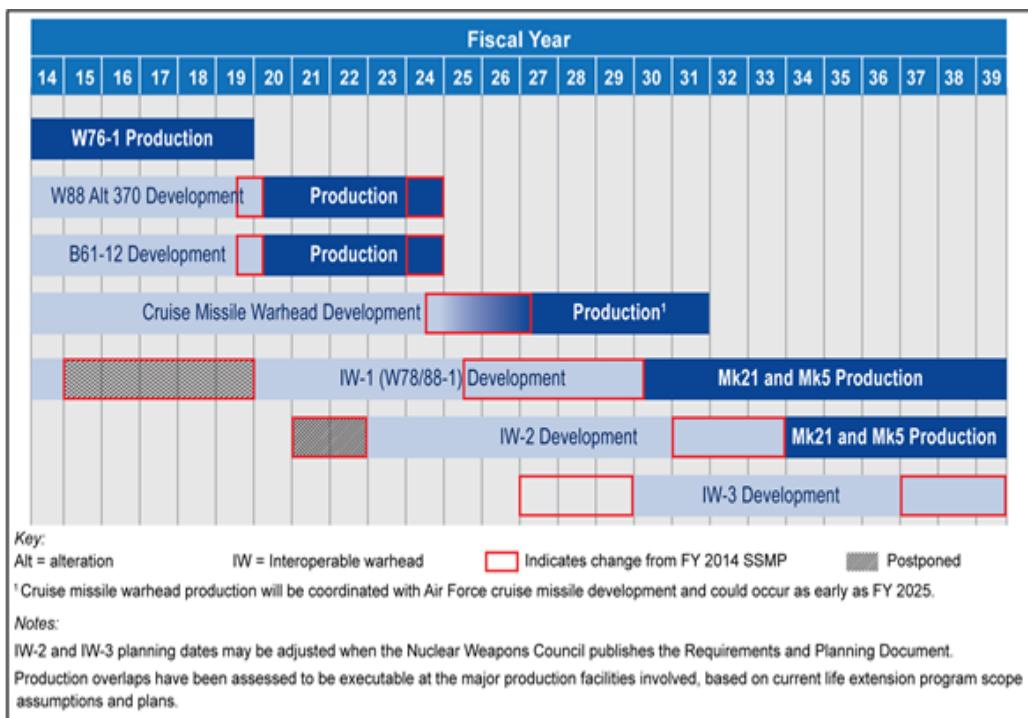
The revised *FY2015 Stockpile Stewardship and Management Plan* takes an important step forward in reconciling timelines with expected resources; but it also underscores several issues that still will need to be addressed in establishing a stable, executable plan consistent with customer needs:

- Not only are the major facilities upgrades pushed beyond the planning horizon, but both the Uranium Processing Facility (UPF) and Chemistry and Metallurgy Research Replacement (CMRR) facility projects have been suspended pending further assessment.

¹⁸ This shortfall does not include the full cost of deferred maintenance estimated at about \$3.5 billion (see Chapter 3). OSD Office of Cost Assessment and Program Evaluation, “NNSA Governance Discussions: Briefing to the Advisory Panel” (Washington, DC: DOD, December 2013); and Congressional Budget Office (CBO), *Projected Cost of U.S. Nuclear Forces, 2014 to 2023* (Washington, DC: CBO, December 2013).

¹⁹ U.S. Department of Energy (DOE), *FY2015 Stockpile Stewardship and Management Plan* (Washington, DC: DOE, April 2014).

- The SSMP plans for only limited progress toward reducing the estimated \$3.5 billion in facilities maintenance backlog.
- The delivery timelines, as shown in Figure 3, continue a history of frequent revisions and remain significantly in flux; in short, the plan is viewed widely as a qualitative description of programs rather than an executable plan.
- NNSA plans and LEP timelines are still not synchronized with DOD's delivery platform modernization program timelines.
- The SSMP assumes a budget that may not be achievable.

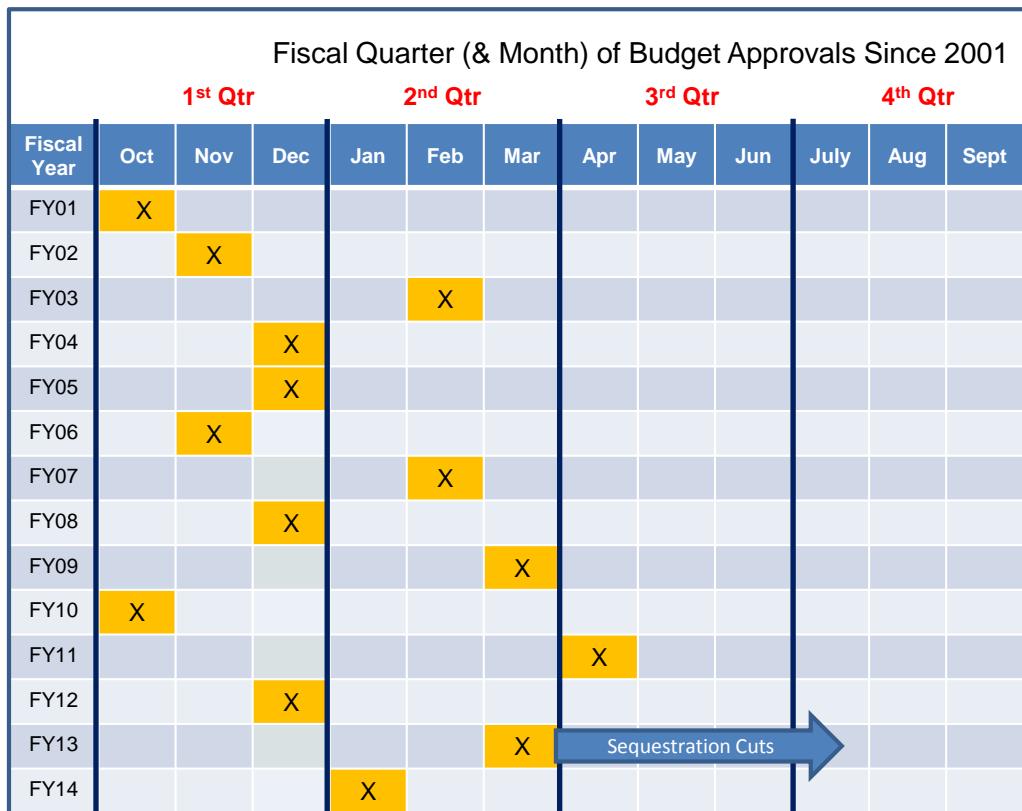


Source: U.S. Department of Energy, *FY2015 Stockpile Stewardship and Management Plan: Report to Congress* (Washington, DC: Department of Energy, April 2014), 2–4.

Figure 3. Current Timeline for NNSA Life Extension Activities

Federal budgeting uncertainties, of course, complicate planning. While the management problems caused by delayed and contentious Congressional budgeting practices are not unique to DOE/NNSA, the budget process has seriously challenged NNSA's ability to plan and manage its array of interrelated activities. Figure 4 shows that since FY01 the Energy and Water appropriation has been passed only twice and signed into law within a month into the new fiscal year. Moreover, in FY09, FY11, and FY13, this did not occur until March or April of the following year. In March of FY13, sequestration cuts came into play. These challenges undermine the ability to manage effectively, but at the same time, an uncertain future makes

thoughtful contingency planning even more important. The lack of executable plans with associated resources and mission priorities is a fundamental weakness in NNSA governance.



Source: Jay Johnson and K. Aaron Menefee, "LANL Resource Management," 19 November 2013 (updated).

Figure 4. Congressional Appropriations Delays, FY01–FY14

Absence of Follow-Through for Governance Reform

After reviewing the findings and recommendations of the many past studies and reports, the panel finds that there has been no shortage of ideas and initiatives for reform. The problem has been the lack of follow-through. Proposals for personnel reforms, Federal workforce initiatives, re-sizing or re-shaping of the complex's infrastructure, and the enforcement of accountability are examples of well-understood ideas that have not been acted on. Of particular relevance to the panel's work are the detailed internal NNSA plans that were developed but not implemented in the years following the NNSA Act for new governance structures, roles and responsibilities, and staff restructuring.²⁰ There are no doubt many reasons why all these recommendations and

²⁰ NNSA, "Standing up the New NNSA: Management and Organizational Changes," 20 December 2002. Briefing provided to the panel, June 2014.

reform plans were disregarded, but one lesson seems abundantly clear: top-level, national leadership is a critical element necessary for success.²¹

As the following chapters of this report make clear, there are many opportunities available to substantially improve the performance of the nuclear enterprise. Few will be possible without strong national leadership and follow-through. To achieve reform, it will be necessary to consolidate and focus available support to establish the nuclear security missions as a continuing national priority.

RECOMMENDATIONS

To achieve reform and operate successfully, the nuclear enterprise will require focused, consistent leadership and direction from both the Executive and Legislative branches. An effective national leadership construct would generate coherent expectations for the enterprise, reconcile the competing demands across mission areas and agencies and overcome the natural frictions and institutional interests that create divisions. Outlined here are several possible actions the President and Congress could take to better fulfill the needed leadership roles.

Recommendation

1. The President should provide guidance and oversight sufficient to direct and align nuclear security policies, plans, programs, and budgets across Departments.

Presidential guidance to the enterprise is needed in sufficient detail to define objectives within each of its mission areas consistent with customer needs, as well as to balance resources and efforts across missions. The panel therefore sees the need for the NSC and OMB to take a more proactive role in formulating Presidential guidance and shaping budgets for nuclear enterprise programs. A primary objective would be to assure that future budgets and schedules for DOE&NS programs and DOD programs are aligned. This step is especially important to address the strained DOD-DOE relationship that is discussed in some depth in Chapter 5. Parallel actions to strengthen guidance and reviews would be desirable for non-proliferation and other mission areas as well.

Action Items

1.1 The President should reaffirm the importance of the mission and align DOE&NS and DOD priorities through an expanded President's annual stockpile guidance.

²¹ See, for example, DSB, *Report of the Defense Science Board Task Force on Nuclear Deterrence Skills*; and Spies and Warden, *Forging a Consensus for a Sustainable US Nuclear Posture*.

The Nuclear Weapons Stockpile Memorandum and Plan (NWSM/NWSP) has not been provided since 2011 (a 2015 NWSM is in draft). The panel recommends restoring and expanding annual guidance and making it sufficiently robust to convey priorities for the enterprise.

The President's NWSM, when issued, has been narrowly focused on Presidential direction for the specific make-up of the stockpile, delineating numbers and types of warheads. The policy guidance the panel recommends (perhaps in the form of a Presidential Policy Directive) needs to go much further than the current NWSM, directing specific stockpile stewardship work, LEP deliverables, and infrastructure recapitalization as well as recapitalization and modernization work required for DOD's delivery platforms.

The process by which the NWSM is drafted currently involves both Departments; in fact, the process is guided by the statute describing the role of the Nuclear Weapons Council,²² which the panel recommends be continued in the crafting of this new or expanded directive.

The panel envisions an expansion of the annual directive to specify milestones for progress on life-extended weapons and facility construction projects, linked with the required progress in recapitalizing the strategic ballistic missile submarine, intercontinental ballistic missile, strategic bomber, and dual-capable tactical aircraft forces. Such direction would serve to guide development of the President's Budget, and be reflected in DOD's Future Years Defense Program (FYDP), DOE&NS's Future Year Nuclear Security Plan (FYNSP), and the *Stockpile Stewardship and Management Plan*.

1.2 The President should require annual OMB joint budget reviews to shape and align DOE&NS and DOD programs and budgets.

Combining a review of the DOE&NS nuclear weapons modernization program with the existing OMB joint review of DOD's strategic nuclear modernization programs would assist in synchronizing the programming and budgeting of warheads, delivery platforms, and enterprise capabilities. Linked with the Presidential policy guidance, this review would significantly increase the alignment of plans, programs, and budgets for these complementary programs across Departments.

An OMB review should also serve to end the recent practice of *transferring* top-line budget authority between the DOD and DOE. As is discussed in Chapter 5, these

²² Per 10 U.S.C., § 179, para (d)1, “The Council shall be responsible for . . .(1) Preparing the annual Nuclear Weapons Stockpile Memorandum”

transfers have been a source of extraordinary misunderstanding and friction between the two Departments over the past several budget cycles.

OMB should extend this approach to address the nonproliferation and counter-proliferation programs of the DOE&NS, DOD, DHS, and State. These programs have frequently been cited as overlapping and insufficiently coordinated.²³

1.3 The President should require annual NSC joint program reviews to shape and align DOE&NS and DOD programs and policies.

Similar to the joint OMB budget review, an NSC-led joint program review would help set highest-level policy guidance and priorities for the enterprise. An NSC-led review would help align and synchronize policy and programs, as well as raise the visibility of this mission with both Departments' Secretaries.

Recommendation

2. Congress should establish new mechanisms to strengthen and unify its leadership and oversight of the nuclear enterprise and its missions.

The panel recommends several mechanisms that would strengthen Congressional support and oversight, and better align the efforts of cognizant committees responsible for the nuclear enterprise and its missions. Recommended actions include involving committees with mission responsibilities in confirmation proceedings; involving mission committees in joint reviews of enterprise plans, programs, and budgets; conducting joint committee oversight reviews to ensure effective execution of the budgets, and demanding needed governance reforms with follow-through to support their implementation.

In acting on these recommendations, the panel recommends a Congressional focus on high-level issues affecting the nuclear enterprise, acting in effect as a Board of Directors.

²³ Government Accountability Office (GAO), *Nuclear Nonproliferation: Further Actions Needed by U.S. Agencies to Secure Vulnerable Nuclear and Radiological Materials* (Washington DC: GAO, 2012), 12–14; and GAO, *Nuclear Nonproliferation: Action Needed to Address NNSA's Program Management and Coordination Challenges* (Washington DC: GAO, 2011), 43–46.

Action Items

- 2.1 Congress should add Senate Armed Services Committee approval to the confirmation and reporting requirements for the Secretary and Deputy Secretary of DOE&NS (and continue to have the Director, ONS be approved by the Senate Armed Services Committee).**

Of foremost importance to the enterprise is the need to establish strong Department leadership in national security for the enterprise. Congress can help ensure this by requiring nominees for the Secretary and Deputy Secretary positions to testify before and be approved by the Senate Armed Services Committee, in addition to the Senate Energy and Natural Resources Committee. The existing process of approval by the Senate Armed Services Committee should be continued for the Director, ONS.

- 2.2 Congress should require the Secretary to testify annually on the health of the enterprise, and on progress in reforming its governance, to the Senate Energy and Natural Resources and Senate Armed Services Committees, and to the House Energy and Commerce and House Armed Services Committees.**

Each of the following chapters of this report identify needed reforms that will require significant national-leadership commitment and follow-through. While much of the difficult work to correct fundamental cultural problems will fall on the shoulders of the enterprise leadership, the most significant reforms will also require strong backing for tough and sometimes politically difficult actions. No approach to reform can succeed without engaged national leadership.

Senate and House Armed Services Committee testimony would help to unify support for needed reforms. Such testimony also would reinforce the Secretary's national security leadership roles outlined in Presidential Policy Directive (PPD)-1.²⁴ It also would help align the Congress' national security oversight of the enterprise.

- 2.3 Congress should implement information sharing and collaboration mechanisms to unify and strengthen its mission-focused oversight across cognizant committees and to better harmonize direction and oversight across the enterprise's mission areas.**

The nuclear security enterprise would benefit greatly from unified Congressional leadership that sets program direction and provides commensurate resources. Toward this end, the panel has identified a number of potential actions Congress could take to better harmonize its activities. Without endorsing any particular approach, the panel

²⁴ As stipulated in PPD-1, *Organization of the National Security Council System* (Washington, DC: The White House, 13 February 2009), the Secretary of Energy is a member of the National Security Council and of the NSC Principals Committee.

believes that Congress should act aggressively in its oversight roles to unify priorities, as well as to align plans with resources, across the enterprise mission areas and involved Departments.

First, greater focus could be achieved if involved Members of Congress were to form a community of interest. Such a community could comprise a coalition or a caucus consisting of Members whose committee assignments involve national security or intelligence-related issues, who have other legislative responsibilities or interests that overlap with the enterprise, or who have enterprise facilities in their State/district.

A successful community of interest could expand the number of legislators who can provide informed advocacy and could strengthen coordination among multiple communities. Informal coalition/caucus-led events could enhance interactions among Members and enterprise leaders, outside of the formal hearing process.

In addition, the relevant authorizer and appropriator subcommittees could also exercise the accepted practice of inviting coalition/caucus members to hearings as another tool to deepen awareness and knowledge among a larger number of legislators as well as across jurisdictional lines.

Second, Congress could strengthen information-sharing and collaboration across mission areas by formally designating a limited number of joint committee memberships across responsible authorization and appropriations subcommittees. As an example, this practice in the past has served to help increase the coordination of priorities for the Intelligence Community among the Defense and the Intelligence subcommittees. Among the Energy and Water and the Defense Appropriations subcommittees for nuclear enterprise issues, this practice has produced stronger involvement of legislators in, and understanding of, the mutually-dependent relationships of the two Departments. Formalizing this practice of dual-assigning legislators would encourage what is now a useful, but informal, practice.

Third, a stronger form of collaboration could be achieved if Congress were to conduct annual joint authorization and appropriations subcommittee reviews of major nuclear security programs. Joint reviews would enhance communication and improve the coordination of policy and appropriations guidance and oversight. Such a joint review could be a key mechanism to align congressional positions and to follow up on enterprise reforms. This review process could also culminate in a meeting of the Chairman and Ranking Member of each pair of subcommittees to resolve any substantive differences before the authorization bill and appropriations bill go to full committee.

Fourth, and finally, many experts have advocated shifting appropriations authority for nuclear weapons programs and Naval Reactors to the Defense subcommittees of the House and Senate Appropriations Committees. The alignment of appropriations jurisdiction would help to synchronize the major modernization investments that

DOD will make for delivery platforms with the DOE&NS investments needed to modernize warheads.

The panel took differing views on the fourth idea. The Proponents note that this approach is consistent with previous actions where Congress has realigned committee jurisdiction to unify the oversight of important activities. For example, congressional appropriators, seeing the compelling need to align and synchronize the resourcing of all U.S. development efforts overseas, galvanized by ongoing development campaigns in Afghanistan and Iraq, brought together in one subcommittee what was previously bifurcated appropriations authority for funding the State Department and “Foreign Operations” (security assistance, foreign military funding, and development assistance). This action served to enhance the cooperation and collaboration underway by State and Defense assets on the ground. The resulting Senate and House “State, Foreign Operations, and Related Programs” appropriations subcommittees are evidence of successful jurisdictional shifts to unify two Departments’ efforts to meet emerging needs. In a similar way, there would be significant advantages in joint congressional oversight for the nation’s strategic nuclear weapons and platforms in combination with DOD’s conventional space, cyber, non-proliferation, and missile defense programs. Such integration would better synchronize the resourcing of weapon systems and warheads as part of the larger national security portfolio.

The opponents to the fourth idea were of the view that this action would create a seam between the weapons programs and other DOE programs, which would be counter to the goal of solidifying the Department’s ownership of the nuclear security missions. The panel therefore includes this step as a consideration, along with all the potential actions Congress could take, rather than as a specific recommended action.

2. Solidify Cabinet Secretary Ownership of the Mission

Diversity in counsel; unity in command.

—Cyrus the Great

CHALLENGES

Despite the intent of the NNSA Act to create a *separately organized* NNSA *within* DOE, the Act as implemented did not achieve the intended degree of clarity in enterprise roles and mission ownership. NNSA was not provided the line management authority necessary to execute NNSA's missions; nor was an effective policy implementation framework established.²⁵ In retrospect, this outcome perhaps should come as no surprise: no Cabinet Secretary could be expected to relinquish control over a mission that constitutes over 40 percent of his or her Department's budget; that presents significant environmental, safety, and security risks associated with potential management failures; and that produces a nationally strategic capability—a capability for which he or she is personally responsible to annually certify its safety, reliability, and performance to the President.²⁶

An important weakness of the Act is that it proposed organizational changes designed to insulate NNSA from DOE headquarters without specifying the Secretary's ownership roles, without stipulating the relationships between NNSA and DOE headquarters staffs, and without requiring actions to shift the Department's culture toward a focus on mission performance.²⁷ The

²⁵ “...NNSA and DOE have not fully agreed on how NNSA should function within the department as a separately organized agency. This lack of agreement has resulted in organizational conflicts that have inhibited effective operations.” GAO, *National Nuclear Security Administration: Additional Actions Needed to Improve Management of the Nation's Nuclear Programs* (Washington DC: GAO, 2007).

²⁶ In accordance with § 3141 of the FY03 NDAA, each of the three nuclear Laboratory Directors and Commander, U.S. Strategic Command are required to provide a letter with their assessment of the safety, reliability, and performance of each type of weapon in the nuclear stockpile. The Secretary of Energy and Secretary of Defense must forward these letters to the President unaltered, and must also provide their conclusions on these three factors. As noted in GAO, *Annual Assessment of the Safety, Performance, and Reliability of the Nation's Stockpile* (Washington, DC: GAO, February 2007).

²⁷ During the establishment of NNSA, the leadership undertook to draft a Functions, Roles, and Authorities Manual to clarify how the NNSA management system should work. A draft was completed in 2005, but it has

panel concludes that the relationships among NNSA, the Secretary of Energy, and the DOE headquarters are not properly aligned with mission needs today, and are in need of major reform. As implemented, the NNSA Act has actually been counter-productive. The problems fall into three main areas.

Overlapping DOE and NNSA Headquarters Staffs

As the result of the Department's implementation decisions, DOE headquarters mission-support staffs have continued to exercise oversight of NNSA—acting in parallel with the counterpart staffs in NNSA. The NNSA Act specified that NNSA would be “separately organized,” in order to provide the NNSA Administrator with headquarters staffs independent from those in DOE. NNSA staffs were established in functional areas such as General Counsel, Human Capital management, Public Affairs, Legislative Liaison, Chief Financial Officer, Environment, Safety and Health (ES&H), Security, and Chief Information Office.

Despite the creation of NNSA’s parallel staff structure, the DOE established management processes requiring that major NNSA decisions and initiatives would remain subject to myriad DOE headquarters staffing processes.²⁸ This was possible because, despite the legislative intent to insulate NNSA from DOE headquarters staffs, the legislative provisions provided the opportunity for the Department to adopt its own interpretation of the Act.²⁹ Members of both the DOE headquarters and NNSA staffs point to the inefficiencies this creates.³⁰

not yet been adopted. See, NNSA, “NNSA Matrix of Functions and Activities by Location (Revision 3),” February 2005. Briefing provided to the panel, June 2014.

²⁸ Unlike the Executive Order for Naval Reactors, the NNSA Act does not provide a blanket exemption of NNSA from DOE orders and directives, nor does it clearly designate NNSA as the risk acceptance authority for nuclear enterprise activities. For instance, the DOE order known as the *Departmental Directives Program* (DOE O 251.1C) requires policies, orders, notices, guides, and technical standards to be reviewed by a Directives Review Board chaired by the Director of the Office of Management. Senior representatives from the three Under Secretarial offices, the Office of General Counsel, and the Office of Health, Safety and Security (HSS) all serve as members whose concurrence is needed before final issuance. Should the review board be unable to reach consensus, the Deputy Secretary decides whether to approve or disapprove the position proposed by the directive’s responsible staff office. See U.S. Department of Energy, *Departmental Directives Program*, DOE O 251.1C (Washington, DC: Office of Management, 15 January 2009).

²⁹ DOE and NNSA define and govern their relationship based on legislation that does not unequivocally assign policy and risk acceptance authority. Section 7144 of 42 U.S.C. Chapter 84 reads, “The Secretary shall be responsible for establishing policy for the National Nuclear Security Administration” and “The Secretary may direct officials of the Department...to review the programs and activities of the Administration and to make recommendations to the Secretary regarding administration of those programs and activities, including consistency with other similar programs and activities of the Department.” Section 7144(a) further states that, “The Secretary shall be responsible for developing and promulgating the security, counterintelligence, and intelligence policies of the Department.” These statutes conflict with § 2402(b) of 50 U.S.C. Chapter 41, which declares, “The Administrator has authority over, and is responsible for, all programs and activities of the Administration...including...(2) Policy development and guidance...(6) Safeguards and Security...(9)

Confused Roles, Responsibilities, Authorities, and Accountability

Officials working within DOE and NNSA have cited the corrosive effects that result from the lack of understanding of responsibilities among DOE, NNSA headquarters, the field offices, and the M&Os. In sum, the current structure is one where many people can say no, but too few can say yes. Some mission-support organizations view their role as a mission rather than as important support functions to facilitate safe and secure mission achievement. As a consequence, some organizations responsible for mission-support functions often operate independently of line management. As one field representative put it, “We suffer in a regulatory framework where there are no clear lines of appeal or decision making and no integrated place for the cost-benefit analysis to be done. For example, regarding facility safety and operational infrastructure, I get direction from the Office of Acquisition and Project Management, the Defense Programs leadership, the leadership for infrastructure management, DOE headquarters.... How am I to do my job when getting direction from five different organizations?” Outcomes often are determined through interactions among competing interests. One illustrative example is Sandia’s Building 840, which was re-purposed for B61 LEP testing support and evaluation. During just one year of this effort, January 2012 to January 2013, the funding profile was modified five times by various DOE/NNSA authorities, frequently resulting in inefficient work stoppages.³¹

The operational consequences are magnified by a risk-averse culture in which the penalties of being responsible for a wrong (albeit well-intentioned) decision are far greater than any rewards for taking initiative. Because issues and decisions are staffed through multiple layers of headquarters staffs pending resolution, at a pace set by the staffs, the staffing structure itself tends to skew incentives toward delay and excessively conservative approaches at the DOE headquarters level. As noted in a recent report of the National Research Council, mission-support personnel are able to assess the risk of doing an experiment, but are not able to balance this against the countervailing risk of *not* doing an experiment.³² This tendency is amplified in those areas where mission-support organizations improperly view their role as a mission rather than as an important support function to facilitate safe and secure mission achievement. The combined effect is to create strong and counter-productive incentives to delay action and to

Environment, safety, and health operations” and § 2402(d), which states “the Administrator can establish NNSA-specific policies unless disapproved by the Secretary.”

³⁰ Earlier studies arrived at this conclusion as well. “Implementation of the NNSA Act failed to achieve the intended autonomy of NNSA within DOE.” Elizabeth Turpen, *Leveraging Science for Security: A Strategy for the Nuclear Weapons Laboratories in the 21st Century* (Washington, DC: Stimson, 2009). “The governance structure of the NNSA is not delivering the needed results. NNSA has failed to meet the hopes of its founders. It lacks the needed autonomy.” Strategic Posture Commission, *America’s Strategic Posture*.

³¹ Sandia, *Building 840 Approval Process* briefing during the panel’s fact-finding visit to Sandia.

³² National Research Council, *The Quality of Science and Engineering at the NNSA National Security Laboratories*, 3.

eliminate all risks—large and small—rather than seeking to effectively manage the most important ones.

Given the sensitivity of nuclear activities in such areas as security, safety, health, and environmental stewardship, it should be emphasized that the panel’s intent is to strengthen these aspects, not diminish them. It does so by proposing that line management be held responsible for these activities, in addition to producing primary mission deliverables. In doing so, line management is to be supported by specialists, but not subject to their direction.

Flawed DOE Processes for Risk Management

Because DOE regulates a wide variety of operations, its orders are often written broadly to apply to both nonnuclear and nuclear activities even though each may demand special considerations. Consequently, DOE orders for ES&H and security often lack the precision, consistency, and clear implementing guidance necessary to translate the order’s intent into practice. Not all sites have the same version of DOE orders for ES&H and security policy reflected in their contracts. Indeed, there are sites that have both NNSA and DOE orders in their contract covering the exact same ES&H topic; although these orders may be similar, they can contain subtle, but crucial, differences.³³

The ambiguity in applicable standards is compounded by the Department’s lack of a clear mechanism for defining and accepting risks. In the current DOE/NNSA structure, there is no clear mechanism or single responsible official (below the Secretary) for assessing and accepting risk. In contrast, other more formally structured regulatory bodies, such as the Nuclear Regulatory Commission or the Occupational Safety and Health Administration, have processes for clarifying the intent of their regulations and resolving operational issues as they arise, including disciplined risk analysis and risk acceptance procedures. Field participants see the lack of such processes in DOE and NNSA as a key impediment. As one laboratory participant stated, “Even if the lab has a rock-solid technical justification for its design, there is not a central point of contact in NNSA for adjudicating and getting a final decision on a safety-based design change.” The frustration is evident: “This process takes a long time; it shouldn’t be this hard. And, in this process, there is never any link to cost or mission.”

³³ For example, DOE O 473.3 Attachment 3, *Physical Protection*, states that corrective maintenance of security system elements must be initiated within specified times frames depending on their level of importance and degree of deterioration. NNSA NAP 70.2 *Physical Protection*, while overall levying many of the same requirements as DOE 473.3, requires instead that the contractor just develop a maintenance prioritization plan. An additional example can be found in exemptions to nuisance and false alarm rates. DOE O 473.3 allows minimum nuisance and false alarm rates to be exceeded, “if the alarms can be assessed at all times, either visually or by CCTV” and “do not degrade system effectiveness.” NAP 70.2, despite having the same minimum rates as DOE O 473.3, does not contain this exemption.

The Department's inability to deal analytically with risk acceptance decisions is sharply illustrated by a case involving the Microsystems and Engineering Sciences Application (MESA) complex at Sandia. In this case, there are well-established commercial standards for occupational exposure limits to arsine, a hazardous gas, which is common in such fabrication facilities. When practical, MESA has set gas monitors to alarm at levels below accepted industrial standards in order to increase safety margins. In 2007, when MESA lowered its detection limit for arsine by an order of magnitude, frequent false alarms soon occurred, which resulted in building evacuations that significantly impacted operations. Consequently, Sandia proposed to raise the detection limit to a value that was still both code compliant and within the stable operating space of the gas monitors. In the end, it took more than a year and thirteen false alarms before DOE accepted this revised detection limit.

Such weaknesses in risk analysis and risk acceptance decision making also have significantly undermined the DOE/NNSA's ability to engage effectively with the Defense Nuclear Facilities Safety Board. Congress chartered the DNFSB to provide independent nuclear safety oversight, by identifying safety concerns and raising issues with respect to the DOE's implementation of its own orders. At the same time Congress has recently stated that, "it is incumbent upon the Secretary to reject or request modifications to DNFSB recommendations if the costs of implementing the recommendations are not commensurate with the safety benefits gained."³⁴ Given the statutory role of the DNFSB to identify any shortcomings in implementation, and the seeming lack of a DOE analytical capability to effectively evaluate options to respond to the Board's findings or recommendations, the DNFSB exerts a dominant influence over DOE's risk management in nuclear safety policies and programs. In essence, it becomes a de facto regulatory arm. Even when the DNFSB engages informally, it exerts enormous influence, which can cause DOE staff to over react.³⁵

³⁴ "Joint Explanatory Statement to Accompany the National Defense Authorization Act for Fiscal Year 2014," Congressional Record 159: 176 (12 December 2013), H7968.

³⁵ One example of a costly DOE interpretation of requirements can be found in the categorization of the Joint Actinide Shock Physics Experimental Research (JASPER) facility as a nuclear facility. JASPER was developed by Lawrence Livermore National Laboratory (LLNL) at the Nevada National Security Site (NNSS) to conduct shock physics experiments to explore the fundamental properties of plutonium including its equation of state. JASPER is a two-stage, light-gas gun that shoots projectiles at plutonium targets at a velocity of 1–8 kilometers/second, inducing very high pressures in the material. JASPER supports the stockpile stewardship program by providing important physics data regarding nuclear warhead primary certification, dynamic materials properties, and pit lifetime studies.

Experiments at JASPER typically employ targets using a few tens of grams of plutonium. The target is enclosed in a Primary Target Chamber (PTC) that is designed to entomb the expended material while surviving the resulting stresses so that receipt of data from the experiment is assured. A Secondary Confinement Chamber (SCC) provides a redundant, engineered passive safety feature to preclude the release of radioactive material should the PTC fail to contain radioactive debris.

JASPER began operations in 2000 as a radiological facility. In 2007, after some debate within the DOE and with DNFSB staff (albeit not based on a DNFSB finding), the facility was categorized as a higher-risk Hazard

RECOMMENDATIONS

As directed by Congress, the panel explored a range of options for an organizational structure that would address the problems created in establishing NNSA. Several alternative structures were developed and assessed. (A discussion of the structural options considered by the panel is provided in Appendix E). The panel concludes that the nuclear enterprise would be most effective in performing its missions if it were led by an engaged Cabinet Secretary with strong national security credentials. Hence, the solution is not to seek a higher degree of autonomy for NNSA, because that approach would further isolate the enterprise from needed Cabinet Secretary leadership. Instead of attempting to more completely insulate the nuclear enterprise from the Department, or place the enterprise elsewhere in the government, it is recommended that Congress place the responsibility and accountability for the mission squarely on the shoulders of the Secretary, supported by a strong, well-qualified enterprise Director with unquestioned authority to execute nuclear enterprise missions consistent with the Secretary's policy direction—with accountability for doing so clearly delineated throughout the enterprise.

Every other alternative has significant weaknesses.

- The panel first considered the option of reorganizing DOE/NNSA within the Department in order to strengthen NNSA's autonomy (effectively, an improved status quo). This was rejected because numerous studies and the panel's own fact-finding revealed that the current *separately-organized* approach, as implemented, is fundamentally flawed, and that adjustments to this model are not sufficient to correct either the structural or cultural problems.
- The panel also explored the model of NNSA as an independent agency. The panel concluded that a mission of this importance to U.S. national security requires Cabinet-level ownership and support.
- The panel also evaluated three variants of a greater role for the Department of Defense. In each case, there is considerable uncertainty about DOD's willingness and ability to integrate and support an organization with a very different scientific and civilian culture.

Category 3 nuclear facility. Apparently, this determination was based on the quantity of “material at risk,” not taking into account the use of the facility and the redundant containment during experiments. As a result, the facility incurred increased costs from additional quality assurance needs for equipment and extensive new safety basis requirements, which, absent increased funds, resulted in reduced scientific output. In 2011, the NNSA decided to review its 2007 decision and consider the recategorization of JASPER as a radiological facility to save costs while providing an opportunity to carry out more experiments. That review, so far, has not resulted in any changes.

Categorization of JASPER as a nuclear facility must be questioned. Adherence to standards and controls that are time consuming to implement and that must be applied to the entire facility add significant operational costs without commensurately enhancing the safety of the public or experimental personnel.

As discussed in the following recommendations, it will be vital to clarify this Director's line-management authority by making it abundantly clear that mission direction and risk acceptance authorities are to be vested with the Director. This option also assumes fundamental management reforms are achieved within DOE, along with changes beyond DOE and NNSA—including within the White House and Congress.

An approach to achieve these objectives is outlined in the panel's recommendations (3, 4 and 5). The proposed roles and authorities of the Secretary and Director are summarized in Table 2 and detailed in Appendix C.

Recommendation

3. Congress should amend the NNSA Act and related legislation to clarify Departmental leadership roles.

- The Secretary “owns” the nuclear enterprise missions, sets Departmental policy for the nuclear enterprise, and is accountable to the President and Congress for the enterprise.
- The Director, Office of Nuclear Security (ONS) has full authority to execute the nuclear enterprise missions consistent with the Secretary’s policy.
- Departmental mission-support staffs advise and assist the Director in executing enterprise missions.

A range of actions are outlined to ensure appropriate leadership and to provide key authorities and statutory responsibilities.

Action Items

3.1 The amended legislation should specify the Secretary’s leadership responsibilities and define duties that underscore the Secretary’s accountability for the nuclear enterprise and its missions.

The amended legislation should stipulate that the Secretary sets Departmental policy and priorities for the mission, while conveying full authority to the Director for executing the mission. Further, the Secretary should be responsible to ensure that Departmental mission-support staffs serve the Director effectively in the execution of the mission.

The Secretary must possess a national security background sufficient to be confirmed by both the Senate Energy and Natural Resources and Senate Armed Services Committees. The Secretary’s accountability is emphasized by stipulating annual mission reviews with Presidential staff and oversight committees of Congress.

3.2 The amended legislation should create the Office of Nuclear Security (ONS) within the Department to perform the missions currently assigned to NNSA.

In establishing ONS, the “separately organized” provisions in the NNSA Act should be removed. This will enable the Secretary to eliminate the overlapping DOE and NNSA headquarters staffs, and create a more effective and efficient ONS. Key to the success of this structural change is the clear understanding that a single set of DOE&NS mission-support staffs will serve the ONS mission, but will serve under the operational leadership of the Director. In addition, this approach will require the clear delineation of the responsibilities and authorities of the Secretary and Director, ONS as summarized in Table 2, and explained in the other recommendations and action items in this Chapter.

3.3 The amended legislation should designate a Director, Office of Nuclear Security with full authority to execute nuclear enterprise missions under the policy direction of the Secretary. The Director should have tenure of at least six years, be compensated at the rate of Executive Schedule Level II, and hold the Departmental rank of a Deputy Secretary or Under Secretary.

If the Director is to succeed with the ONS organizational structure, roles and authorities need to be made crystal clear. The panel sees several attributes as essential for success: To provide needed seniority and continuity of leadership, the Director should have the rank of Deputy Secretary or Under Secretary, be compensated at the rate of Executive Schedule Level II with a minimum six-year term. The Director should have full authority and accountability for the ONS mission, consistent with the Secretary’s policy, including serving as the risk acceptance authority for environment, safety, health, and security matters. The Director should have direct and unfettered access to the Secretary as required to execute the ONS mission. The Director should also have direct access to the President on matters critical to the ONS’s missions, such as the safety, security, and reliability of the nuclear stockpile, non-proliferation, and counter-proliferation concerns.

The panel judged these attributes of the Director to be paramount in empowering a leader capable of executing all aspects of the mission and reforming the enterprise’s culture. The panel recommends that the Director serve concurrently as a second Deputy Secretary in the Department or as an Under Secretary. While the panel did not agree on the appropriate rank, it does agree that this question of rank is less essential for success than is establishing an effective working relationship with a knowledgeable, engaged Secretary and providing the Director all the necessary authorities as described above. As a result, the panel notes the potential options but offers no recommendation on this one specific issue.

Table 2. Proposed Departmental Roles and Authorities

Secretary of Department of Energy and Nuclear Security (DOE&NS)
<ul style="list-style-type: none">• The Secretary is assigned full ownership of and accountability for the nuclear security missions• The Secretary sets Departmental policy and priorities for executing nuclear security missions, conveys full authority to the Director for executing the missions, and ensures Departmental mission-support staffs serve the missions effectively• The Secretary's nuclear security roles and needed background are emphasized by requiring confirmation hearings with both the Senate Energy and Natural Resources and Senate Armed Services Committees• Annual mission reviews with Presidential staff and oversight committees of Congress emphasize the Secretary's accountability• The importance of the enterprise and its missions is signified by renaming the Department the Department of Energy and Nuclear Security
Director, Office of Nuclear Security (ONS)
<ul style="list-style-type: none">• The Director has full authority to execute the nuclear security missions under the policy established by the Secretary, and therefore must possess strong technical management capabilities• For leadership and continuity, the Director's position is an executive schedule II with a tenure of at least six years (subject to Presidential review); The Director shall be assigned the rank of Deputy Secretary or Under Secretary of DOE&NS.• The Director is provided direct access to the President on issues critical to ONS's missions, such as nuclear stockpile safety, security, and reliability; non-proliferation, etc.• The Director is provided direct access to the Secretary on all ONS matters; he advises the Secretary on all Departmental policies as they affect the nuclear security missions and recommends responses to findings and recommendations of advisory/oversight groups• The Director is assigned risk acceptance responsibility and authority on ONS matters, taking full responsibility and accountability for executing the Secretary's policies for nuclear security missions<ul style="list-style-type: none">○ Mission-support staffs advise the Director on risk-acceptance decisions○ Any disagreements between line managers and mission-support staffs are quickly raised through an appeals process to the Director for adjudication and decision (and in rare cases where resolution is not reached, to the Secretary)• The Director has full authority to shape and manage the ONS technical staff; Existing political appointments beneath the Director are converted to Director-appointed Senior Executive Service or Excepted Service positions• To eliminate redundancies, ONS receives mission support from Department headquarters staff functions; the Director provides input on performance evaluations for mission-support staff personnel.

3.4 The amended legislation should assign risk acceptance authority and accountability to the Director for ONS mission execution.

The Director must ensure there is a formal, documented process for assessing and accepting risks in implementing the Secretary's policies. In addition the Director must inform the Secretary of any high-risk conditions. This process should result in consistent implementation of the Secretary's policies, while allowing for informed and purposeful risk acceptance decisions by the Director. Similarly, the Director must be accountable to inform the President of any high-risk conditions relating to the safety, security, or reliability of the stockpile.

The Director should establish an analytical capability for evaluating reasonable risk-reduction alternatives in executing missions, so that informed decisions are made and those decisions can be documented. (See Action Item 5.1)

3.5 The amended legislation should grant the Director authority to appoint senior officials in ONS, including the conversion of three Senate-confirmed direct-report positions (Principal Deputy, Assistant Secretary for Defense Programs, and Assistant Secretary for Non-Proliferation Programs) to Senior Executive Service or Excepted Service positions.

Congress should grant the Director full authority over the key, senior management positions in ONS. These include the direct reports to the Director: the Deputy Directors and the government field office managers.

To enact this recommendation and to ensure the Director has unambiguous authority and accountability for execution of the nuclear security mission, Congress should eliminate the Presidential appointment and Senate confirmation of the Principal Deputy Administrator (NA-2), the Deputy Administrator for Defense Programs (NA-10), and the Deputy Administrator for Defense Nuclear Nonproliferation (NA-20). These positions should be restructured as Senior Executive Service or Excepted Service positions and filled under the sole authority of the Director.

The ONS should adopt, whenever permitted by law, the personnel management philosophy and practices observed in the successful organizations benchmarked for this review. In such organizations, recruitment, career management, and the growth and development of future leaders is a top leadership priority.

3.6 The amended legislation should emphasize the importance of the nuclear enterprise missions, by changing the name of the Department to the “Department of Energy and Nuclear Security.”

The new name highlights the prominence and importance of the Department's nuclear security missions, recognizes that greater than 40 percent of the Department's budget

is devoted to these missions, and stresses the importance of the needed cultural change. The Secretary of Energy would similarly be renamed the “Secretary of Energy and Nuclear Security.” The intangible value of this recognition of reality will, in the panel’s view, far outweigh the financial costs of its implementation.

Recommendation

4. The Secretary should implement Departmental management processes that specify the Director’s authorities for executing nuclear enterprise missions. These authorities include:

- **Line management authority for the safe, secure, and environmentally responsible execution of nuclear security missions**
- **Management authority for mission-support staffs assigned to the Office of Nuclear Security**
- **Concurrence authority for Departmental rulemaking on ONS matters**

In addition to the legislative actions outlined in Recommendation 3, it will be essential for the Secretary and the senior Departmental leadership to create an effective management structure. Decision-making structures are needed that ensure the Director has the authorities necessary to execute his responsibilities for the nuclear missions.

Action Items

4.1 The Secretary should establish decision-making practices among the senior headquarters staffs that codify the Director’s authority to execute the nuclear security missions consistent with the Secretary’s policies.

The Secretary owns the nuclear security missions within the Department and sets policy. The Secretary’s actions must reinforce the authority of the Director, who is responsible for implementing that policy.

A management system is needed that will codify the Director’s authority to execute the Secretary’s policies without undue intervention or interference from other senior officials. This will require the incorporation of three attributes:

- The Secretary conveys to the Director and his ONS line managers the authority to execute nuclear enterprise programs in accordance with the Secretary’s policies. In executing their mission responsibilities, the line managers are responsible for meeting the Department’s policies and standards for all the mission-support functions, including such areas as ES&H, security, financial integrity, and personnel management.
- The Director and the ONS line managers must seek the support and advice of mission-support functional experts in executing ONS responsibilities, but remain responsible to make the decisions on program execution and the acceptance of risk and program decisions.

- Where disagreements arise between line managers and mission-support functional experts, a structured process is established to raise the issue for disagreement—first to the Director and senior mission-support officials and then, if need be, to the Secretary.

The current DOE organization chart in Figure 5 identifies the major senior officials who must be considered in establishing the needed decision-making process. Roles and authorities (and issue resolution mechanisms) must be made clear with respect to the four most senior officials reporting directly to the Secretary, including the Deputy Secretary and three Under Secretaries. Mechanisms also must be put in place to ensure each mission-support function effectively supports ONS. Several mission-support officials are placed under the Under Secretary for Management & Performance, including in the functional areas of policy making for environmental, safety, health, and security matters; human capital management; and the Chief Information Officer. Other officials head mission-support functional offices reporting directly to the Secretary, including General Counsel, Chief Financial Officer, Intelligence and Counterintelligence, Public Affairs, and Congressional Liaison.

In presumably rare cases where major conflicts exist between line management's decisions and the staff element's view of its responsibilities, the issue should be promptly elevated to the Director, ONS for resolution. This will reduce the number of personnel who can delay or stop mission execution and enhance risk-informed decision-making at the lowest appropriate management level.

In establishing these headquarters management practices, the Department could benefit from the examples of successful organizations benchmarked for the panel's review. The best practices employed in the benchmarked organizations include a senior management process that codifies roles and relationships among the top officials and their staffs, ensures the free flow of information up and down the chain of command, identifies issues requiring top management attention, and fosters the timely, decisive adjudication of issues.

4.2 The Secretary should establish a matrix management structure that

- **Aligns and codifies roles, responsibilities, authority, and accountability**
- **Specifies the Director's leadership authority over line-management and mission-support ("functional") staffs assigned to ONS**
- **Eliminates overlapping headquarters staffs**

An essential step in establishing the needed matrix management structure is the alignment and systematic documentation of roles, responsibilities, authority, and accountability. Individuals at all levels should understand their roles and their contributions to mission execution. This should be done in a manual available to everyone working within the nuclear security enterprise.

The Secretary should stipulate that the Director, ONS shall receive support from the Department's mission-support staffs in order to eliminate redundancies, reduce costs, and leverage best practices. To make this approach work effectively, the Secretary must establish suitable management structures and processes to ensure that the Director can interact with and draw upon the skills and expertise across line-management staffs and these DOE&NS mission-support elements.

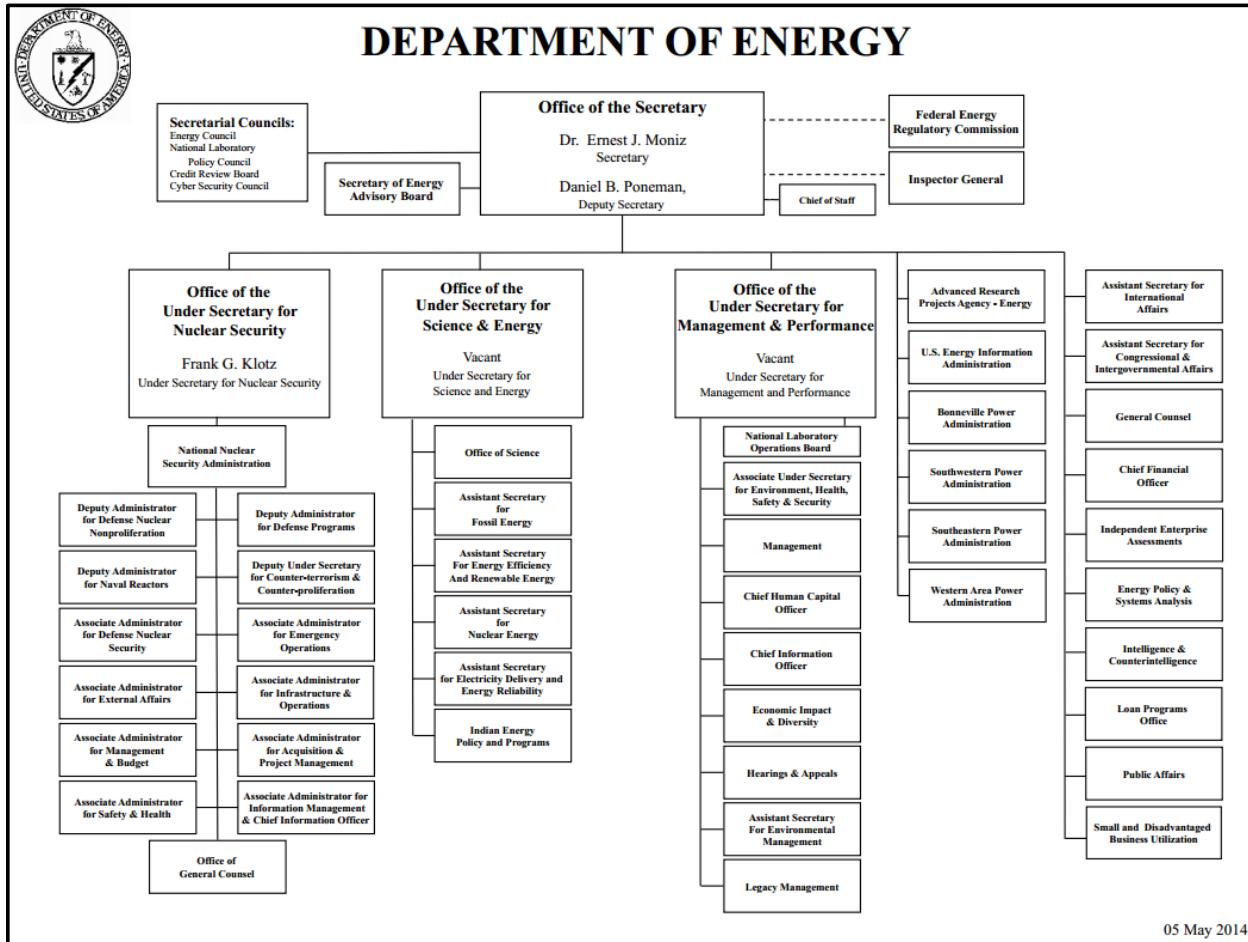


Figure 5. Current Department of Energy Organization

An effective personnel management system is essential. The Director should have input on performance evaluations for those mission-support staff personnel assigned to assist ONS. The Director further should have the authority to approve or dismiss assigned individuals. In addition, those DOE&NS functional staff directors responsible for the functional communities who provide matrix support to ONS must be accountable to the Secretary to ensure their organizations' responsibilities are executed in support of nuclear security missions.

While mission-support staffs serve primarily to support and advise line managers, there must be a mechanism that allows functional experts to question and appeal the

decisions of the line managers. Such a mechanism needs to elevate issues quickly to the appropriate authorities for resolution, as described in Action Item 4.1.

4.3 The Secretary should adopt processes defining the Director's role in ensuring applicable DOE&NS policies, rules, and orders are compatible with the operating circumstances of the nuclear security enterprise.

Decision-making mechanisms should provide the Director a role in reviewing and approving all Departmental policies affecting ONS and enterprise missions, especially ES&H and security rules. As a model for this, the Department can build on its recent initiative to create a committee to coordinate the development of security policy.³⁶ Structured effectively, this committee should enable the Secretary to unify overall security strategies and policies, while allowing the tailoring of requirements to unique operating environments. By adopting a similar review and tailoring of policies and regulations across all mission-support functional areas, the Secretary could ensure that rules and orders applicable to the nuclear enterprise are subjected to careful analysis, with the goal of providing strong regulatory standards consistent with the effective and efficient operations of the enterprise.

4.4 The Secretary should designate those senior headquarters positions that have line-management decision authorities and those that are responsible for mission-support functions.

To complement the decision mechanisms outlined in Action Items 4.1, 4.2, and 4.3, the Department will need to create a manual that clearly defines and codifies roles, responsibilities, authorities, and accountability.

Recommendation

5. The Secretary and Director should reform DOE regulation to strengthen risk management.

It is imperative that existing rulemaking practices and execution oversight be overhauled so that risk is better assessed and balanced with the needs of mission execution.

³⁶ DOE's recent reorganization established a Chief Security Officer for each of the Under Secretaries with the responsibility for implementing security policy in their respective facilities. These Chief Security Officers will form a new Departmental Security Committee responsible for developing the Department's security strategies and policies. The goal is to establish common rules and orders with tailoring as needed to fit unique operating circumstances.

Action Items

- 5.1 The Secretary should strengthen the Department's analytical expertise and processes for assessing risks, especially for nuclear and other high-hazard functions.**

The Secretary should ensure that the Department has strong, technically qualified mission-support staff and should expand that capability if needed in order to make risk-informed decisions in line with mission execution, and to properly consider external oversight and advice (such as that of the DNFSB) during decision making.

- 5.2 The Secretary should direct a comprehensive review and reform of the Department's ES&H and Security Orders and Directives to reflect best industry practices.**

The purpose of the recommended review is to clarify roles and responsibilities; remove ambiguity from requirements; expand the use of national- or international-consensus standards (e.g., International Organization for Standardization [ISO] certifications, OSHA, National Industrial Security Program) where appropriate and not already in use. The orders and directives should account for unique nuclear and high-hazard conditions and requirements that may demand special consideration or instructions (e.g., in the use of beryllium); and they should establish performance-based, risk-informed guidelines.

- 5.3 The Secretary (with Congressional concurrence) should establish a mechanism to improve the Department's ability to respond to inquiries, findings, and recommendations of the Defense Nuclear Facilities Safety Board.**

The DNFSB serves an important external advisory function for the Secretary and Congress. The Department needs to improve its ability to interact effectively with the board. To this end, Congress should amend legislation governing the forwarding of Recommendations from the DNFSB (as described in 42 U.S.C. Sections 2286a and 2286d (2006)) to require that DNFSB recommendations relating to ONS activities be transmitted to the Director at least thirty days before the recommendations are transmitted to the Secretary, unless the DNFSB determines that a safety issue needs the immediate attention of the Secretary.

3. Adopt Proven Management Practices to Build a Culture of Performance, Accountability, and Credibility

Culture eats strategy for breakfast.

—Peter Drucker

CHALLENGES

In addition to the leadership and structural challenges outlined in the preceding chapters, the nuclear enterprise is greatly burdened by DOE/NNSA’s counter-productive management culture. One senior NNSA official summed up the current situation as follows: “An effective management system is timely, accurate, and simple; our NNSA system is none of these.” Participants at all levels report that DOE/NNSA lacks a unifying focus on mission deliverables. Much of the dysfunctional behavior reported to the panel reflects an absence of trust and mutual respect, internal and external to the enterprise. Until effective management practices are institutionalized and such counter-productive behaviors are reversed, narrow bureaucratic interests will dominate, “turf battles” will persist, and the morale of the workforce will continue to erode.³⁷ To begin the process, a major cultural overhaul will be needed to align the structure, resources, and decision processes with mission priorities.

To assess the current situation, the panel identified a number of proven management characteristics common to successful high-risk, high-technology operations. These characteristics, summarized in Table 3, draw on benchmarking activities documented in Appendix F.

³⁷ See, for example, Sonja B. Haber et al., “An Evaluation of Organizational Safety Culture at the U.S. Department of Energy National Nuclear Security Administration” (Washington, DC: Defense Nuclear Facilities Safety Board, 2 July 2013), 4, 26; and Partnership for Public Service, *The Best Places to Work in the Federal Government, 2013 Rankings*, which ranked DOE overall 17 of 23 among mid-size agencies and noted a steady decline in its rating compared to the mid-agency average since 2009. Moreover, NNSA ranked 249th out of 300 agency subcomponents in this same survey, available at <http://bestplacetowork.org/BPTW/rankings>, accessed 5 August 2014.

Table 3. Criteria for Success in High-Reliability, High-Technology Organizations

Mission-Driven Culture	<ul style="list-style-type: none">Universally understood and accepted purposeEffective culture developed over many years by transformative leadership and maintained by mentoring carefully selected personnelQualified, empowered leadership
Competent Personnel	<ul style="list-style-type: none">Long-tenured senior leadershipTechnically proficient and accomplished staffExceptional candidates recruited early to instill and sustain cultureProfessional development programs emphasizing problem identification/solving, continuous learning in part through rotational assignments, leadership, and the employment of best practices
Disciplined Planning and Budget	<ul style="list-style-type: none">Work scope and funding is aligned and reserves are provided for contingenciesSingle strategic planning reference document guides all decisionsUnwavering adherence to a disciplined planning and budget process, which is comprehensive and detailedSystematic planning and budgeting for needed facilities and infrastructure
Clear Line-Management Structure & Decision-making	<ul style="list-style-type: none">Clearly established, codified, and reinforced lines of authority, responsibility, and accountabilityFormal, inclusive, decisive, prompt, and documented decision-making processesDeliberative body, such as a Board of Directors or Management Council, which obliges the organization to collectively engage in a timely fashion in risk-based resource allocation decisions to accomplish the missionMission and support functions are separate, but line management is responsible for both
Accountable Program Managers	<ul style="list-style-type: none">Program managers command the resources and authority needed to manage their programsIn a government operation, government program managers oversee efforts, but contractors execute the work within established policiesLean and authoritative field offices have sufficient technical and operational expertise to effectively oversee the workStakeholders are included early in project life cycle and strive to understand all requirements and regulations upfrontTechnical and financial elements of programs are scrutinized in order to validate efforts and control costsThe more hazardous the operation, the more safety is considered integral to mission performanceSpecialized ES&H and security standards are used only when more generally accepted standards (e.g., industrial standards, OSHA standards) are shown to be inadequate
Proactive Communications—Internally and Externally	<ul style="list-style-type: none">Organization priorities are aligned with mission and frequently communicated by senior leadershipInformation flows freely and quickly up and down the organization, and decisions are made at the appropriate levelsNo obstacles (people or processes) prevent bad news from moving up the chain of commandMechanisms exist for field oversight offices and site managers to communicate regularly and directly with the head of the organizationAdequate visibility by external stakeholders

Mission-Focused Contracts and Incentives	<ul style="list-style-type: none"> • Contract fees primarily focused and evaluated on overall costs and mission performance rather than on mission-support compliance • Contracts consolidated, where appropriate, to achieve economies of scale • Contracts are competed to yield market-based fixed fees • Contractor incentives provided in the form of possible award term and/or contract extensions • Magnitude of fixed fee determined by investment (personnel, culture, processes, financial) of contractor resources and risks involved (including reputational)
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Prominent among the characteristics of successful organizations are a mission-driven management culture with capable, empowered leadership; clear plans with careful analysis of the resources needed to succeed; a clear line-management structure; strong program managers focused on mission deliverables; effective communications; a focus on conveying effective incentives to suppliers; and clear and meaningful accountability.

This is no more than a collection of sound management principles, yet in many of these areas DOE/NNSA has fallen short. The panel's findings on each of the areas listed in Table 3 are presented here (with the exception of contractual incentives, which are discussed in Chapter 4.)

Lack of a Mission-Driven Culture

A common definition of management culture is, "This is how things are done here." In a healthy organization, management practices and culture are mutually reinforcing in creating productive behaviors: management practices shape the culture; the culture shapes behaviors and reinforces the management practices. Successful organizational cultures share two common attributes: leadership and accountability. First, each person feels accountable, and is held accountable, for his or her contribution to the mission—high quality deliverables, on schedule, and on budget. Teamwork and peer pressure create incentives to "not let my team down." NNSA staff are among those who widely report that this sense of mission focus is missing in the organization.³⁸ Second, effective leaders provide a clear, consistent vision that is effectively

³⁸ See, for example, the document prepared for NNSA by Haber et al., "An Evaluation of Organizational Safety Culture at the U.S. Department of Energy National Nuclear Security Administration" 4, 16–17. While this study focused on the safety culture, many of its findings—including on accountability—addressed perspectives within the organization more broadly. In the summary, the survey team reported the following:

"There is a lack of trust and respect for NNSA senior leadership by many employees across the organization. Individuals described not feeling valued or respected for their professional expertise and being instructed about what to do by leaders who generally do not understand the various functions that NNSA is responsible for. A lack of engagement by senior leadership of the staff combined with the perception of favoritism for a small group, contributes to the unfavorable perception held by many of the senior leadership team. The behaviors exhibited by senior leadership could be labeled as a 'culture of entitlement' and a 'culture of non-inclusion' for NNSA staff."

The NNSA organization does not effectively manage change. There is no systematic organizational change management process. Several major changes were recently made without a clearly communicated strategy, without anticipation of the potential consequences of changes in roles and responsibilities, especially in the

communicated throughout the organization. Everyone understands the mission, and focuses on his or her part in fulfilling it. Such communication, as discussed later, has not been effective in NNSA.

In the absence of a unifying culture, enterprise participants report there are significant divisions within NNSA. Entrenched organizational relationships and loyalties inhibit an enterprise-wide team approach. Distinct communities and subcultures create splits between mission managers and mission-support personnel, between headquarters and the field, and between the government and the M&Os. As noted in Chapter 1, these internal divisions within NNSA stem, in part, from the lack of clear national direction. Individuals and groups within the organization are left to compete in setting priorities, vying for resources and attention. Such divisions also reduce the incentives to cooperate, such that the leverage from joint efforts across the mission areas is often lost. Reestablishing a unifying sense of purpose will be essential for building a cohesive mission-driven culture.

The delay in filling top leadership positions in NNSA has contributed to these problems. As noted already, NNSA has suffered from a fifteen-month gap in permanent leadership until recent months when Congress confirmed NNSA's fourth Administrator and his Deputy. Contrast this with the leadership continuity provided in the generally high-performing Naval Reactors program, where the previous three commanders were each in position for eight years—without any leadership gaps or lapses in continuity.

Weak Career and Leadership Development

The purposeful development of leaders, managers, and staffs is essential to any governance system. Committed, well-trained, and experienced personnel can overcome organizational deficiencies, but no organizational improvements can compensate for uncommitted, ill-trained or inexperienced people. The effective organizations benchmarked for this study focus on personnel management to create a reinforcing virtuous cycle: proven leaders emerge from careful selection and decades of experience involving assiduous development and screening. Such leaders make a

areas of safety and security, and without the necessary formalization ahead of the change to facilitate an effective transition. All the changes have resulted in frustration among the workforce because of confusion in responsibility, uncertainty in authority, and a questioning of value of to the mission.

Participants in this assessment clearly indicated that they believe that there are ... work environment issues across the NNSA organization. Results from the electronic survey, discussions, ... respondents who chose the Prefer Not to Respond category, ... Hotline inquiries and requests ... are all indicators of a fear of reprisal for raising potentially negative concerns These behaviors are also related to the ... Cultural Styles that employees perceive are needed in order to succeed, or in some cases to survive, in the NNSA organization.”

system work. They also attract and inspire other high-caliber people to join and stay in their organizations.³⁹

NNSA has not instituted the personnel programs needed to build a workforce with the necessary technical and managerial skills. There is a nearly complete absence of career development programs, rotational assignments, and professional certification requirements. Too little emphasis is placed on technical training, experience, and accomplishments. Some motivated individuals take the initiative to grow and develop on their own within the NNSA system, but there is no systematic process in place to develop and reward a “professionalized” career workforce.

Additional skilled personnel will be needed in several management disciplines, including cost and resource analysis and program management. Another key staffing issue for NNSA is the shortage of headquarters personnel with operational understanding, experience, and awareness. Now, as the United States embarks on an intensive series of warhead LEPs covering the entire stockpile, a leadership team with deep experience and continuity (such as had developed during the Cold War) will be essential for managing the enterprise. Building the needed workforce will take time and a focused effort. Creating and sustaining a personnel management system to build the needed culture, skills, and experience is a vital component of governance reform.

Absence of Trusted Cost and Resource Analysis

NNSA’s inability to estimate costs and execute projects according to plan has been a major source of dissatisfaction among the national leadership and customers and has significantly undermined NNSA’s credibility. The panel understands that there are external and internal factors that have influenced NNSA cost estimates. Nevertheless, initial cost estimates for major NNSA programs have been found to be underestimated not by 10 to 20 percent but by factors of two to six:

- B61 LEP: An initial estimate (2010) assumed that the cost would be comparable to that of the W76 LEP, in the range of \$4 billion. However, lab experts, when engaged by NNSA, concluded that the B61 LEP would be much more complex than the W76. When

³⁹ At benchmark organizations, the new entrants are carefully screened and selected, in part based on suitability for long-term careers within the organization. Employees tend to spend long careers within the organization. Promotion to the most senior levels is usually from within, and these organizations favor those with broad-based career experience within the organization. As one example, the current Director of Navy Strategic Systems Programs (SSP) started his career within that organization as a junior officer, and almost all of his subsequent assignments have been within that command. In addition to deep familiarity resulting from a long career with the same organization, long command tours provide needed continuity and allow the Director to promulgate and sustain the desired culture. Recently, the tenure of the SSP’s Director was extended from about four years to eight years to strengthen this benefit.

the *final* B61 LEP cost report was completed, the estimate rose to \$8 billion. DOD's CAPE then reviewed the program and explored alternative assumptions on program schedule and salary growth. Based on its review, CAPE assessed costs of roughly \$10 billion. At present, the B-61 is progressing, albeit with another six month delay, according to the *2015 Stockpile Stewardship and Management Plan*.

- Los Alamos CMRR facility: An initial estimate (2005) placed the ceiling at \$975 million; by 2010, NNSA estimated the cost to range from \$3.7 to \$5.8 billion, a nearly six-fold increase with a three to seven year delay.⁴⁰ Now, the project is being deferred five years, and the design is being reconsidered.
- Y-12 highly enriched uranium processing facility (UPF): An initial estimate (2004) placed the maximum at \$1.1 billion; this was raised to \$3.5 billion (2007), and then to \$6.5 billion (2010). An independent review by the Army Corps of Engineers, commissioned by the Secretary's oversight office, placed the maximum cost at \$7.5 billion (2011). The FY13 National Defense Authorization Act capped the UPF at \$4.2 billion for the first of its phases. Recently discovered re-design requirements to accommodate production equipment (the ceiling is too low and the concrete foundation and walls are not thick enough) add an additional \$0.5 billion. Now, the project is being delayed and the design is being reconsidered. NNSA did not include the cost of the total project in its FY14 budget "because planning for these phases [phases II and III] is still in the early stages."⁴¹
- Savannah River plutonium disposition facility (the Mixed-Oxide Fuel Fabrication Facility, or MOX): DOE approved a cost estimate of \$4.8 billion (2007) and start of operations in September 2016. Although construction began in August 2007, NNSA subsequently increased the estimate to \$7.7 billion (2012) with the start of operations delayed to November 2019. Now the project is in a strategic pause as DOE evaluates other options for plutonium disposition.

In too many cases, the cause of the change in planning estimates has not been promptly communicated by NNSA to the Congress or customers, such as when the duration of a construction project is doubled or when the safety requirements are changed during the planning or design stages.

Clearly, changes in a project's plans and estimates of the scale described here suggest more fundamental challenges than can be remedied by simply hiring more, or better, cost estimators.

⁴⁰ GAO, *Modernizing the Nuclear Enterprise: New Plutonium Research Facility at Los Alamos May Not Meet All Mission Needs* (Washington, DC: GAO, March 2012), 9.

⁴¹ GAO, *Modernizing the Nuclear Enterprise: NNSA's Budgets Do Not Fully Align with Plans* (Washington, DC: GAO, December 2013), 27.

The experience with these programs suggests fundamental weaknesses in the analysis of alternatives underlying program plans, requirements setting, configuration management, and certainly, execution. Too often, programs have been started, and substantial financial commitments made, with a limited understanding of total program scope and complexity and only a cursory review of possible alternative approaches. In some cases, programs have had only limited DNFSB involvement in the early planning, with the result that significant changes have been required later to address issues that might have been identified and addressed much sooner and at much less cost if the DNFSB had been involved earlier in the process. For example, in recent years, substantial construction rework was required for the PF4 security system at Los Alamos, as well as for the uranium storage facility at Oak Ridge, Y-12.

A major hurdle for defining and estimating costs is the lack of an *activity-based* cost accounting methodology that is capable of distinguishing the incremental costs of activities from baseline capability sustainment costs in the weapons complex. In NNSA, as in most government activities, costs are accounted for by major input category, rather than by the product or activity supported. Consequently, it is difficult (if not impossible) to measure the true costs of activities or products.

A capability for independent cost estimates and for conducting Analyses of Alternatives (AOA), coupled with a disciplined cost reporting system, is essential to effective program scoping and initiation, resource planning, source selection, and contract oversight and management. NNSA needs a significant infusion of expertise, data, and tools for independent costing, requirements evaluation, program planning, and scheduling. Both NNSA and DOE are engaged in initiatives to create these needed capabilities.⁴²

The Lack of Focus on Mission Deliverables

In effective organizations, program managers are assigned to deliver strong focus to meeting customer needs by aligning resources and accountability with key customer deliverables. In the peak years of the nuclear weapons program, the operational core of the nuclear enterprise was located in the Albuquerque Operations Office (ALOO). This office synchronized the cycle of design-test-build-maintain-dismantle throughout the Cold War, until 1992, when the production of new weapons was suspended. ALOO was officially disbanded ten years later, in 2002; however, many mission-support staff personnel and administrative functions were retained in the Albuquerque facility. NNSA headquarters absorbed Albuquerque's operating functions, which were greatly diminished by then since the United States had just

⁴² NNSA recently has developed a plan for creating the needed capabilities. See briefing for Congress, "Cost Estimating and Program Evaluation (CEPE) Implementation Plan," September 2014. Under this plan, CEPE will increase staff from two government and three contractor personnel to about twenty-five total staff over the next three years, drawing on support for training and mentoring from DOD's CAPE organization.

completed a modernization cycle and had no requirements to produce warheads. Decades of operational experience, knowledge, and technical expertise resident within ALOO were lost in the reorganization as little of that expertise moved to headquarters.

The panel recognizes the steps being taken to introduce decision-making rigor and increase the program manager's authority, at least for the B61 LEP, as described below. But, testimony to the panel indicates that NNSA still lacks an effective line-management structure able to plan for integrated operations, as well as to ensure operational information is shared, problems are surfaced early, and timely decisions are made. In short, the panel found many capable individuals trying to accomplish needed tasks, but no effective structure focused on executing programmatic work.

To understand the weaknesses at the individual program level, consider the question of who has responsibility for the B61 Life Extension. For technical management, there is a well-defined set of responsibilities and accountability for managing individual LEPs, and a well-defined process—the 6.X process—that guides LEP development and production:

- Los Alamos (LANL) is responsible for the B61 physics package. The laboratory is responsible for managing activities to generate the physics and engineering design, development and testing for the nuclear explosive package. This involves close coordination with the production facilities and subsequent delivery to Pantex.
- Sandia (SNL) is responsible for the nonnuclear component design, development, and testing and for integrating the nuclear explosive package and non-nuclear components into the bomb. This involves close coordination with LANL as well as component production activity at Sandia and Kansas City, and delivery of data and products to Pantex for assembly. For the B61 LEP, Sandia is also responsible for technically integrating the bomb with the DOD-provided bomb tail-kit assembly.

While the laboratories are responsible for technical integration, a government program manager is needed to synchronize B61 LEP activities across (up to) eight facilities, to oversee the progress of the labs and plants; to take responsibility for integrating safety and security requirements within programs; and to ensure that funds are allocated as needed to meet inevitable operational contingencies.

Although NNSA designates government program managers for each major program, their authorities have been very limited. Most importantly, they have lacked control over resources necessary to exercise needed leadership. In practice, they could more accurately be described as program coordinators than as program managers.

In general, NNSA program and project management has not been supported at the staffing and funding levels that the private sector and other agencies have demonstrated are necessary to assure success, especially in the field. For example, the B61 program office has fewer than a dozen staff. Funding levels for reserves and contingencies have not been provided until FY14

and remain quite small relative to levels that have been demonstrated to be necessary for major projects, especially recognizing the unique technical nature of many of NNSA's undertakings. When projects or programs proceed from design stages to production stages, there is not adequate configuration control of designs and too many nonessential subsequent changes are allowed.

The management practices for infrastructure upgrades and major facilities construction are also problematic. DOE's guidance for such projects is contained in DOE Order 413, which aligns with the management practices prescribed in OMB Circular A-11 for Capital Acquisition Projects.⁴³ OMB requires agencies to establish a disciplined capital programming process that addresses project prioritization between new assets and maintenance of existing assets; risk management and cost estimating to improve the accuracy of cost, schedule, and performance estimates provided to management; and the other difficult challenges posed by asset management and acquisition. However, although compliance with DOE Orders is mandatory, in practice, Order 413 has been viewed only as guidance, and adherence and enforcement have been weak. For instance, rigorous planning processes at the front end of a project, such as an Analyses of Alternatives, are lacking. In establishing its Acquisition and Project Management Office, NNSA is trying to bring such discipline to NNSA project management. Department-wide recommendations for improved project management rigor and oversight are now being considered.

New Limitations on Internally Directed Research and Development

Both Laboratory Directors and production plant managers have testified to the importance of discretionary funding for attracting and retaining skilled experts, for promoting cutting-edge work, and for maintaining needed scientific, engineering, and manufacturing capabilities. One function of Laboratory Directed Research and Development (LDRD), as established in its current configuration in 1991, has been to give the laboratories the flexibility to address continuing work-force management challenges—both attracting and retaining high-quality personnel. At the outset, it represented about 2 percent of each lab's operating budget, grew to 8 percent, but has since been declining, with the current Congressional mandate that it not exceed 6 percent. This downward trend has been exacerbated by the elimination of another source of discretionary funding, Weapons-Related Research, a gap that has been filled by LDRD at least at LANL and LLNL.⁴⁴ It should be noted that such internally directed funding is applicable not only to the laboratories. For example, NNSS devotes 2 percent of its budget to

⁴³ OMB, *Preparation, Submission, and Execution of the Budget*, Circular A-11 (Washington, DC: Executive Office of the President, July 2013).

⁴⁴ National Research Council, *Managing for High-Quality Science and Engineering at the NNSA National Security Laboratories* (Washington, DC: National Academies Press, 2013), 19–20.

Site-Directed Research and Development and similarly notes its importance for recruiting and retaining personnel with critical skills and enhancing core competencies.⁴⁵

Any enterprise dedicated to cutting-edge science, engineering, and manufacturing needs to be able to support long-term research efforts focused on exploring new frontiers. This is also essential in preparing these institutions to face the technical challenges ten–twenty years in the future, a future that no one can predict. FFRDCs, both inside and outside of NNSA, routinely are provided discretionary funds to encourage such exploration. The panel consistently heard from site personnel about the motivating effect of LDRD work and that the availability of LDRD has been a factor in their recruitment and retention at the lab.

The National Research Council study of the laboratories cited earlier, reports several statistics indicating that LDRD contributes significantly to the intellectual environment. For example, 20–25 percent of external publications for the three laboratories in the mid- to late-2000s were supported by LDRD funding.⁴⁶ Across the three labs, LDRD was responsible for the majority (58–70 percent) of all their “R&D100” awards during FY09–13, and for 22–46 percent of the patents issued to the three labs during FY08–12.⁴⁷

The *Strategic Posture Commission Review* also noted LDRD’s importance for the national security laboratories.⁴⁸ In addition, LANL identified the indirect and direct value of LDRD on the “nuclear security mission,” noting that in FY12, more than \$40 million of its LDRD-supported projects directly addressed this mission area and another \$50-plus million supported projects to invest in the underlying science, technology, and engineering for nuclear security.⁴⁹

Shortfalls in Facilities and Infrastructure Modernization

Much of the weapons complex was built for, and scaled to the needs of, the Cold War. The United States accumulated an inventory of several tens of thousands of nuclear weapons, and at its peak produced over 1,000 new nuclear weapons a year. Today’s needs have changed radically: both inventories and throughput are an order of magnitude lower today. The nation faces a situation where the complex is not well matched with future needs: in many respects the

⁴⁵ Presentation during the panel’s fact-finding visit, 3 February 2014.

⁴⁶ National Research Council, *Managing for High-Quality Science and Engineering at the NNSA National Security Laboratories*, 84–85.

⁴⁷ Carol J. Burns, “Building Capabilities: Los Alamos National Laboratory,” 19 November 2013, briefing to the panel fact-finding team.

⁴⁸ *Strategic Posture Commission Review*. More recently, the Secretary has convened a study on LDRD under the Secretary of Energy Advisory Board.

⁴⁹ Ibid.

weapons complex is both too old, and too big—a situation that presents significant challenges for the governance of the enterprise.

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. The DOE/NNSA enterprise comprises 2,160 square miles, roughly the size of Delaware, with 8 million feet of fencing and 2,540 total lane-miles of paved road. It includes approximately 3,800 facilities, about 54 percent of which are over forty years old, 29 percent are over sixty years old, and 12 percent are still in place but no longer in use.

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. Examples include:

- The Sandia Silicon Fabrication Replacement (SSiFR) project is scheduled to replace the existing and obsolete 6 inch wafer equipment with 8 inch wafer equipment. Trusted, radiation-hardened semiconductor silicon chip production is needed for the B61, W88 ALT, and every stockpile system. The SSiFR project replaces older tools with newer generation tools that are able to use both 6 inch wafers (for the B61 and W88ALT) and 8 inch wafers that will support the needs of the LEP mission beyond FY19. In FY13 and 14 combined, a total of \$50 million of the \$150 million required was provided, but there is no funding in the FY15 budget. The remaining \$100 million is included only in the FY16–20 FYNSP.
- The Tonopah Test Range in Nevada has a communications hub in need of upgrading. The hub is critical to systems testing, including for the B-61 LEP. Should this hub fail before completion of the upgrade, the B-61 schedule will be further delayed.
- The Weapons Evaluation Test Laboratory, a Sandia facility at Pantex, has two thirty year centrifuges, one of which is broken. Being the only two centrifuges of their kind, replacing them will require new design, which will take both money and time. The centrifuges are used for the stockpile surveillance program and, with only one of them functioning, NNSA’s surveillance program has fallen behind schedule.
- The Perimeter Intrusion Detection and Assessment System (PIDAS) at Pantex needs updating. The fence, light poles, and communication cabling are failing and sensors are obsolete. Effective security at Pantex is essential for all stockpile work. The current plan is estimated to cost about \$350 million.

- The Extended Core Facility (ECF) at the Naval Reactors facility, Idaho National Laboratory requires recapitalization. This facility receives, stores, analyzes, and packages for long-term dry storage all spent nuclear fuel for the U.S. Navy's nuclear powered fleet. ECF is over fifty years old and in degraded material condition. It represents a single point of failure because if, due to material failure, it cannot accept future spent fuel shipments, Navy ship refueling and defueling in Naval shipyards will be at risk, with consequent major impact on fleet operations. Full funding for this recapitalization has been proposed in the President's budgets but has been repeatedly deferred by Congress. This action has further affected DOD in that DOD has been, and will continue to be, required to purchase temporary storage equipment (M-290 shipping containers) to accommodate future spent fuel shipments in excess of existing facility capacity. Additional cost to the government has been on the order of \$100 million per year for the procurement of the temporary storage containers. The increased construction costs due to the deferrals are in addition to this figure.

The panel notes the Secretary's recent guidance to propose a budget that begins to reduce the deferred maintenance backlog. One workaround for modernizing infrastructure is private, third-party financing for new facilities that are operated under long-term leases. This approach was employed to acquire the new production facility for the Kansas City Plant and two new office buildings at the Y-12 site. The complexity of ongoing modernization requirements, coupled with addressing safety, security, and environmental issues in an increasingly austere budget environment, requires holistic and integrated decision-making mechanisms to meet operational requirements and find cost-saving solutions across the enterprise.

An Inflexible Budget Structure that Undermines Mission Execution

The challenges in exercising line-management control and synchronizing execution across sites and programs are amplified today by NNSA's attempt to manage the operating sites from headquarters using detailed budgets and milestones. Some of this growth in budget control lines has been mandated by Congress. At the time NNSA was established, the detail of congressional budgeting was increased by a factor of nearly four—from nine to thirty-four funding categories in FY01—and roughly one-third of the funding was shifted out of program-related budget categories into mission-support budget categories.⁵⁰ NNSA today has eighty-two congressional budget control lines. But NNSA, in turn, imposes even more internal controls. For example,

⁵⁰ In FY98, there were only nine congressional budget control lines. The five top-level categories in the budget were programmatic in focus. They were program direction, production and surveillance, research and development, testing, and inertial confinement fusion. By FY01, the number of budget categories had increased to thirty-four. The top-level categories were modified and expanded to seven and modified to include several mission-support functions. In addition to program direction, directed stockpile work, and campaigns, the top-level categories now included infrastructure, safeguards and security, and transportation safeguards.

LANL reported that NNSA funds are provided with over 500 budget reporting lines and associated milestones; Pantex reported 225. Other sites have comparable controls. And, in the case of Directed Stockpile Work (DSW), NNSA has some 1,000 budget reporting lines.

No doubt this provides a degree of *control* for NNSA offices, but it also creates a high degree of complexity and constraint for operations managers at all levels.⁵¹ Control of these funds is dispersed across NNSA headquarters organizations, with different responsibilities and priorities.

Ineffective Communications

Despite noted efforts (e.g., the annual *Stockpile Stewardship and Management Plans*), the current DOE/NNSA culture inhibits the communication of a coherent, unified message—to national leaders, customers, and internally. As a result, there can be many competing and inconsistent messages.

Among many Members of Congress and their staffs, the perception prevails that NNSA has lost credibility. Congressional staff members choose to, or are driven to, engage a number of sources throughout the enterprise to obtain accurate information about programs and issues; they have cited a need to *pull* for information, because there is insufficient effort by NNSA to *push* information. Hill staff members also indicate that the information that they do receive is often inconsistent from one source to the next. Staff members in the Executive Branch shared similar concerns as did DOD representatives.

Lines of communication are not always respected in NNSA's external relationships. Interviewees from Capitol Hill and inside DOE indicated that leaders in field operations, including M&O leadership, sometimes interact directly with Members of Congress without headquarters coordination. While the M&O leadership is not required to do so, advance notice to DOE headquarters prior to contacts with legislators or Hill staffs would foster an improved relationship and is a simple matter of professional courtesy. Legislators also indicate they have been surprised during formal hearings with new information about cost projections and budget requirements. In addition, enterprise customers spoke of the need to go directly to field staff to learn about a program's status instead of learning it from NNSA headquarters.

Similarly, the panel found problems in communication within the NNSA, both upward and (especially) downward. People in the field noted difficulties in obtaining decisions from headquarters, such as needing to obtain program requirements directly from customers instead of from headquarters. Field staff also described instances when headquarters officials reached down

⁵¹ National Academy of Public Administration, *Positioning DOE's Lab's for the Future: A Review of DOE's Management of Oversight of the National Laboratories* (Washington, DC: National Academy of Public Administration, 2013).

to the working level, circumventing the field managers, to provide instruction, with little regard or appreciation for the implications that such direction would have for the overall program or for management discipline. In turn, headquarters staffs spoke of difficulties caused when NNSA field staff or the M&O organizations have not shared information or have circumvented headquarters.

Such poor communication and failure to adhere to lines of authority run starkly counter to the practices of the successful organizations studied by the panel. These organizations stress the importance of quickly sharing information, especially if it is bad news. Indeed, high-performing organizations enforce discipline in *promoting* effective communications—if there is a penalty to be paid, it occurs principally when a subordinate *fails* to report bad news.

For the enterprise workforce, there is a need to clearly communicate mission and objectives, to include how enterprise missions are knit together around a central nexus of national security. A recent in-person visit by a key NNSA leader to a number of field sites was described as the first time in many years that any leader of such stature had made time to visit worksites and talk to rank-and-file workers. More generally, the panel notes the recent efforts of the current NNSA and DOE leaders to engage the workforce and communicate priorities, which are clearly welcome developments.

RECOMMENDATIONS

DOE must transform its culture to focus on executing an ambitious program of work across its missions, while modernizing key facilities. The panel describes the needed culture as one focused on performance, accountability, and credibility. The panel's recommendations are intended to adapt management best practices from high-performing benchmark organizations to the operational environment of the nuclear security enterprise. The proposed actions will improve performance in the short run, and thus bolster morale, and in time, create the needed culture.

Recommendation

- 6. To begin reforming the DOE&NS culture, the Secretary and Director should develop within six months a plan for continuous management learning and improvement, including an implementation plan for the panel's recommendations with milestone target dates.**

Achieving the necessary changes in DOE&NS culture must begin with the adoption of the management reforms the panel proposes. For ONS, the Director, in consultation with the Secretary, should devise a rapid transition to realign ONS authorities, resource allocation mechanisms, decision-making processes, and staffs to achieve mission focus, as outlined in the panel's recommendations. Focused on the longer-term, the Director should establish a management system for identifying and adopting management improvements.

Action Items

- 6.1 The Secretary and Director should urgently develop a more robust, integrated DOE&NS/ONS-wide process to provide accountability and follow-up on findings and recommendations from studies and reviews, both internal and external.**

As the panel has noted, there have been literally scores of previous studies with numerous valid recommendations, many of which are offered in this panel's assessment as well. However, there is not a well-established process for reviewing these recommendations, performing root cause analysis of them, taking corrective action where appropriate, and then following up to ensure that the corrective actions are institutionalized.

- 6.2 The Secretary and Director should establish management metrics for assessing and improving enterprise management.**

Systematic management metrics will help assess management performance across the nuclear enterprise, and provide the informational basis necessary for reform. With respect to the nuclear weapons complex, the emerging Contractor Assurance Systems, which provide extensive data on contractor operations, should provide a starting point for developing effective metrics.

- 6.3 The Secretary and Director should routinely survey personnel to gauge morale, assess cultural changes, and identify the results of efforts to change management practices.**

Feedback from staff, both at headquarters and in the field (to include the M&Os) can provide the best gauge of what is working and what is not within the enterprise. Routine surveys would also contribute to improved communications and situational awareness among the staffs.

- 6.4 The Secretary and Director should aggressively communicate reform plans and objectives.**

The Secretary and Director should execute a coherent strategic communications strategy to external and internal audiences. For external audiences, this plan should be designed to convey the Director's commitment to executing the national strategy and collaborating with customers to understand and meet their needs. For internal audiences, this plan should be designed to communicate how and why structures and practices are changing, explain the alignment of organizations and personnel, enlist support for the new approach, and set expectations for individual success within the new approach.

Recommendation

7. The Secretary and Director should implement industry best practices for shaping and building the enterprise workforce.

In parallel with changes in the management system, the necessary changes for a new DOE&NS culture will require persistent leadership. This will require major reform of the personnel system to place the emphasis on building technical and managerial expertise, senior leadership development, and continuity. The panel finds some specific shortfalls in critical skills for program management, cost estimation, and resource management. Simultaneously, the panel foresees that the consolidation of parallel headquarters staffs, coupled with the consequent reductions in transactional oversight functions, will entail rightsizing and the retraining of many employees within the workforce. Reform will require that the Secretary and the Director have all the authorities necessary to hire, fire, shape, and train a workforce appropriate to address current and future requirements. To allow for this flexibility, senior ONS staff positions should be filled by Senior Executive Service or Excepted Service personnel.

Action Items

7.1 The Secretary and Director should establish strong career and leadership development programs, require rotational assignments, and place greater emphasis on continuing education and professional certifications.

The Secretary and Director need to reform the personnel management system, including pay, compensation, and evaluation processes to build skills aligned with the Department's nuclear security missions and reformed governance model. Senior managers should be required to acquire experience in both the field and headquarters. This includes programs to systematize rotational assignments and competitive opportunities for training, education, and broadening experience, to build technical and leadership expertise.

The Director should lead an annual succession planning activity to identify candidates to fill key positions in the future and to prepare them for the responsibilities thereby entailed.

7.2 The Secretary and Director should reshape staffs as needed to implement governance reforms.

The Director should be granted the authorities necessary to reconfigure the ONS's workforce as necessary, including broader utilization of Excepted Service positions (for all but administrative staff) and targeted tools such as early retirement, buy-outs, and other workforce-shaping authorities. Several skills require growth in both capabilities and staff numbers. Staff in other functional areas will need to be reduced, particularly those associated with transactional oversight and contract compliance.

7.3 The Secretary and Director should conduct a zero-based personnel review to right-size government staffs consistent with recommended reforms and changing workload since the end of the Cold War; this review should include the consolidation of headquarters activities across DOE&NS's Forrestal headquarters, the Germantown campus, and the Albuquerque complex.

In implementing the proposed reforms, the Secretary, together with the Director, should carefully review DOE headquarters and field personnel needs. The purpose is to align and adjust personnel requirements and capabilities in accordance with changing needs. This includes evaluating not only the appropriate numbers of staff for program execution and mission support, but also optimal management-to-staff ratios and the value of Germantown and Albuquerque as satellite headquarters. Considerable cost savings should be realizable from this review and resultant restructuring.

Recommendation

8. The Secretary should establish trusted Cost Analysis and Resource Management staffs, tools, and data; the Director should be responsible for this process in ONS.

The Director needs to reinforce recent efforts to build a capability for independent cost estimating and resource analysis within ONS to address persistent problems. The panel recommends a number of actions to strengthen the personnel, data, and tools for independent cost estimating and conducting an Analyses of Alternatives. Significant additional investment will be needed to establish capabilities that are trusted by key customers and national leadership. The Director needs to recruit additional resources for a strong, independent team for resource management. This team should be empowered to build the competencies and mechanisms needed to conduct independent cost estimates, Analyses of Alternatives, and thorough peer reviews. In parallel, the Director should encourage the M&Os to develop similar capabilities.

Action Items

8.1 The Secretary and Director should strengthen the Department's efforts to develop independent cost and resource analysis capabilities.

The Secretary should strengthen and elevate the Department's headquarters oversight office devoted to program/project analysis and advice for the Secretary (currently the Office of Acquisition and Project Management (OAPM) in the Department's Office of Management). This would include:

- Enhance the staff competencies to conduct independent cost and schedule estimates and program evaluation, in addition to capital project evaluation
- Strengthen the Department's current Project Management System (Directive 413) to specifically include more rigorous independent cost analysis and oversight of Analyses of Alternatives to provide effective advice for the Secretary and Director

- Extend the office's scope to include evaluation of and reporting on major programs, such as LEPs, in addition to major capital construction projects

Once the Department establishes this office, the Secretary should receive its formal advice during milestone decision making, with the mandate to document acceptance or rejection of its advice, similar to the legislation that stipulates such a requirement on DOD with regard to the CAPE organization.

To support long-term improvements in cost and resource analysis, the Secretary and Director should establish an activity-based cost accounting system that would enable managers to determine true costs of underlying enterprise capabilities and the incremental costs of specified programs. This would better align resources with mission priorities, provide a basis for estimating the cost of future projects, and provide a more sound basis for communication with customers.

8.2 The Secretary and Director should employ a rigorous Analyses of Alternatives process during program formulation as the basis for assessing and validating program requirements.

The Department could significantly (and relatively quickly) enhance program decision making by conducting a competition of ideas to explore and question alternative programmatic approaches, using a rigorous and contemporary Analysis of Alternatives early in the decision process. Periodic, independent peer reviews would help to ensure programs remain on track. This is already being done in other parts of DOE.

8.3 The Secretary and Director should take advantage of established DOD resource analysis capabilities in establishing DOE's cost analysis and resource management capabilities.

The Secretary should develop a Memorandum of Understanding (MOU) with DOD to train DOE personnel in cost estimating capabilities. The MOU could also encompass sending program management interns to the Defense Acquisition University to acquire formal, professional program manager training and certification.

One potential model for building the needed capabilities is DOD's CAPE, which is independent of the acquisition chain (for all intents and purposes, the Director of CAPE reports to the Deputy Secretary of Defense), carries out independent cost estimates (ICE) and reviews investment alternatives. It maintains a store of cost data and estimating relationships from previous major acquisition programs to inform *should cost* analyses for current and proposed programs.

Recommendation

- 9. The Director should establish 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 key synchronizing functions that had been performed by the Albuquerque Operations Office are needed today. 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. The participants include the Director, Deputy Directors, program managers, M&O leadership, and field office managers.

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. 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.

Action Items

- 9.1 The Director should create operational mechanisms to perform the key synchronization functions that used to be performed by the Albuquerque Operations Office.**

The needed mechanisms would regularly engage the key line-management decision makers and mission-support officials to share information, raise issues, and seek solutions. The key participants would include the Director, Deputy Directors, program managers, the M&O leadership, and the Federal field office managers. A relatively small number of well-informed, qualified leaders and managers are needed to align decision making for missions and mission-support functions.

The panel's benchmarking suggests effective models for such mechanisms: successful organizations commonly convene the key operational stakeholders regularly in brief gatherings or teleconferences to ensure the free flow of information, coordinate activities, identify and resolve issues at the lowest possible level and at the earliest possible time, and rapidly elevate issues to higher authorities when necessary to resolve them. Such mechanisms serve to clarify who can approve and who can say no when decisions need to be made, and facilitate direct interactions among decision makers, with a minimum of bureaucracy. Such organizations insist on simplicity and discipline in their decision-making mechanisms. They document decisions and follow up on those decisions. They empower people to take decisions as far down the management chain as is reasonable, and they have procedures for promptly elevating issues up the chain when necessary. They measure timeliness of decisions, and they study and improve the decision-making process itself.

9.2 Deputy Directors should be designated to lead in the integrated planning and execution of programs in their mission areas of responsibility.

The Deputy Directors would support the Director in integrating the execution of programs by developing integrated operating plans that align programs, resources, infrastructure capabilities, and the workforce. The line management responsibilities assigned to Deputy Directors are designed to shift the management culture from a compliance based one to an operational, mission-performance oriented one.

9.3 The Deputy Director responsible for Life Extension Programs, working with DOD, should create a long-term operating plan to support the nation's warhead modernization strategy; this plan should be designed to create a relatively stable, long-term workload.

A stable baseline of design, engineering, and production is needed to make effective use of the available capabilities in the weapons complex, provide the basis for sizing and modernizing the weapons complex, and identify potentially conflicting demands on available capabilities. An operational plan would provide the basis for creating an executable *Stockpile Stewardship and Management Plan*, as well as for keeping this plan aligned with DOD plans for modernizing delivery systems. This recommendation does not assume precise knowledge of the requirements for future programs. Enough is known about the near- and mid-term needs of the nation to outline an approximate plan and to design the production system to accommodate some uncertainty.

A rough plan would be extremely helpful for integrating activities across the weapons complex and for efficiently employing available capacity. A continuous, predictable cycle of development and production of LEPs is critical to fulfilling production demands, sustaining critical skills, maintaining safe operations, and doing so for reasonable costs. The attendant shift in operational focus toward the execution of a long-term program of work will provide an important driver for changing DOE's governance culture.

As noted in the panel's benchmarking work, such a long-term production strategy has precedent in the strategic systems arena. For example, the Navy plans for the production of large solid rocket motors at the minimal rates needed to assure quality and process control for the Trident II Life Extension Program, and in doing so, sustains the requisite industrial base.

Recommendation

10. The Director should establish program managers who are provided necessary authorities and resources, and who are held accountable for major mission deliverables.

An essential step toward creating a culture focused on mission performance and accountability is to establish program managers (PMs) for major programs and construction projects, who have sufficient authority, resources, and accountability to meet mission deliverable objectives. Delegating control to these PMs for relevant funding would serve to transform program managers from weak coordinators—who must negotiate for support from the campaigns and mission-support staffs—to resource-owning managers. These officials would serve as the focal point for planning and executing their programs, and become the “go-to” individuals for solving problems and resolving issues. Program managers should also have approval authority for all personnel assigned to their projects and be responsible for personnel evaluations. To exercise their authorities effectively, these PMs must have proven technical, managerial, and leadership skills.

As described in Recommendation 9, each program manager would report to the Deputy Director responsible for his or her mission area. This management structure is designed to provide the program manager with effective authority to focus on executing a particular program, while the Deputy Director focuses on the synchronization of activities, weapons complex capacity, and resources across programs and mission areas.

Action Items

10.1 The Director, in coordination with the responsible Deputy Director, should designate program managers for each Life Extension Program and major construction project.

The panel’s proposed approach builds on and extends the very positive initiatives recently undertaken by NNSA to strengthen program management. In DOE/NNSA’s recent actions, the B61 LEP program manager has been provided control over a significant share of the resources necessary to execute the program and has been granted a 5 percent management reserve by Congress.⁵²

⁵² The program manager reports that many necessary management authorities have been assigned to his program office:

- The program manager controls the B61 LEP funding (\$530 million), which now constitutes about 85–90 percent of the unique funds required to execute the program.
- The remaining 10–15 percent of funding—“other peoples’ money” in campaigns, stockpile support, etc.—is identified, support agreements are in place, and are subject to the Deputy Administrator’s quarterly program reviews.
- Congress provides funds for the B61 program in only two congressional line items.
- The B61 program has a management reserve at each site and within each PM’s management budget. The management reserve (beginning in FY14) of about \$35 million gives the PM improved latitude to address problems.

10.2 Program managers should be held accountable to employ effective management practices.

The B61 program has established a very detailed plan as well as a prototype earned value management system for monitoring program progress. The government program manager reports that he has a regular meeting cycle with the responsible M&Os, involved DOE offices, and customers in DOD. The PM believes that everyone understands the plan; and they are executing according to the plan. Both the program office and key M&Os agree that communication is very good.

10.3 The Director should delegate to the program managers control of any funds identified as uniquely required to execute their programs.

Funding that is currently allocated for other activities (Stockpile Systems, Stockpile Services, Campaigns, Mission Support) that are uniquely required for executing programmatic work should be consolidated under the control of the Deputy Directors (and PMs).

A related issue, discussed in Recommendation 11, is the need to simplify funding categories and to consolidate control over resources within the chain of line management. A significant increase in line managers' authorities can be accomplished if the Director were to transfer the control of resources in existing budget accounts from officials responsible for mission-support functional areas to the Deputy Directors responsible for mission deliverables and, by delegation, to individual program managers who would also be held responsible for such factors as ES&H compliance on their programs.

An illustration of the benefits of such budget transfers and consolidation is provided in Figure 6. In FY13, B61 LEP work at Sandia was funded by more than twenty NNSA funding sources. The figure shows that control of this funding is spread over numerous organizations, including the B61 program office, numerous offices within the Defense Programs organization, and the offices responsible for infrastructure funding. Managing funding at the current level of detail with this large number of resource owners creates major coordination demands: every budget category has headquarters proponents who must be consulted and persuaded on every decision related to their resources.

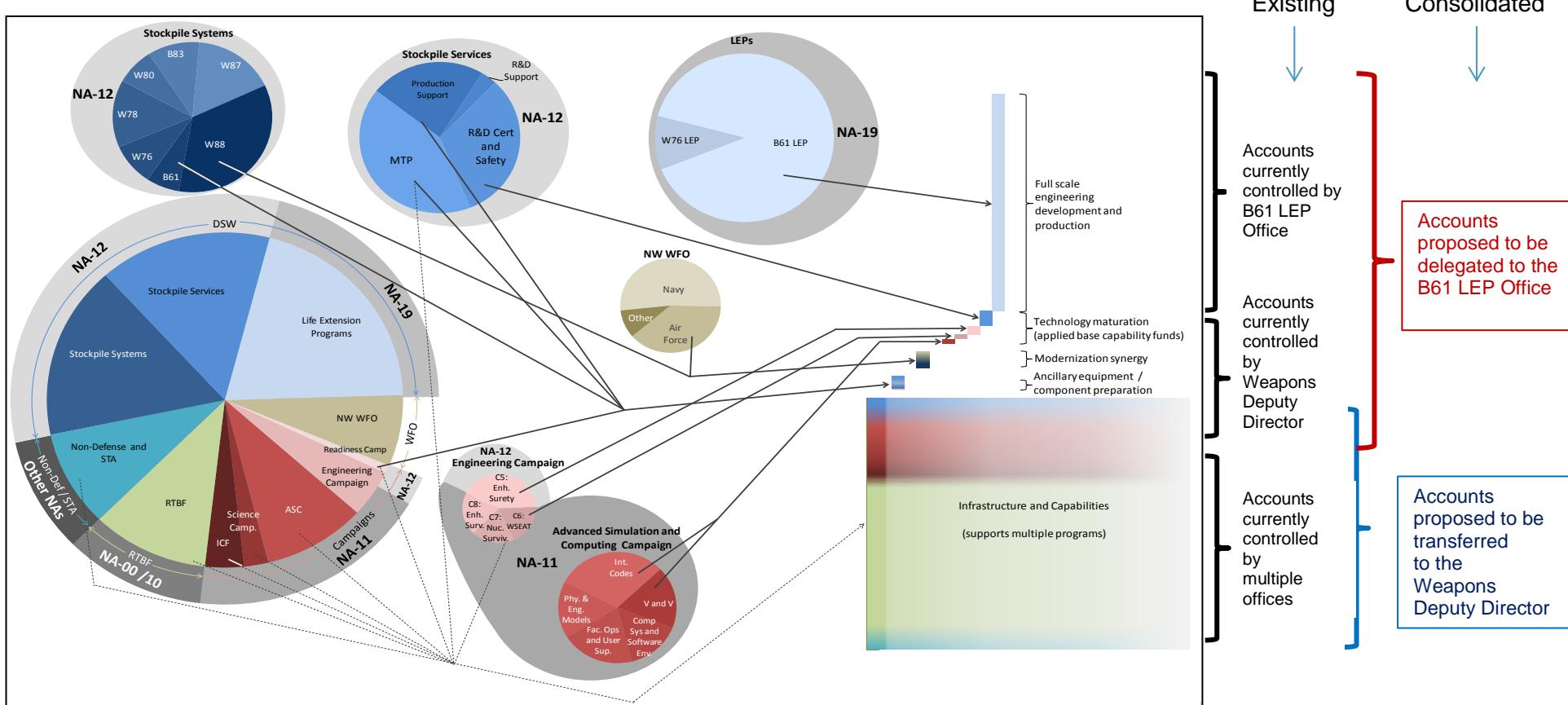
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- The program office has been able to fund infrastructure upgrades at the sites, where needed, to execute the program. Examples include investments at MESA and a new high explosives press at Pantex.
 - The PM tracks regulatory requirements and approvals necessary for executing the B61 program. In particular, the steps necessary to secure approvals at Pantex are included in the overall plan.

The illustration shows how the consolidation of resource control authority with a small number of well-informed, qualified managers could reduce complexity in executing programs. First, the transfer of relevant infrastructure funding to the Deputy Director responsible for the LEPs would simplify the headquarters interfaces necessary for managing those funds. Second, the delegation of resource control to the PM for all funds that are uniquely linked to B61 program execution would provide the program manager with the day-to-day control of needed resources (subject to ongoing oversight and review by the Deputy Director).

A careful review of the budget will be needed to identify the appropriate allocation of funds between program managers and mission-support staffs. As a general rule, *fixed costs* necessary for funding infrastructure and maintaining common capabilities should remain with mission-support functions. *Incremental costs* uniquely required to execute individual programs should be controlled by the PMs accountable for meeting customer needs.

Location of Government Resource Authority and Accountability

Sandia B61-12 Program Funding Illustration



Source: Sandia Briefing to the National Security Enterprise Panel.

Figure 6. Current and Proposed Resource Control for the B61 LEP (Sandia Example)

10.4 The Director should delegate control over personnel assigned to their programs to the program managers.

In addition to having increased control over funding, PMs should have approval authority over personnel assigned to the project, to include personnel evaluation authority.

Recommendation

11. The Congress, Secretary, and Director should adopt a simplified budget and accounting structure (by reducing budget control lines) that aligns resources to achieve efficient mission execution while providing sufficient visibility to enable effective management oversight.

A redesign of the budget and accounting structures to better align resources with program deliverables would both improve the budget as a management tool and enhance customers' visibility of program execution. With improved alignment it should also be possible to simplify the budget structure—reducing both the number of budget lines and the number of people controlling them—thereby providing the flexibility needed to execute programs effectively.

Action Items

11.1 Congress should reduce the number of Congressional budget control lines to the number of major programs plus major mission-support functions.

Congress should impose fewer funding lines on the enterprise to reduce fragmentation of the budget and increase the ability to manage programs across the enterprise. The designation of line items for major programs and major mission-support functions serve to provide sufficient transparency into the employment of funds while preserving a significant degree of flexibility to manage funds within budget categories. This approach would reduce the number of Congressional budget control lines to roughly thirty versus the current eighty-two.⁵³

11.2 The Director should reduce ONS's internal budget control lines to the minimum number needed to assign funding for major programs and mission-support activities across the sites.

⁵³ This number is a rough estimate, based on the following factors: Across the five Deputy Directors responsible for missions, there are presently about twenty major programs. These include the Life Extension Programs, Stockpile Surveillance and Maintenance, Campaigns, Nonproliferation programs, Counter-proliferation programs, and Counter-terrorism programs. If the Director were to retain the current categories of infrastructure funding, this would require an additional ten budget categories.

The Director should consolidate the hundreds of internally defined budget lines that have been created by NNSA that constrain program management flexibility, and align the appropriate lines of funding under relevant Deputy Directors and program managers. This approach would reduce the number of ONS budget control lines to approximately 240.⁵⁴

11.3 Infrastructure funding that is uniquely required for the execution of Life Extension Programs should be integrated into the portfolio of the Deputy Director for Defense Programs.

It is vital for this Deputy Director to have full control of funding for both program elements and program-specific infrastructure to address cross-seam issues.

Recommendation

12. The Director should develop a strategy and plan to reshape the weapons complex to meet future needs.

The enterprise must sustain and modernize nuclear weapons and their delivery platforms, aligning its capabilities to deliver a modernized stockpile and a recapitalized infrastructure to meet twenty-first century national security needs. To accommodate this work within reasonable budget levels, existing infrastructure must be upgraded and right sized. As a steady-state, long-term work plan is developed, decisions will need to be made on what infrastructure and personnel will be needed. (The requirement to right-size ONS staff is addressed in Recommendation 7.)

Action Items

12.1 The Director should ensure that the strategy and plan identify and address the deferred maintenance backlog.

In the last two decades, large portions of NNSA's production infrastructure aged while safety rules and other precautions expanded rapidly, leaving NNSA with a significantly reduced ability to design, develop, and produce life-extended warheads. Delayed infrastructure maintenance must be appropriately budgeted to address LEP and other requirements.

12.2 The Director should ensure that the strategy and plan match (and, in many cases, reduce) the infrastructure needed to meet requirements.

⁵⁴ Thirty Congressional budget lines allocated across eight sites yields 240 internal budget control lines.

The panel recognizes that NNSA has developed plans to shrink the weapons complex footprint. This is an issue that will require strong Congressional support.

12.3 The Director should ensure that the strategy and plan identify investments in the needed skills in the workforce.

There needs to be an analysis of the level and skill mix of the workforce necessary to meet future requirements, and an assessment of the steps required to recruit and retain them.

12.4 The Director should ensure that the strategy and plan specify investments in capabilities, including the sites' use of internally directed research and development. The panel recommends Laboratory Directed Research and Development (LDRD) funding of no less than 6 percent, which is needed to sustain leadership in nuclear science, engineering, and manufacturing.

Even as the Director brings greater focus to the execution of customer deliverables, it is essential to sustain the campaigns and independent research that build future capabilities. In this regard, it will be important for Congress to reassess ceilings placed on LDRD funding, which makes an important contribution in sustaining scientific capability, supporting innovative R&D, and attracting and retaining young scientific/technical talent. In light of its importance, the panel recommends the laboratories be authorized to fund LDRD at no less than current levels (no lower than 6 percent), pending further review. Similar support should be given to the plants and NNSS for their internally directed research and development. At the same time, it should be assured that all LDRD is relevant to carrying out the mission of the nuclear enterprise and/or maintaining the capability to do so.

Recommendation

13. The Secretary and Director should continue ongoing efforts to improve construction project management capabilities (at all levels) by introducing disciplined management practices in order to recapitalize infrastructure on time and on budget.

Facility recapitalization projects have been a continuing source of program schedule delays and cost overruns that, as noted, have significantly undermined NNSA's credibility. Major reforms are needed to demonstrate a commitment to sound management practices and improved performance, building on the current OAPM initiative. These include steps to strengthen organizational focus and to adopt proven management practices. The panel notes that the current Secretary has undertaken important preliminary steps in this area, but affirms that persistent commitment and additional and continuing focus on these problems is needed.

Action Items

- 13.1 The Director should strengthen infrastructure project management skills, tools, and the collection and analysis of data.**

The Director should recruit a strong management team supported by experienced experts in facility planning, design, engineering, and construction. This team should be commissioned to create a trusted capability for executing future facility projects.

- 13.2 The Director should build on recent efforts to adopt best practices for managing infrastructure projects, especially the use of external peer review.**

The Director should commission the management team to undertake an initiative to identify, adapt, and expand the use of best practices from inside other parts of the Department, such as the Office of Science's structured approach for facilities construction peer reviews (the "Lehman Review model") and from other government agencies as well as the private sector.

- 13.3 The Secretary and Director should hold managers accountable for adopting the effective practices detailed in the Department's directive on project management (Order 413), consistent with the principles provided in OMB Circular A-11 in infrastructure projects.**

While adherence to DOE Orders is mandatory, in practice, Order 413 has been viewed more as guidance that is not always followed. Stricter enforcement is necessary. The Secretary and Director should ensure effective practices are employed everywhere.

4. Maximize the Contributions of the Management and Operating (M&O) Organizations to the Safe, Secure Execution of the Mission

Don't tell people how to do things; tell them what to do and let them surprise you with their ingenuity.

—George S. Patton

CHALLENGES

The government needs access to and a healthy working relationship with first-class scientific, engineering, manufacturing and management expertise that in some cases is not resident within the government. In the nuclear weapons complex, this is done using a Management and Operating (M&O) contract.⁵⁵ This may be supplemented, when appropriate, by the Federally Funded Research and Development Center (FFRDC) model, as discussed in this chapter. There is concern across the NNSA complex that these needed relationships have eroded over the years, and have become more of an arm's length, even adversarial contracting relationship, rather than the needed collaborative one.

In effective organizations, the Federal sponsor decides *what* is needed and the M&O organization decides *how* to meet that need. Put in the simplest terms, the Federal sponsor should identify the objective to be accomplished; identify the best performer; provide adequate resources; monitor results; and hold the performer accountable. Under this construct, a competent M&O organization is relied upon to provide expertise, corporate culture, and leadership sufficient to execute the work while meeting the government's operating standards.

Changes in mission priorities, performance expectations, and cultures have worked to erode the relationship between the Federal sponsor and the M&Os established during the Cold War. Beginning in the early 1990s, mission priorities underwent major transformation, while in

⁵⁵ Federal Acquisition Regulation (17.601) defines a management and operating contract to mean “an agreement under which the Government contracts for the operation, maintenance, or support, on its behalf, of a Government-owned or -controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting Federal agency.” An M&O contract is appropriate where “The work is closely related to the agency’s mission and is of a long-term or continuing nature.”

parallel the nation's demands in the areas of environmental management, workplace health and safety, and security grew significantly.⁵⁶ Two actions that profoundly affected the nuclear enterprise were the decisions in 1991–92 to cancel or postpone several nuclear weapons programs and to suspend underground nuclear testing. These actions ceased the well-established weapons complex product delivery cycle of design-test-build that had organized work throughout the Cold War. In the early 1990s, the DOE identified Science Based Stockpile Stewardship as the strategy for sustaining the safety, security, and reliability of nuclear warheads, while simultaneously sustaining weapons research and development through investments in key stewardship capabilities, including advanced computing, fusion research, materials properties research, and non-nuclear component testing. But the nuclear weapons production complex was allowed to deteriorate to the point where today's NNSA is carrying out warhead life extension work at several facilities that were commissioned in the 1950s and 1960s.

Three decisions made when establishing NNSA also reinforced the shift in relationships. First, as noted earlier, the Albuquerque Operations Office was disestablished in 2002 and no headquarters activity was established that provided comparable expertise or continued operational focus. Second, the new management structure placed greater emphasis on contract management: In the NNSA transition plan, it was proposed that each field office manager would become a contracting officer and serve as the major point of contact with the site operators.⁵⁷ Third, as described in Chapter 3, the budget structure was also significantly modified and expanded during the creation of NNSA with the effect of transferring a significant share of resource control to the mission-support staffs within NNSA.

⁵⁶ In response to growing public concern over environmental hazards and nuclear safety (Three Mile Island occurred in March 1979; Chernobyl occurred in April 1986), significant actions were taken to tighten the regulation of weapons complex facilities and operations. Congress established the Defense Nuclear Facilities Safety Board in 1988. The board was created to provide an independent observer and advisor on nuclear facilities safety. Admiral James Watkins became the Secretary of Energy in March 1989. In June of that year, Watkins announced the Ten-Point Plan to strengthen environmental protection and waste management activities at the U. S. Department of Energy's production, research, and testing facilities. Included in the plan was the creation of "Tiger Teams" to identify possible environmental problems and violations across the DOE complex. Watkins also modified contracts to provide stronger incentives to address ES&H matters. On 9 November 1989, Watkins established the Office of Environmental Restoration and Waste Management. The joint FBI-EPA raid on the Rocky Flats plutonium facility in June of that year was perhaps the most publicly visible demonstration of the shift in focus.

⁵⁷ NNSA, *Report to Congress on the Organization and Operations of the National Nuclear Security Administration*, February 2002. The report, never fully implemented, declared the intention of establishing a single line of tasking authority, but does so through the contract management function, rather than through line managers for executing programs. Tasks are to be assigned as follows: "Federal program direction to the laboratories, production plants, and the test site will be delivered only by a warranted contracting officer (CO) or by a designated contracting officer's representative (COR)." The report goes on to say, "NNSA has decided to flow the Administrator's authority and responsibility directly through a contracting officer—who is also an NNSA Site Office manager—to the laboratories, production plants, and test site contractors. In this way, NNSA's basic reporting model is that the laboratory directors and facility managers report directly through to the Administrator through a contracting officer. (pp. 1, 20)

The tension in defining the roles of the M&Os and the Federal mission-support officials has created significant friction in the government-M&O relationships, especially at the laboratories. This friction in the field has been aggravated by the lack of clear roles and responsibilities within government headquarters. It also has been aggravated by the transition of the laboratories toward a more diversified customer base, as well as by the transition to for-profit parent organizations for the M&Os at the laboratories. These changes have led to a heightened, if incorrect, perception on the part of many Federal personnel that the M&Os are now driven foremost by their incentives for growth and profit and only secondarily by their traditional commitment to national service. In addition, the transition to award fees to encourage competition has created the belief among Federal personnel that greater oversight and transparency is required to monitor M&O performance.

In short, the combined effect of the changes in mission, increased regulatory oversight, reduced budget flexibility, and ascendancy of contracting officers in the management structure overturned accepted relationships within the nuclear weapons program. DOE/NNSA has increasingly moved toward detailed direction and regulation of the M&Os, resulting in the current troubled relationship. Concurrently, focus has shifted from mission accomplishment to one of compliance. In the view of one long-tenured laboratory leader: “Historically the job was to accomplish the mission safely and securely. Beginning with Secretary Watkins’ Tiger Teams, the job began to change to ‘Make sure nothing bad ever happens,’ with too little regard to the ability to accomplish NNSA’s missions.”⁵⁸

A 2012 National Research Council study directed by Congress concluded there is little trust in the relationship between the laboratories and NNSA. NNSA has lost confidence in the ability of the laboratories to “maintain operation goals such as safety, security, environmental responsibility and fiscal integrity.”⁵⁹ The panel has learned of some efforts to repair this relationship. There is evidence, for example, of recent positive interactions between the field offices and the sites, and more routine channels of communication have been opened between headquarters and the field offices. Nevertheless, the panel affirms these positive changes must be institutionalized and still much more needs to be done.

Five fundamental problems will need to be addressed to create the needed government-M&O organizations’ working relationships necessary to restore the effective and efficient operation of the enterprise.

⁵⁸ Testimony to the panel (nonattribution).

⁵⁹ National Research Council, *Managing for High-Quality Science and Engineering at the NNSA National Security Laboratories*, 5.

Breakdown of the Federally Funded Research and Development Center Model

The FFRDC model for the three NNSA labs has been seriously impaired. Historically, the Federally Funded Research and Development Centers—the laboratories—have played a key strategic role as *trusted advisors* in informing the government regarding effective execution of the mission. The historic, statutorily-defined relationship between the FFRDC and its sponsor includes⁶⁰

- Comprehensive knowledge of sponsor needs: mission, culture, expertise, and institutional memory regarding issues of enduring concern to the sponsor
- Adaptability: ability to respond to emerging needs of their sponsors and anticipate future critical issues
- Objectivity: ability to produce thorough, independent analyses to address complex technical and analytical problems
- Freedom from conflicts of interest and dedication to the public interest: independence from commercial, shareholder, political, or other associations
- Long-term continuity: uninterrupted, consistent support based on a continuing relationship
- Broad access to sensitive government and commercial proprietary information: absence of institutional interests that could lead to misuse of information or cause contractor reluctance to provide such information
- Quick response capability: ability to offer short-term assistance to help sponsors meet urgent and high-priority requirements

Ideally, the benefit of such a relationship is that an FFRDC can function as an independent, long-term, trusted advisor and honest broker. The FFRDC is answerable only to the Federal customer and has no vested interest in particular technologies or solutions. To achieve this ideal, the FFRDC must trust that the sponsor values its role. The government sponsor must trust that the FFRDC is acting as a disinterested, supportive party. These behaviors make it possible to build mutual trust.

In some quarters of the government, the transition to for-profit M&Os, combined with laboratory competition to increase their work for other agencies, has called into question the assumptions regarding the M&O's objectivity and the primacy of the public interest in their

⁶⁰ Definition taken from “Federally Funded Research and Development Centers (FFRDC),” on the Defense Acquisition University website, <https://dap.dau.mil/acquipedia>, accessed 29 July 2014.

operations.⁶¹ Consequently, the trusted FFRDC special relationship has increasingly been replaced by one whereby the laboratories are perceived as profit-motivated contractors to be held at arm's-length, rather than as *trusted agents*. The Laboratory Directors have expressed their concern that the enterprise lacks an effective forum for strategic dialogue between NNSA leadership and their labs.⁶² As one symptom of the breakdown in dialogue, one executive reported that his team learned about the site's FY14 budget through the trade press, rather than from NNSA headquarters. Current leadership appears committed to addressing this shortfall, and has initiated strategic forums and more frequent dialogue with the Laboratory Directors, but far more must be done to restore the essence of the FFRDC relationship, and more broadly to reinstate trust in government-M&O relationships.

Unclear Responsibilities for Managing Operations at the Operating Sites

The panel finds that the respective roles and responsibilities of the Federal sponsors and M&Os are not consistently and clearly stated or understood. Rather, they are unique to each site and evidently have evolved over time from the cumulative interactions of government and M&O personnel. Indeed, the panel has been told many times that the relationships between the M&Os and government personnel can vary from site to site and from issue to issue, depending largely on the personalities involved.

Ambiguity is pronounced when it comes to the fundamental question, "Who is the risk acceptance authority (i.e., who is accountable)?" In the case of the Kansas City Plant, for example, the field office and plant manager stated unequivocally that they co-owned the risk. At the Savannah River Site, the M&O has taken ownership of the risk and conducts routine internal management reviews to find the *right* balance in the operation of its activities. Generally, multiple individuals in the government and the M&O will lay claim to owning the risk, but the sense of responsibility and explanations differ from site to site.

While everyone the panel met with accepts a shared responsibility, this leaves no one person directly responsible. Today's system provides no clear answer to the question of who at each site is responsible for balancing across different risks for mission delivery, and the system provides no defined mechanism for clarifying operational interpretations of policy and resolving day-to-day questions or disagreements.

⁶¹ Of note, the Federal Acquisition Regulation (FAR) does not exclude for-profit industry from FFRDC participation, as long as industry complies with the FAR.

⁶² The laboratory leadership views were expressed in the "Tri-Lab Letter," which provides their characterization of the degraded relationship and recommended changes. See Penrose C Albright, Charles F. McMillan, and Paul J. Hommert, "The Model for the National Nuclear Security Administration and its Laboratories: Recommendations for Moving Forward" (17 April 2012).

From a practical standpoint, the true measure of responsibility is to be held accountable—whether for success or for failure. Within NNSA, the ambiguities in the understanding of the responsibilities for risk are amplified by the unbalanced system of accountability when things go wrong. In the case of the July 2012 Y-12 security incident, in which an octogenarian nun and two aging activists penetrated four security barriers, the differences among the repercussions for the nun, the security contractor, the M&O and the government personnel were stark. The nun was imprisoned. Among the involved contractors, nine top officials were fired. The security contract managed by the government was terminated and security responsibility was transferred to the M&O. In contrast, there were two NNSA Federal employees in the Y-12 field office that were formally punished. One was suspended without pay for ten days and one was moved out of security and is no longer a member of the Senior Executive Service. Within NNSA headquarters, three Senior Executive Service staff were relieved and reassigned outside of NNSA. No DOE employees outside of NNSA were disciplined.⁶³

Insufficient Influence of the M&O Parent Organizations’ Cultures

The premise of the operating model outlined at the beginning of this chapter is that the government would engage excellent parent organizations to instill strong cultures, operating practices, and systems in the weapons complex operating facilities. Overall, the record has been mixed. There have been important successes and recent progress. The obvious example is at the Kansas City Plant, where the parent Honeywell Corporation has thoroughly driven its highly regarded business systems and culture into that plant’s operations. The panel also learned of other somewhat narrower examples of successes, for example the adaptation by Sandia of its parent, Lockheed Martin’s earned value management system for the B61 LEP.

But success has by no means been as broad as it could or should be, and there are barriers to progress both within the government and within the M&O parent organizations. The M&O parents argue that sometimes the government does not sufficiently credit their initiatives. For example, when an M&O has adopted parent corporation practices, such as Lean Six Sigma management improvement processes, or invested to obtain industrial certification, NNSA has not relieved them of related transactional oversight. From the government perspective, the M&O parents sometimes under-contribute. The examples cited from this perspective include

- Failures to install promised top talent on the M&O management teams following competitive contract awards, or to keep top managers in place for more than a couple of years
- Failures to install “best-of-breed” corporate management systems at the operating sites

⁶³ The panel found it extremely challenging to obtain even such broad information with regard to the discipline administered to Federal employees.

- An unwillingness to collaborate among M&O organizations to identify best practices and seek common solutions and efficiencies across the weapons complex

As noted earlier, there is a distinct relationship between the Federal sponsor and M&O employees located at each site that has evolved over time. The same can be said for the relationship between the M&O's headquarters and the site: Some M&Os have single industrial parents and others have multi-member joint ventures. Each model can work and each brings advantages to the site. The weapons complex could benefit from greater collaboration to identify best practice solutions and to implement cost-saving common support functions. The M&O contractors can and should be major contributors to the Department's improvement initiatives.

Costly and Ineffective Transactional Oversight

NNSA's transactional oversight has proven to be expensive and counterproductive.⁶⁴ From the perspective of the field looking up at headquarters, the emergence of powerful but unaligned mission-support staffs within NNSA has created confusing, layered oversight. The operating entities of the enterprise face a multitude of oversight agencies, exacerbated in part by the flawed DOE/NNSA governance structure discussed earlier. The result is uncoordinated efforts to address the mission's safety, security, and environmental stewardship without sufficient regard to effectiveness, cost, schedule, risk, or mission impact.

Excessive and uncoordinated inspections, audits, and formal data calls fuel inefficiencies and generate little value added; in fact, they may detract from the desired safety, security, or environmental outcome. Under the current system, elements in the field are subject to review of their programs by NNSA (headquarters and field office staffs); DOE's Health, Safety and Security (HSS) office; the DOE Office of the Inspector General (OIG); GAO; OIGs other than DOE's OIG; the DNFSB; and OSHA and other industrial standards organizations (e.g., National Quality Assurance). Sandia, for example, reported that seventy-eight external audits or inspections were started in FY2013, more than one per week.⁶⁵ The workload is such that one full-time employee is required simply to schedule associated activities. Across the weapons

⁶⁴ As described by one former Laboratory Director, "Transactional oversight entails setting precise steps to be followed and examining implementation of each step with more than 100 Federal employees at each site and hundreds of external audits annually. By its very nature, this process is extremely conservative, risk-averse, and avoids appropriate cost-benefit considerations." George H. Miller, Director Emeritus, Lawrence Livermore National Laboratory, "Opening Remarks and Summary," Hearing of the Armed Services Committee Strategic Forces Subcommittee, U.S. House of Representatives (16 February 2012), 2, accessed 3 April 2014, http://armedservices.house.gov/index.cfm/files/serve?File_id=619ff080-e877-43f6-918f-66be678ef721.

⁶⁵ Sandia tracks inspections and audits based on new starts. Each noted event may trigger multiple days of engagement and support. Sites track various metrics, including audits and inspection closed out, or the total open audits and inspections.

complex, such audits, reviews and assessments consume enormous time and energy to prepare for, conduct, and follow up on actions.

When asked why a person holding line responsibility cannot say no to these external reviews, the reply was often “There is no gatekeeper of these reviews.” There are also multiple and duplicative inspections and formal data calls. This multiplicity of inspectors and overseers is not rationalized or synchronized. There is insufficient integration of findings to determine the overall impact on mission or risk acceptance. Further, there is only modest evidence that these reviews have actually improved performance or resulted in any other type of constructive change.

Witnesses note that the focus on compliance checklists can actually divert attention from the substance of safe and secure mission performance. In the case of the Y-12 security incident mentioned earlier, the security contractor had been consistently highly rated by DOE prior to the incident. The contractor met the compliance criteria, but long-standing complacency regarding false and nuisance security alarms along the perimeter fencing contributed to an unacceptable security force response. Two assessments done at the request of Secretary of Energy Steven Chu subsequent to the incident underscore these points:

- “...the evaluations of the security at Y-12 had received consistently high marks in the period before the incident. The overall situation reveals significant failings in oversight by DOE.”⁶⁶
- “In general, inspections and testing have focused on verifying that contract terms are satisfied or that the Design Basis Threat...has been countered. Immense volumes of documentation containing innumerable check-lists have been produced—little of which addresses what the Department of Defense would consider Operational Testing... Standards are often procedural rather than performance-oriented, and stress testing has been lacking. What is needed is not more inspections but better inspections.”⁶⁷

This latter point could be applied more generally to oversight, not just to inspections. What is needed is not more oversight but better oversight.⁶⁸

⁶⁶ Richard A. Meserve, letter to Secretary Steven Chu, 6 December 2012, available at <http://www.pogo.org/blog/2013/01/20130117-now-is-the-time-for-nuclear-security-changes.html>, accessed 7 July 2014.

⁶⁷ Norman R. Augustine, letter to Secretary Steven Chu, 6 December 2012, available at <http://www.pogo.org/blog/2013/01/20130117-now-is-the-time-for-nuclear-security-changes.html>, accessed 7 July 2014.

⁶⁸ Two past studies address in considerable detail the issue of transactional oversight. See National Academy of Public Administration, *Positioning DOE’s Labs for the Future*, 47–49; and National Research Council, *Managing for High-Quality Science and Engineering*, 19–21.

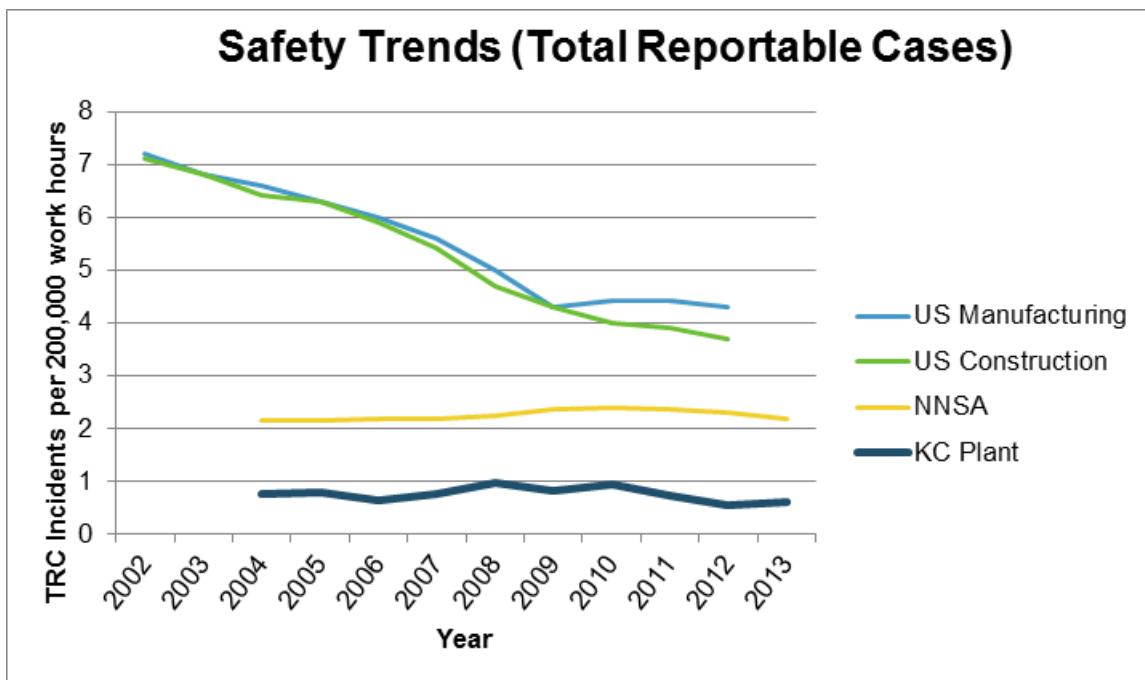
In the case of the Uranium Processing Facility (also at Y-12), none of the many external reviews uncovered a major design flaw (the building height is too low to hold the equipment it must accommodate) until late in the design process. This is now being addressed—at significant cost. Hence, multiple layers of process cannot by themselves ensure zero risk or high confidence in mission performance. These processes can, in fact, generate late changes in requirements that are costly and excessive. Competent, dedicated human judgment is also required. In another case, the panel was told that LLNL, in spite of repeated appeals, was required to purchase large safes to store small arms (.22 caliber) ammunition, but these were then illogically required to be located within a vaulted space where some fifty pounds of high explosives were routinely handled and openly stored. Meanwhile, the same ammunition could be openly purchased in nearby commercial stores.

The panel found there is no consistent reporting on the kinds and frequency of transactional oversight imposed on the weapons complex. Data provided to the panel from the field show that the scope and criteria for required approvals vary significantly across sites. Approval requirements address such areas as Interagency Work (discussed in Chapter 5), travel, conference attendance approvals, and subcontract approvals. The thresholds for reporting vary across sites as well.

Evidence of the high costs and ineffectiveness of transactional, compliance-focused oversight is provided by the gains achieved from the successful reform of regulation at the Kansas City Plant. Beginning in 2005, DOE exempted the Kansas City Plant (non-nuclear operations) from DOE/NNSA orders in areas where there were relevant commercial or industrial standards. The reforms moved the Kansas City Plant under industrial best practice standards (e.g., ISO standards) with validation from external expert bodies. Kansas City Plant officials estimate that this initiative reduced the DOE/NNSA-specific regulatory requirements on the facility by about 55 percent. These changes, coupled with internal business process improvements, have generated steady increases in workplace performance along with reduced mission-support costs.

The plant reports that its safety record, which was already quite good, has remained excellent under the reformed regulatory regime, and is about six times better than U.S. industry averages. A common metric used for reporting safety data is the Total Reportable Case Rate (TRC) per 200,000 working hours, a standard established by OSHA. Figure 7 depicts the TRC rates for the Kansas City Plant from FY04–13, and compares them with the overall NNSA TRC rate, as well as the U.S. rates for the manufacturing and construction sectors. The figure shows that the NNSA safety record is quite good relative to overall industry rates, and that Kansas City accident rates are still less than half those for the overall weapons complex.

A 2008 independent audit following the reforms estimated that the personnel savings for the Kansas City Plant overall was about 12 percent.⁶⁹ In parallel, NNSA's field office was able to reduce its staff by 20 percent, from fifty to forty staff. In the case of Kansas City, a better process has yielded continued excellence in safety performance with much lower costs. This is possible because, while the industrial (ISO) certification process is extremely rigorous, the annual recertification process is much less labor intensive. Assuming performance remains excellent, the recertification is straight-forward and avoids costly transactional oversight.



Source: Office of Analysis, Office of Health, Safety and Security, U.S. Department of Energy, "Department of Energy Safety Performance Information and Metrics Focused on Worker Safety and Health," 22 January 2014, briefing as provided to the panel. U.S. manufacturing and construction data are from the Bureau of Labor Statistics.

Figure 7. Kansas City Plant, NNSA, and National Safety Trends

An internal NNSA Enterprise Re-Engineering Team concluded that the “Kansas City model” of relying on applicable industrial standards should be much more widely applied to replace transactional oversight for routine administrative functions, or for industrial-type operations activities that do not pose unique nuclear or health hazards. In 2009, the then Administrator, Thomas D’Agostino, proposed an initial extension of the approach for Sandia and

⁶⁹ J.W. Bibler and Associates, “Kansas City Site Office Oversight Plan: Assessment of Implementation Cost Savings” (January 2008). The plant management reported to the panel that its internal process improvements actually began in the 1990s, and over the period 1995–2012 it has reduced the headcount of ES&H specialists by 81 percent.

NNSA, with the intent of deploying this approach across the weapons complex.⁷⁰ Over the ensuing years, the proposals to adopt the Kansas City model have been evaluated by senior leadership at DOE headquarters but not accepted. This approach appears to be a significant governance reform opportunity that deserves careful, renewed attention.

Another measure of the costs of transactional oversight is the size of the staffs who reside in the field offices, where much of this oversight occurs. In terms of NNSA's field offices, when benchmarked against the other parts of DOE, such as the Office of Science and Naval Reactors, the difference in the size of the field offices is striking, as depicted in Table 4.⁷¹ Comparisons with other nuclear oversight activities, such as the Nuclear Regulatory Commission, demonstrate that they too maintain much smaller site offices than does NNSA.⁷² There are plans to reduce the size of NNSA's field offices, and each has been asked to furnish projected staffing levels for FY16, but even with reductions, there will remain a considerable gap between NNSA averages and those of the other DOE programs. Obviously, differences in the field office's assignments of oversight and mission-support functions between NNSA and the Office of Science accounts for a significant portion of this difference in staffing levels; nevertheless, the opportunities for reducing transactional oversight through the wider application of industrial standards should not be overlooked. M&Os have observed that they must maintain at least one or two employees to respond to requests from each Federal oversight person at the field offices. As field office personnel are reduced, it should be expected that there will be corresponding reductions in the M&O staff.

⁷⁰ In a memo dated 22 December 2009, Administrator Thomas D'Agostino kicked off the "NNSA Enterprise Reengineering Reform Initiative." In the memo, he stated his intent as follows: "Within the past three years, NNSA underwent a successful change in how we conduct business at the Kansas City Plant (KCP). This change is known as the KCP Oversight Model for Non-Nuclear Operations. Given the success of this KCP model, I believe NNSA is ready to cascade the principles of the KCP non-nuclear operations model to other NNSA contractors in a systematic approach that leverages the lessons learned from KCP and other efforts to implement the KCP model at the Sandia Site Office (SSO)/Sandia National Laboratory (SNL) first followed by implementation at Nevada Site Office (NSO)/NSTec and then site/contractor by contractor across the NSE. ... Over the next few years, transitioning all of NNSA's contractors to the KCP model for non-nuclear operations is one of my highest priorities."

⁷¹ Naval Reactors reports their site offices average roughly seventy staff, yielding a ratio of government staffs to M&O personnel of about .36 per 100. In terms of technical capacity, "NNSA employs a total of 89 PhDs (among its 2,500 personnel), whereas in the Office of Science, nearly all scientific program managers are PhD scientists with extensive research experience." Source: Letter to the panel from a former DOE Office of Science Official.

⁷² The NRC reports that it maintains very small site offices with two or three individuals at each site. This is not a direct comparison, because the majority of NRC field personnel are in regional offices.

Table 4. Field Office Personnel Comparisons

Field Office Personnel	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	FO per 100 M&O (2013)
Kansas City Field Office	50	46	42	42	35	39	43	40	37	35	1.2
Livermore Field Office	94	89	96	95	95	96	97	94	85	83	1.4
Los Alamos Field Office	109	108	105	108	106	105	107	103	91	86	0.8
Nevada Field Office	100	98	95	96	92	96	98	96	87	83	3.0
Sandia Field Office	87	86	83	85	83	83	99	82	80	81	0.7
Savannah River Field Office	21	23	33	34	36	30	31	33	28	28	0.6
Pantex Field Office	86	85	82	75	77	81	78				
Y-12 Field Office	80	82	84	83	79	78	81				
NNSA Production Office*									149	129	127
Avg. NNSA Field Office**										67	1.1
Avg. Office of Science Field Office										19	0.1
Naval Nuclear Propulsion Program											.4

* In 2012, the Pantex and Y-12 field offices were merged, to create the NNSA Production Office

**Average is based on eight field offices, since Pantex and Y-12 are two sites

Sources: For NNSA field office data: DOE, information provided to the panel, 25 March 2014. For Office of Science data: Steve Binkley, "A DOE View on NNSA Labs Governance," briefing slides, 12 March 2014. For M&O data, information provided to the panel, June 2014.

Contract Requirements and Performance Metrics that Divert Attention and Resources from Mission Execution

Misguided contract requirements reinforce the focus on inefficient transactional oversight. By specifying detailed compliance requirements, DOE/NNSA is, in effect, imposing government processes—generally not widely praised for their efficiency—on the M&Os, rather than taking advantage of the strengths that the M&Os bring to the table from the competitive marketplace. In short, this is the very opposite of what should happen.

Award fees, when combined with mission-support-oriented compliance criteria, reinforce DOE/NNSA's emphasis both at headquarters and in the field on transactional oversight. Indeed, close observers have told the panel that the available fee incentives have been divided among the mission-support communities, who view the fees as an important source of leverage for

enforcing compliance. At the same time, the fees incentivize middle managers in the M&O organizations to organize efforts designed to maximize their fee award.

Under the current contracts, the percentage of total fee that is at risk (the incentive fee) ranges from 10 percent for Sandia to 70 percent for LANL and LLNL.⁷³ In 2012, one laboratory reported on twelve sets of performance-based objectives, including over seventy-four individual milestones and deliverables, each with specific performance measures and associated fee. One laboratory official reported that the laboratory's performance report filled a binder that was several inches thick, requiring a huge effort to produce. Moreover, the fees were predominantly centered on mission-support compliance criteria rather than on mission accomplishment itself. One site official noted that, at one point, fully 80 percent of the award fee was tied to mission-support activities, not to mission execution.

The recent transition to Strategic Performance Evaluation Plans (PEP) provides a step away from detailed transactional oversight, focusing more broadly on five evaluation areas with much more emphasis on mission accomplishment and leadership. But, this approach still retains the essence of the fee-driven, compliance culture.

Several experts have recommended shifting the incentive structure away from award fees and instead to focus on the extension of the M&O operator's period of performance as the incentive for satisfactory mission performance. Similarly, a decision not to extend the contract, or even to terminate the contract early, provides a powerful lever to punish poor performance. It has been observed that at the Kansas City Plant's reform efforts were driven importantly by the fear that the long-term future of the contract was at risk, and continuation required major cost savings.

RECOMMENDATIONS

An effective, trusting, and collaborative government relationship with M&Os is vital for accomplishing the nuclear security mission. DOE&NS must establish a relationship that attracts world-class parents for the M&O organizations, and takes advantage of their ability to recruit and retain talent, instill a strong management culture, and contribute proven business systems, processes, and practices. The significant erosion of this relationship and an inability of the M&Os to adequately apply their knowledge and best practices due to onerous oversight and increasingly tactical contractual constraints has resulted in at least an arm's length—and at worst, an adversarial—relationship.

⁷³ The Sandia contract was renegotiated in the summer of 2014 and the award fee component was reduced from 35 percent to 10 percent. The data on fees and performance metrics were obtained during panel fact-finding visits and follow-up email correspondence.

It is clear that the recent acting NNSA Administrator recognized existing problems and set in motion some changes to help resolve them. In the field, the panel saw evidence of improved communication and collaboration between the M&Os and NNSA's field offices, especially at the plants. However, these positive changes do not appear to extend to relationships with NNSA headquarters, either on the part of the M&Os or the field offices.

While the focus on tactical compliance as opposed to strategic outcomes has been driven partially by the incentive fees embedded in the existing contract approach, the panel remains skeptical regarding recent calls for a return to the *public service* contracting model. It also finds it inappropriately pejorative. Although the details of this model have yet to be unveiled, the panel firmly believes that turning back the clock to the modern equivalent of the \$1 per year public service arrangement of the Manhattan Project is neither practicable nor advisable.

The panel recommends a major transformation in incentives and relationships. The panel's recommendations are intended to restore the trust and mutual respect intended in the government-contractor (GOCO) management and FFRDC advisory model and the Department's ability to rely on the sites' leadership and expertise for strategic, technical, and programmatic advice, while minimizing ineffective and wasteful transactional oversight activities across the complex.

Recommendation

14. The Director should reform M&O contracts, replacing the award fee structure with fixed fees for longer (multi-year) award terms and linking performance incentives to the contractual period of performance.

The panel found that an unintended consequence of the award fee structure is that it contributes significantly to detailed, transactional oversight. It has contributed to the growth of a government bureaucracy responsible to track fee. This, in turn, has induced the M&O organizations to grow a corresponding bureaucracy to provide the assessments that justify their award fees. The panel recommends the following actions to end this dysfunctional practice.

Action Items

14.1 The Director should adopt market-based fixed fees for new M&O contracts commensurate with M&O-borne risks, M&O investments in the enterprise, and the scale of the undertaking.

The Director should reform the fee structure and contract performance assessments for the M&Os for future contracts. Award fees should be eliminated and replaced with fixed fees. To the extent that small incentive fees are retained, they should be appropriately focused on rewarding best practices. Fees should be market based, commensurate with

- the risk exposure of parent organizations (tangible and reputational)

- the value of the parent's investments in the nuclear enterprise (leadership and corporate talent, industrial best practices, safety/security culture, management systems, etc.)
- the size and complexity of the undertaking to be managed

14.2 Where practicable, the Director should convert existing contracts to similar fixed fee arrangements.

Using the criteria described in Action Item 14.1, the size of the fixed fees could be negotiated based on a thorough market analysis.

14.3 The Director should base decisions to extend an M&O contract's period of performance primarily on contributions to mission performance; unsatisfactory performance should lead to early termination.

The primary basis for the decision on contract extension should be mission performance, except in the case of extraordinary failures in supporting areas. Extension of the contract period of performance should be the foundational element of evaluation and, in turn, successful performance. Award terms should be for multiple years to encourage continuity and high performance. Such an award term should be added on to the end of the contract. This is often referred to as the *evergreen approach*.⁷⁴

14.4 The Director should seek greater standardization of contract provisions across similar entities.

For example, the M&O should be responsible for security at the site (to avoid bureaucratic seams, such as those that arose at Y-12 during the 2012 incident). Standardization could also create greater equality in fixed fee, to avoid existing disparities such as seem to exist between the LANL/LLNL and Sandia contracts.

Recommendation

15. The Secretary and Director should reinforce the M&O parent organizations' obligations to contribute to enterprise management improvement initiatives

The panel finds a wide range of M&O contributions at the sites. What is clear from the most successful examples is that a strong infusion of a successful parent organization's corporate

⁷⁴ According to Investopedia, the definition of "evergreen" is "A contract provision that automatically renews the length of the agreement after a predetermined period, unless notice for termination is given. Evergreens are often used for long term agreements..." <http://www.investopedia.com/terms/e/evergreen.asp>, accessed 30 September 2014.

culture, business systems, and talent are essential for effective operations at the site. This requires a personal commitment by the firm's top executives.

Action Items

15.1 The Director should create collaborative mechanisms to strengthen the joint contributions of the M&O organizations in improving the effectiveness and efficiency of enterprise operations.

The Director and M&O leadership (to include the Laboratory Directors, plant managers, and other appropriate senior leaders) should work together to improve visibility and integration of overall enterprise technical work programs including infrastructure sustainment and Interagency Work (IW). Along with better visibility, there should be a concerted effort to effectively prioritize the work, improve cost accounting and transparency. This effort should be undertaken with the objectives of more informed resource management across the enterprise and more opportunities to improve overall efficiency and effectiveness.

15.2 The Director should task M&O organizations to identify and assess management improvement opportunities, both for mission execution and for mission-support functions.

The M&O organizations should be tasked to contribute their corporate knowledge and experience to identify ways to improve the management of the nuclear enterprise. As an element of the Director's continuous learning and improvement system, the M&Os should be routinely tasked to identify and assess possible management improvement initiatives.

Recommendation

16. The Secretary and Director should eliminate wasteful and ineffective transactional oversight.

The panel finds that regulation of the DOE nuclear security enterprise has over time become increasingly beleaguered with competing authorities, conflicting guidance, and costly but often ineffective oversight. It is imperative that existing practices be overhauled. This requires at least two actions by the Secretary and Director.

Action Items

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

The Secretary and Director should conduct a zero-based review of all audits, inspections, and studies. The Director should be empowered to approve or disapprove

any internal DOE&NS/ONS audits to eliminate non-value-added activities. The Director should establish procedures to coordinate and synchronize all internal and external (e.g., GAO) audits, inspections, and formal data calls imposed on headquarters and field activities to the extent possible to minimize disruptions to operations. The focus of internal reviews should shift toward mission success as opposed to compliance.

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

The infusion of a proven safety and security culture from a world-class parent organization, the adoption of modern industry standards, and the reliance of external experts for accreditation or certification can yield very positive results. The Secretary should adopt the best practices of the Kansas City Plant wherever possible. First, insist on strong corporate cultures of the parent M&Os as the basis for achieving safe, secure operations. Second, employ industry standards for non-nuclear operations, with exceptions applied only under extraordinary circumstances (such as processing beryllium). Third, transition to an alternative oversight model based on performance-based standards, rigorous accreditation/certification, and observed performance. Examples from the panel's benchmarking efforts include: Naval Reactors, Strategic Systems Programs, and the Office of Science.

Recommendation

17. The Secretary, Director, and the National Laboratory Directors should adopt management practices that serve to rebuild the strategic Government-FFRDC relationship.

A fundamental concern across the complex, but particularly on the part of the laboratories, is the lack of mechanisms for strategic dialogue and impact to planning. Integrated decision making and planning are critical to successful performance of the endeavor and will serve to restore the trust and transparency necessary to rebuild the FFRDC special relationship.

Action Items

17.1 The Secretary and Director should continue to reinvigorate the strategic dialog with the Laboratory Directors.

Integrated planning and decision-making forums will help ensure coherence across the Department and provide an opportunity to communicate expectations. These forums will facilitate the government being able to convey what needs to be done, and the laboratories being able to convey how it can best be accomplished. The panel notes that an improved dialog has evolved in the last year and makes this recommendation to ensure the dialog continues and deepens.

17.2 Leaders in both the government and M&Os should prescribe and enforce behaviors that rebuild credibility and trust.

Communication policies: There should be consistent messaging among government and M&O officials on factual matters and program priorities. There needs to be “one message, many voices.”

Commitment: The Secretary and Director should support the continued evolution of the laboratories *national security* roles in serving nuclear security customers across the government, while emphasizing that all customers must be served. It is essential that DOD customers trust that the laboratories’ attention to other customers’ needs does not distract from nuclear deterrence needs.

Credibility: Both government and laboratory personnel must focus on delivering on commitments made within agreed-upon timeframes and agreed-upon costs. They must also be committed to communicating honestly and openly with each other, without fear of retribution if they, on occasion, must deliver bad news.

Investment in the relationship: The M&Os should focus on providing world-class business systems and practices for advancing mission execution and mission-support responsibilities.

17.3 The appropriate government officials (e.g., Deputy Directors, program managers) should meet at least monthly with the M&O leadership, and preferably have daily informal interactions.

Monthly meetings would offer a regular opportunity for a two-way discussion of project status, needs, and required changes.

5. Strengthen Customer Collaboration to Build Trust and a Shared View of Mission Success

Our distrust is very expensive.

—Ralph Waldo Emerson

CHALLENGES

The panel examined the relationships between NNSA and nuclear weapons customers in DOD, as well as other customers in DOD, Department of State, Department of Homeland Security, and the Intelligence Community. The most serious collaboration issues are with the DOD nuclear weapons customers, who believe that the current processes for DOD-DOE consultation and collaboration are not serving their needs. DOE/NNSA's history of over-promising and under-delivering has seriously undermined the trust of the DOD's weapons customers. These DOD customers lack confidence in NNSA's ability to execute warhead life extension programs (LEPs) and major nuclear facility modernization projects. This is both a cultural and communications divide. A fundamental void is the lack of an affordable, executable, joint DOD-DOE vision, plan or program for the future of nuclear deterrence capabilities, which are described in more detail in this chapter. On the whole, other customers who currently are working with NNSA laboratories and plants indicate that they are satisfied. Even here, however, detailed oversight of transactions impedes collaborative relationships; a more strategic collaborative approach could strengthen capabilities and improve the services provided.

Collaboration between NNSA and the nuclear weapons customers in DOD occurs primarily through the Joint DOD-DOE/NNSA Nuclear Weapons Council, its subordinate Standing and Safety Committee (SSC) and staff *action officer* working groups, as well as through the Project Officer Groups responsible for each type of nuclear weapon in the inventory.⁷⁵ The NWC has a

⁷⁵ The USD(AT&L) is the chairman of the Nuclear Weapons Council. The other four members are: Vice Chairman, Joint Chiefs of Staff; Undersecretary of Defense (Policy); Commander, USSTRATCOM; and Under Secretary for Nuclear Security of the Department of Energy (Administrator, NNSA). The Services and other staffs are invited to participate as observers. The Council's role and responsibilities are found in 10 U.S.C. §179. Sub-paragraph (d) stipulates the following responsibilities of the NWC:

- (1) Preparing the annual Nuclear Weapons Stockpile Memorandum.
- (2) Developing nuclear weapons stockpiles options and the costs of such options and alternatives.

central role to play in creating an executable plan for the future stockpile agreed on by the two Departments. This responsibility will require an orderly process for the NWC's working groups to serve its principals and provide greater transparency between the two Departments.

Productive working relationships with the customers of nuclear security missions are essential for the health of the enterprise. Three substantial weaknesses in joint NSE-customer collaborative mechanisms undermine the necessary working relationships.

Lack of Effective Joint DOD-DOE Planning and Budget Coordination

The DOE/NNSA-DOD relationship has been significantly stressed over the past several years, due largely to failed attempts to converge on a viable plan for modernizing nuclear weapons and nuclear facilities. Within the past two years, at the behest of the Chairman of the Nuclear Weapons Council and under the leadership of U.S. Strategic Command, the DOD has produced the *baseline plan*: a concept outlining DOD's warhead and delivery platform needs over the next three decades, the NNSA infrastructure required to support DOD's needs, and a "3+2 Concept" for the long-term stockpile.⁷⁶ The NWC has vetted and endorsed the conceptual underpinnings of this approach, but agreement on the details remains elusive within DOD as well as between NNSA and DOD.

The recent decision by the Deputy Defense Secretary's Management Action Group (the DMAG 1) is currently viewed as a near-term path forward, and it represents a step toward an agreed approach.⁷⁷ However, there remain fundamental differences in views on the appropriate composition of the weapon life extension programs and the timing of deliverables.

Many DOD witnesses have expressed frustration with the lack of progress in developing a mutually agreed-upon plan, and have suggested to the panel that the NWC mechanism should be strengthened to drive the needed convergence between DOD and DOE/NNSA on mission priorities and resource plans. Other witnesses have countered that these mechanisms work well for their intended purposes. Still others propose an industrial-type contract between DOD and

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- (3) Coordinating and approving programming and budget matters pertaining to nuclear weapons programs between the Department of Defense and the Department of Energy.
 - (4) Identifying various options for cost-effective schedules for nuclear weapons production.
 - (5) Considering safety, security, and control issues for existing weapons and for proposed new weapon program starts.

⁷⁶ The "3+2 Concept" is a vision for reducing warhead types over the long term via consolidation and retirements thereby making the management of the stockpile more efficient. The concept, if and when it is fully realized, will narrow the number of warhead types to "3" for ballistic missile delivery systems and "2" for aircraft and cruise missile delivery systems.

⁷⁷ DMAG 1 represents the most recent DOD programmatic decision taken during the last cycle of budget development and program review. It represents a commitment to fund completion of the W76 LEP deliveries, the W88 Alt, and the B61 LEP, albeit with delays from the original requirement. DMAG 1 delayed the scheduled delivery of the long range standoff missile and W78/88-1.

DOE. As discussed in Chapter 1, the panel is recommending joint reviews of warhead and delivery system programs by OMB and the NSC, in part to drive the needed collaboration between the nuclear enterprise and its weapon customers.

Regardless of the role assigned to the NWC, there are significant process issues that need to be addressed to improve its effectiveness. The processes supporting the NWC have been unable to achieve the collaboration required to build consensus or to systematically frame issues at the working levels across the Department... This is despite many attempts at establishing better communication, more disciplined staff processes, and closer follow up.

Lack of DOD-DOE Information Sharing and Trust

NNSA's unreliable planning and cost estimating, as discussed earlier, combined with DOD's perception of a lack of transparency into DOE/NNSA programs, has engendered significant distrust of the DOE process within the DOD. Beginning in 2010, DOD has worked with DOE/NNSA initially under a Memorandum of Agreement for a one-time *transfer* of a portion of proposed budget authority for nuclear weapons activities from DOD's proposed budget to NNSA's proposed budget for sustaining deterrence capabilities—including LEPs, stockpile surveillance, CMRR, and UPF.

NNSA and DOD staffs spent much of 2012 working to achieve a common resource plan for the national enterprise that would be geared to meeting DOD's needs. This effort led to a tentative agreement in early 2013 on an NNSA program and budget that would be in line with the "3+2 Concept," and DOD agreed to contribute additional proposed budget authority to execute the program in FY14. In total, DOD has reallocated nearly \$12 billion over multiple years in proposed budget authority to DOE. However, because these funds are in *proposed* budget authority, most, but not all, of the funds were actually received by DOE.

During this period, a series of NNSA budget shortfalls were reported. These resulted largely from significant cost growth in the DOE programs. Other contributing factors included reductions in the overall NNSA budget—due to Continuing Resolutions, congressional marks, the Budget Control Act, and the effects of sequestration.

DOD leaders have been frustrated by these continuing shortfalls, delays in agreed-upon programs, and DOE/NNSA requests for additional funding. DOD officials also have been frustrated by the limited budget and cost information provided by DOE/NNSA, and they have pressed for information on budgeting and program management processes in order to track the execution of the funds that DOD gave up. A satisfactory degree of visibility has not been achieved. The differing perceptions on these *transfers* have exacerbated tensions and further undermined trust in the DOE-DOD relationship.

Also contributing to the challenges of DOD-DOE collaboration is the difference between the Departments in preparing longer term budget estimates. While DOD uses a well-developed planning, programming and budgeting system (PPBS) to create its FYDP, DOE's approach to

creating its FYNSP has historically lacked the same level of transparency and rigor in its cost analysis and estimating. Recent efforts, such as the 2015 *Stockpile Stewardship and Management Plan* (SSMP), are a step in the right direction, but additional rigor is still needed.

Weak Processes for Interagency Coordination and Tasking

Beyond DOD, the enterprise has many other customers from across the government, such as the Intelligence Community, Department of State, and the Department of Homeland Security, all of whom make use of the science and technology (S&T) capabilities of NNSA's national security laboratories, NNSN and, to some degree, the production plants (as well as the DOE Office of Science laboratories). Such customers provide the funds needed to accomplish a mutually agreed program of work on an agreed schedule. This program was known as Work for Others, but has more recently been referred to as Interagency Work (IW).⁷⁸

In the main, the IW customers report they are satisfied with the quality of science and engineering, and the final product they receive from DOE/NNSA. This favorable assessment is consistent with the growth in IW, which now accounts for between one-tenth and one-third of the nuclear weapons laboratories' total funding. The continued growth of this work lends credence to the observation that the three NNSA laboratories are transitioning from strictly nuclear weapons labs to national nuclear security labs, as was noted in the *Strategic Posture Commission Report*.⁷⁹ The amount of IW performed at each site during FY13 is captured in Table 5, in terms of its dollar value, its percentage relative to the site's overall budget, and the number and size of projects the funding represents.

Interagency Work has become an important contributor to the science and technology base that supports the weapons program. Conversely, this work would not be possible without the long-standing and substantial investments of the nuclear weapons program. By addressing the requirements of many customers, the IW program can help DOE/NNSA balance the needs of near-term program execution and long-term national security requirements. The IW efforts have yielded breakthrough developments in combatting improvised explosive devices, detection technologies for weapons of mass destruction, and advanced conventional munitions. IW has also been identified as nurturing and honing capabilities in areas such as weapons design, materials science and radiation hardening technologies to enhance survivability. These programs are also important for hiring and developing needed talent.⁸⁰ Finally, because IW customers

⁷⁸ As of September 2014, a new term for IW is being adopted: Strategic Partnership Projects. For the purposes of this report, drafted while IW was still the term in use, all references are to IW.

⁷⁹ Strategic Posture Commission, *America's Strategic Posture*, 52, 53–55.

⁸⁰ On the overall importance of IW, see DSB, *Report of the Defense Science Board Task Force on Nuclear Deterrence Skills* (Washington, DC: DOD, September 2008), 47–49; and Elizabeth Turpen, *Leveraging Science for Security: A Strategy for the Nuclear Weapons Laboratories in the 21st Century* (Washington, DC: Stimson

often have a choice among potential providers, the ability of the NNSA complex to attract this work is one way to judge the quality of the workforce. On the other hand, controls must be in place to assure that work unrelated to NNSA's unique skills do not become a distraction from the basic mission or an excuse for hiring or retaining otherwise unneeded personnel.

Table 5. Interagency Work (IW) by Site (FY13)

	Total IW Funding (\$M)	IW Funding as % of Total Funding	Total Projects	Projects by Funding Level (Percentage)			
				≤\$100K	\$100–500K	\$501K–\$1M	≥\$1M
LANL	225	11	607	44	37	10	9
LLNL	272	18	836	61	24	8	8
Sandia	879	35	1862	41	31	11	17
KCP	187	20	279	28	35	13	23
NNSS	97	19	137	28	44	15	12
Pantex	5	< 1	29	76	21	0	3
SRS**	22	2	60	43	23	7	27
Y-12	28	< 1	31	26	32	13	29
NNSA Totals	\$1,715		3,810	45%	31%	10%	14%

Note: These figures do not include site work for other parts of DOE.

** At SRS, NNSA work is performed by two major contractors, the M&O and a construction contractor. Data provided is as follows: M&O/Construction/Total. The M&O information includes NNSA and Environmental Management.

Source: Data provided to the panel by each site upon its request, June 2014.

While the panel did not focus deeply on DOE/NNSA's relationships with its interagency customers, experts did identify several issues for the panel's consideration. One is the tactical approach taken by many customers: much of this work for external sponsors is accomplished using annual task orders with no long-term commitment. Interagency tasks are typically quite small and each laboratory manages hundreds of such tasks. For example, LLNL reported it manages about 800 interagency tasks, many providing a few tens of thousands of dollars in support, as noted above in Table 5. As this issue has frequently been summarized, the IW customers "buy by the glass" but do not invest in "maintaining the vineyard." There is also a range of areas where working relationships could be simplified and improved:

Center, 2009), 27–31, 33. On the specific point of its ability to attract and retain talent, see Albright, McMillen, and Hommert, "The Model for the National Nuclear Security Administration and its Laboratories: Recommendations for Moving Forward," 1.

- Approval processes are needlessly cumbersome, as Figure 8 illustrates. Tasks are reviewed and approved individually, even though these tasks are typically quite small and each laboratory manages hundreds of them (as shown in Table 5). Even small, routine contracts require multiple levels of approval sometimes taking weeks.

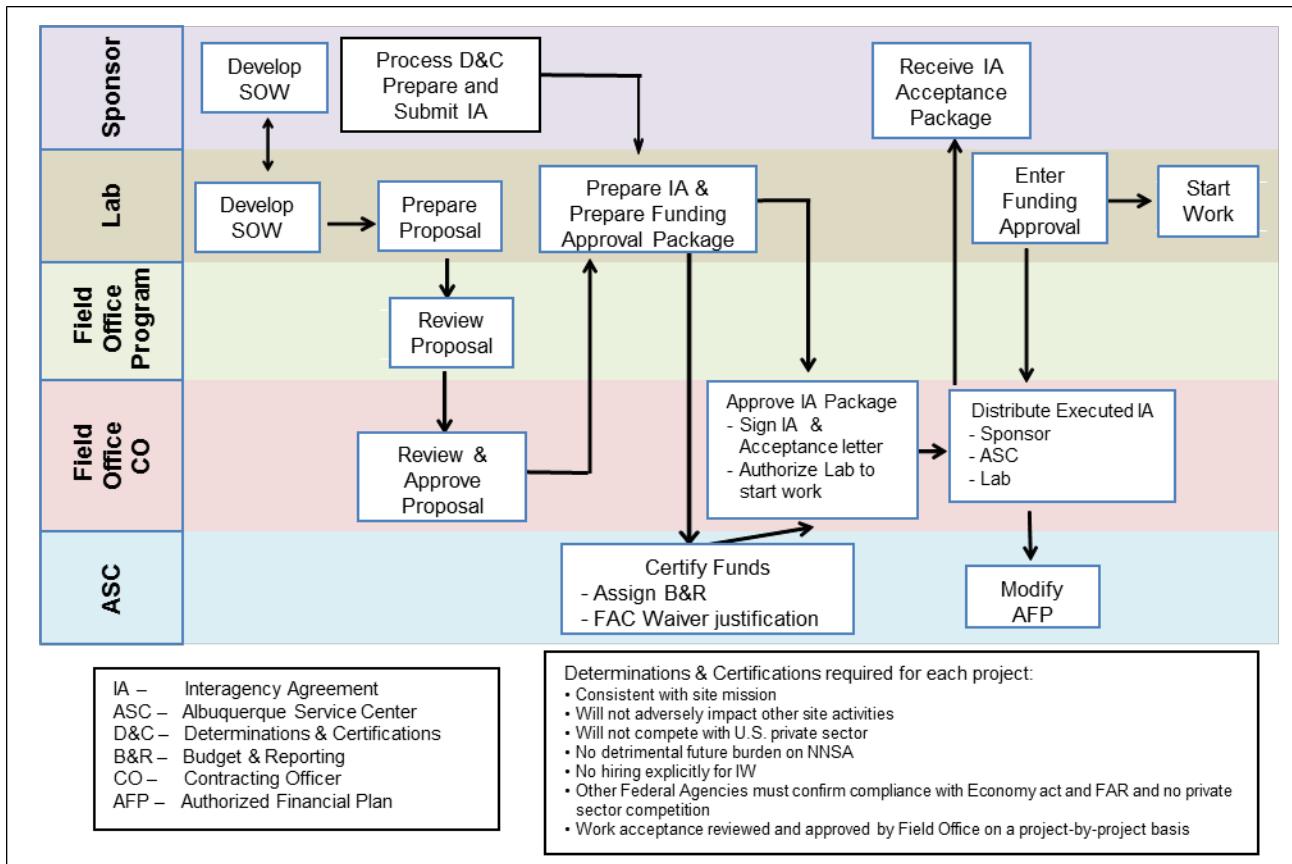


Figure 8. The Interagency Work (IW) Approval Process

- Delays are not uncommon in the movement of funds from sponsors to the labs. In some cases, technical efforts may be put on hold pending arrival of funds.
- Year-to-year uncertainty in funding makes it difficult to forecast demand and manage professional staffs.
- Recapitalization of scientific and physical capital is not addressed. While external funding covers the overhead costs immediately associated with the work being accomplished, it does not cover the cost of refurbishing and replacing the unique laboratory capital equipment or capabilities used in some tasks.

Some customers have found ways to resolve some of these challenges by employing interagency agreements with DOE/NNSA in which the external funding organization makes a standing commitment to funding support at a specified level of effort.⁸¹ While necessarily subject to the availability of annual appropriations, this eliminates much of the uncertainty, enabling the NNSA laboratories to better align and manage professional staffs and plan and conduct technical work. Capital investments to develop needed capabilities for interagency customers are a more difficult challenge, but they too have been overcome in a limited number of cases. NNSA has approached this challenge on a facility-by-facility basis.

The 2010 establishment of the Mission Executive Council (MEC), via a four-party Governance Charter signed by the Secretaries of Energy, Defense, Homeland Security, and the Director of National Intelligence, is intended to facilitate interagency collaboration on long-term planning and investment in the enterprise's skill sets.⁸² The MEC provides a forum for coordinating shared, long-term planning for the critical, and often unique, capabilities resident in the DOE national laboratories (not just NNSA laboratories) that are of cross-cutting strategic national security interest. The MEC, however, has had limited success to date in identifying common technology areas, addressing long-term investment needs, and providing a strategic focus.

⁸¹ The panel was told, generically, of Intelligence Community examples. In addition, Homeland Security Act of 2002, §309, authorizes DHS use of DOE national laboratories and sites via joint sponsorship, direct contract, or "work for others." Labs and sites perform such work on an equal basis to other missions at the laboratory and not just on a noninterference basis. DHS does not pay costs of DOE or its contractors in excess of the amount that the DOE pays. DHS' position is that it strongly prefers using authorities given it in law to allow it to work across the DOE complex in response to proposals.

⁸² The "Governance Charter for an Interagency Council on the Strategic Capability of DOE National Laboratories as National Security Assets," U.S.C §188 (2012), has the following objectives:

- Provide a forum for the Parties' leadership to identify and plan strategic ST&E collaboration of common interest in the area of national security;
- Examine critical strategic mission needs requiring the ST&E capabilities unique to the National Laboratories;
- Develop a mechanism for two or more of the Parties to undertake long-term strategic planning of common interest to develop and sustain strategic capabilities of inter-agency interest at the National Laboratories; and
- Create an interagency framework for two or more Parties to consider making collaborative national security investment decisions.

The Governance Charter further states that "The Council will serve as an inter-agency forum for discussion and coordination on developing priorities among the Parties regarding long-term strategic ST&E capabilities at the National Laboratories."

RECOMMENDATIONS

The panel finds that NNSA's many customers and sponsors have uneven levels of satisfaction and varied perceptions of collaboration and transparency. Some of DOE/NNSA's customers are satisfied, but its nuclear warhead customers in DOD are dissatisfied with the lack of transparency and the continued growth in costs and slips in the schedules for major programs and infrastructure projects. Secretarial attention is needed to reconcile the current disparity between the statutory roles and responsibilities of the Nuclear Weapons Council and the results of the Council's work. The panel provides a number of recommendations to strengthen collaboration in order to improve communication and drive toward a common view of mission success.

Recommendation

18. The Secretary should collaborate with the Secretary of Defense to better align the planning, resourcing, and execution of sustainment and modernization programs for nuclear weapons and their supporting infrastructure with DOD's delivery platforms.

In order for the enterprise to fulfill its nuclear deterrence mission, the relationship between DOE&NS and DOD must be collaborative. Secretarial attention is needed to strengthen commitment and collaboration across Departments, including an effort to strengthen the statutorily-established Nuclear Weapons Council.

Action Items

18.1 The Department Secretaries should direct activities that foster collaboration and communications among the principals and staffs supporting the Nuclear Weapons Council (NWC).

The Secretary, in collaboration with the Secretary of Defense, should jointly review performance of the Nuclear Weapons Council and its Standing and Safety Committee and working groups in light of the stipulations establishing the Council's role and responsibilities found in 10 U.S.C. §179 (1994). This review should include steps to increase information sharing, communication, and transparency at all levels of the two Departments' interactions.

18.2 The Department Secretaries, supported by the chairman and members of the NWC, should reinvigorate its working-level elements.

The Council needs to reinvigorate its working-level groups (i.e., the Standing and Safety Committee and action officer groups), which offer proven staff and analytical processes, and embrace the inputs they provide. Their more effective use can

strengthen working-level coordination and enhance preparations for informed decision-making during Council sessions.

18.3 The Department Secretaries should establish transparent information sharing mechanisms and increase direct staff collaboration on a daily basis to address persistent communications and trust issues.

Principal members of the Nuclear Weapons Council, the Project Officer Groups, and responsible staff elements should have full access to all program information, including cost data, necessary to carry out their responsibilities. Access to and transparency of program data, irrespective of source, for any nuclear weapon system program impacting both Departments—warhead LEPs and delivery systems—is inherent in the effective synchronization of the enterprise.

In addition to the formal interactions occurring through the NWC and its subordinate entities, other mechanisms for more routine coordination should be identified that would enhance mutual understanding and transparency in the nuclear weapons program. For example, there should be continued joint work on cost estimating, budgeting, and program management. This should take the form of regular collaboration between ONS staff and appropriate DOD counterparts in OSD, the Joint Staff, the Military Services, and the Combatant Commands.

18.4 The Department Secretaries should confer on each Department's proposed co-chair to the Standing and Safety Committee (SSC), which reports to the NWC.

Specific focus should be placed on the expertise, experience, and team building skills of the two principals responsible for co-chairing the Standing and Safety Committee. These two officials provide a key bridge for communication and collaboration across the Departments, and an effective working relationship is critical to the success of the enterprise. (They are the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs [ASD(NCB)] in DOD and the Director of Defense Programs in DOE.) If the Secretaries were to confer on their respective nominees for these positions, this would help ensure compatible individuals with the right mix of talents are appointed. While the appointee of each Department is entirely the province of the Secretary of that Department, informal coordination is important, both as a professional courtesy and as a means of forestalling future, avoidable, problems.

18.5 The Department Secretaries should involve the NWC in drafting and reviewing the annual assessment to the NSC of progress on meeting Presidential guidance.

The Secretary, in collaboration with the Secretary of Defense, should jointly direct the Nuclear Weapons Council to conduct an annual review of progress toward achieving Presidential guidance and report results of this review to the Secretaries (as

described in Action Item 1.1 in Chapter 1, calling for robust annual Presidential guidance including the NWC’s preparation of an expanded NWSM). To this end, the two Departments should coordinate budget development for the relevant portions of the warhead and strategic systems budgets; the NWC should assess this synchronization effort. This would help fulfill the Council’s chartered role to “coordinate and approve programming and budget matters” between the two Departments.

This Council role would support the implementation of Action Item 1.2 in Chapter 1 calling for OMB to expand and extend its “joint budget reviews” to include the nuclear weapons and strategic forces of the two Departments, as well as Action Item 1.3 in Chapter 1 calling for an NSC joint program review.

18.6 The Director should strengthen the roles, responsibilities, and accountability of the senior military officer assigned to ONS in order to improve DOE&NS-DOD collaboration.

The Secretary and the Director should increase the leadership responsibilities and coordination roles of the DOD General Officer/Flag Officer assigned to the ONS. This would help to improve communications across Departments and maximize use of the officer’s skills and expertise.

Recommendation

19. The Secretary and Director should align and streamline processes for collaboration with Interagency customers.

The important role played by Interagency Work can be improved by better mission alignment and by eliminating cumbersome business processes to meet the needs of these customers. The Mission Executive Council’s goals are appropriate but not yet adequately fulfilled.

Action Items

19.1 The Secretary, working through the Mission Executive Council, should improve coordination for planning and executing Interagency Work.

The Secretary should provide a structure for IW to align it strategically with the Department’s missions. This reform should seek to simplify access to nuclear security complex capabilities, speed approval processes, and establish approaches for strategic, multi-year investments in the complex’s capabilities by IW customers. It should also ensure that such work is, in fact, relevant to the nuclear enterprise’s overall mission.

The Intelligence Community provides a model for consistent, responsive contracting with the DOE enterprise. Such a process could be tailored and replicated for other customers.

19.2 The Mission Executive Council should annually conduct a review of the execution of Interagency Work across the nuclear security enterprise to identify improvement opportunities in working relationships, collaborative mechanisms, and management practices.

The Mission Executive Council should convene one MEC forum annually dedicated to overseeing fulfillment of IW customer needs and the status of strategic investments by MEC members in the enterprise, in keeping with the objectives of the MEC Governance Charter.

6. Conclusion

*Perfection is not attainable, but if we chase perfection
we can catch excellence.*

—Vince Lombardi

REFORM IS NEEDED ACROSS THE NUCLEAR ENTERPRISE

The recent history of the enterprise recounted here provides ample evidence that wide-reaching reform is necessary. The panel finds that while NNSA has done some things well and the current leadership has begun steps to address some of the problems, major additional actions are needed to put the enterprise on a sound footing. The scope of the challenge is reflected in the five enterprise-wide maladies identified in the introduction. The recommendations, detailed in the preceding chapters, provide detailed actions targeted at each of these areas:

- Strengthen national leadership focus, direction, and follow-through
- Solidify Cabinet Secretary ownership of the mission
- Adopt proven management practices to build a culture of performance, accountability, and credibility
- Maximize the contributions of the M&O organizations to the safe, secure execution of the mission
- Strengthen customer collaboration to build trust and a shared view of mission success

IMPLEMENTATION OF THE PANEL’S RECOMMENDATIONS

The panel fully recognizes the enormous challenges in implementing its recommendations. Multiple panels and commissions over the past two decades—among them commissions led by the President’s Foreign Intelligence Advisory Board, the National Academy of Sciences, the Defense Science Board, John Foster (multiple times), General Larry Welch (multiple times), Admiral Hank Chiles (multiple times), the Stimson Center, and most recently the work of the Bipartisan Congressional Commission on the U.S. Strategic Posture and the National Research Council—have developed coherent, consistent recommendations to address many, if not most, of the problems the panel has identified. But these recommendations either have not been

implemented or their implementation has failed. Indeed, there are no assurances that this panel's work will not result in a comparable outcome.

At the root, these failures can be attributed to insufficient attention to the enterprise, and demand for change from national leadership. The panel, therefore, attaches great importance to sustained White House attention and congressional cohesion in ensuring successful implementation of these reforms.

The panel believes its recommendations must be viewed in their entirety and implemented as an integrated package to ensure lasting reform. Successful implementation requires: (1) creation of champions within organizations who are empowered, and held accountable, to effect real change, and (2) institutionalized and structured means to monitor progress on implementation on at least an annual basis.

Along these lines, the panel's recommendations charge three sets of leaders to take action. First, the panel asks that the President and his national security advisors increase their efforts to direct and align nuclear security plans, programs, and budgets across the Energy and Defense Departments. Second, the panel asks that the Congress strengthens and unifies its focus, and most significantly, that it amends the NNSA Act to clarify Department leadership roles and refocus the Department on nuclear security missions. Finally, the panel recommends that the Department leadership, both the Secretary and the Director, ONS, undertake numerous reforms to more closely align authority and responsibility with mission goals, increase accountability, streamline management, transform the culture of the Department, strengthen the M&Os' contribution to the mission, and restore trust and credibility with customers. Ideally, each of these activities would have a champion authorized to monitor implementation on a regular basis and charged with driving change through the system.

Most of the work on implementation will be carried out within the Department of Energy and Nuclear Security. A small team of senior experts, reporting directly to the current Administrator, NNSA, should be empowered and held accountable within six months to develop an implementation plan including, as necessary, options for decision. The group would be asked to assess the degree to which the plan is aligned with the panel's intended approach. Once agreement among senior leaders was achieved, implementation of the plan should proceed. To assist it in achieving an independent assessment, the Secretary should commission a team of independent experts to review and advise on progress.

If implementation is reasonably prompt, measurable progress on many recommendations could be observed very quickly. Ongoing reviews should focus on certain concrete indicators of change including the following:

- Presidential guidance is in place addressing an executable, funded long-term plan for modernizing the nuclear deterrent capabilities, aligned with DOE&NS and DOD and updated annually, for platform modernization, warhead life extension and infrastructure recapitalization; DOE&NS and DOD programs are in place to execute this plan

- Highly qualified experts from the National Security Council staff are routinely engaged in policy development and nuclear enterprise oversight and strategic direction
- Congress supports the panel's approach by amending the NNSA Act to clarify the roles of the Secretary, and provide the Director, ONS with the authority needed to succeed
- Congressional committees and associated staffs are well versed and routinely engaged in matters pertaining to the nuclear security enterprise and they are working in a collaborative manner that ensures consistent, efficient, and effective authorization, appropriation, and oversight
- A strong DOE&NS and ONS leadership team is in place; Congress agrees that political appointments for the Secretary and Director be confirmed by both the Senate Energy and Natural Resources and Armed Services Committees
- The DOE&NS has clearly delineated and documented the authorities of the Director, ONS and his or her relationship with other senior DOE&NS officials including managers responsible for mission-support functions
- A *risk management* culture has replaced the existing *risk aversion* culture; technical competence is restored within the workforce to address safety issues raised by the DNFSB
- Internal management reforms have substantially reduced excessively burdensome budgeting detail and transactional oversight, and have led to substantial staff realignments and a performance-based approach; a staff right-sizing plan is in place and is being executed
- Warhead Life Extension Program and Infrastructure Modernization Program Managers are established in ONS with control over program resources and are accountable for delivering on agreed schedules
- Cost-estimating and resource management staffs are in place, and work is underway to develop management tools and data
- The Director, ONS has developed an executable plan to build needed new facilities, reduce maintenance backlogs, and eliminate outmoded facilities
- Mechanisms for strategic dialogue have been instituted and the government-M&O/FFRDC relationships have been restored
- Laboratory Directors, plant managers, and M&O leadership have developed and are executing plans that provide for clear identification of required technical work and infrastructure sustainment, accurate and transparent cost accounting, and initiatives to continuously improve value performance
- Contracts with the M&Os have been revised to provide incentives focused on mission success, replacing award fees with fixed fees and the potential for contract extensions

- ONS customers express satisfaction with collaboration, information sharing, and business practices, as well as performance in delivering on their needs

The panel believes that its recommendations, if fully and effectively implemented, provide the best chance to achieve a nuclear security enterprise that is much more efficient and capable and, thus, much better prepared to deliver its products within assigned budgets and schedules. If, based on assessments by independent overseers, attention to implementation is lacking and significant progress is not made within the next two years, then the panel believes that the only remaining course of action—and a clearly inferior one—is to remove ONS from what is now the Department of Energy and establish it as an autonomous, independent organization.

Appendices

Appendix A

Charter of the Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise

SEC. 3166 of NDAA 2014. CONGRESSIONAL ADVISORY PANEL ON THE GOVERNANCE OF THE NUCLEAR SECURITY ENTERPRISE.

(a) ESTABLISHMENT.—There is established a congressional advisory panel to be known as the “Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise” (in this section referred to as the “advisory panel”). The purpose of the advisory panel is to examine options and make recommendations for revising the governance structure, mission, and management of the nuclear security enterprise.

(b) COMPOSITION AND MEETINGS.—

(1) MEMBERSHIP.—The advisory panel shall be composed of 12 members appointed as follows:

(A) Two by the chairman of the Committee on Armed Services of the House of Representatives.

(B) Two by the ranking minority member of the Committee on Armed Services of the House of Representatives.

(C) Two by the chairman of the Committee on Armed Services of the Senate.

(D) Two by the ranking minority member of the Committee on Armed Services of the Senate.

(E) One by the Speaker of the House of Representatives.

(F) One by the minority leader of the House of Representatives.

(G) One by the majority leader of the Senate.

(H) One by the minority leader of the Senate.

(2) CO-CHAIRMEN.—Two members of the advisory panel shall serve as co-chairmen of the advisory panel. The co-chairmen shall be designated as follows:

(A) The chairman of the Committee on Armed Services of the House of Representatives and the ranking minority member of the Committee on Armed Services of the Senate, in consultation with the Speaker of the House of Representatives and the minority leader of the Senate, shall jointly designate one member of the advisory panel to serve as co-chairman of the advisory panel.

(B) The chairman of the Committee on Armed Services of the Senate and the ranking minority member of the Committee on Armed Services of the House of Representatives, in consultation with the majority leader of the Senate and the minority leader of the House of Representatives, shall jointly designate one member of the advisory panel to serve as co-chairman of the advisory panel.

(3) SECURITY CLEARANCE REQUIRED.—Each individual appointed as a member of the

advisory panel shall possess (or have recently possessed before the date of such appointment) the appropriate security clearance necessary to carry out the duties of the advisory panel.

(4) PERIOD OF APPOINTMENT; VACANCIES.—Each member of the advisory panel shall be appointed for the life of the advisory panel. Any vacancy in the advisory panel shall be filled in the same manner as the original appointment.

(5) MEETINGS.—The advisory panel shall commence its first meeting by not later than ~~March 1, 2013~~,⁸³ so long as at least two members have been appointed under paragraph (1) by such date.

(c) COOPERATION FROM GOVERNMENT.—

(1) COOPERATION.—The advisory panel shall receive the full and timely cooperation of the Secretary of Defense, the Secretary of Energy, and any other Federal official in providing the advisory panel with analyses, briefings, and other information, including access to classified information, necessary for the advisory panel to carry out its duties under this section. With respect to access to classified information, the Director of National Intelligence may determine which information is necessary under this paragraph.

(2) LIAISON.—the following heads of Federal agencies shall each designate at least one officer or employee of the respective agency to serve as a liaison officer between the agency and the advisory panel

- (A) The Secretary of State.
- (B) The Secretary of Defense.
- (C) The Secretary of Energy.
- (D) The Secretary of Homeland Security.
- (E) The Director of National Intelligence.

(d) REPORTS REQUIRED.—

(1) INTERIM REPORT.—~~Not later than 180 days after the date of the enactment of this Act,~~ Not later than March 2014 (understanding with HASC/SASC staff from 1st Panel meeting), the advisory panel shall submit to the President, the Secretary of Defense, the Secretary of Energy, the Committees on Armed Services and Energy and Natural Resources of the Senate, and the Committees on Armed Services and Energy and Commerce of the House of Representatives an interim report on the initial findings, conclusions, and recommendations of the advisory panel. To the extent practicable, the interim report shall address the matters described in paragraph (2) and focus on the immediate, near-term actions the advisory panel recommends be taken.

(2) REPORT.—Not later than ~~February~~ 1 March 1, 2014 (changed in House report, NDAA 2014) the advisory panel shall submit to the President, the Secretary of Defense, the Secretary of Energy, the Committees on Armed Services and Energy and Natural Resources of the Senate, and the Committees on Armed Services and Energy and Commerce of the House of Representatives a report on the findings, conclusions, and recommendations of the advisory panel. The report shall

⁸³ Note: strikethroughs and changes to dates reflect changes made in House Report, NDAA 2014

include the following:

- (A) An assessment of each option considered by the advisory panel for revising the governance structure, mission, and management of the nuclear security enterprise, including the advantages, disadvantages, costs, risks, and benefits of each such option.
- (B) The recommendation of the advisory panel with respect to the most appropriate governance structure, mission, and management of the nuclear security enterprise.
- (C) Recommendations of the advisory panel with respect to—
 - (i) the appropriate missions of the nuclear security enterprise, including how complementary missions should be managed while ensuring focus on core missions;
 - (ii) the organization and structure of the nuclear security enterprise and the Federal agency responsible for such enterprise;
 - (iii) the roles, responsibilities, and authorities of Federal agencies, Federal officials, the national security laboratories and nuclear weapons production facilities, and the directors of such laboratories and facilities, including mechanisms for holding such officials and directors accountable;
 - (iv) the allocation of roles and responsibilities with respect to the mission, operations, safety, and security of the nuclear security enterprise;
 - (v) the relationships among the Federal agency responsible for the nuclear security enterprise and the National Security Council, the Nuclear Weapons Council, the Department of Energy, the Department of Defense, and other Federal agencies;
 - (vi) the interagency planning, programming, and budgeting process for the nuclear security enterprise;
 - (vii) the appropriate means for managing and overseeing the nuclear security enterprise, including the role of federally funded research and development centers, the role and impact of various contracting and fee structures, the appropriate role of contract competition and nonprofit and for-profit contractors, and the use of performance-based and transactional oversight;
 - (viii) the appropriate means for ensuring the health of the intellectual capital of the nuclear security enterprise, including recruitment and retention of personnel and enhancement of a robust professional culture of excellence;
 - (ix) the appropriate means for ensuring the health and sustainment of the critical capabilities and physical infrastructure of the nuclear security enterprise;
 - (x) infrastructure, rules, regulations, best practices, standards, and appropriate oversight mechanisms to ensure robust protection of the health and safety of workers and the public while also providing such workers the ability to effectively and efficiently carry out their mission;
 - (xi) the appropriate congressional committee structure for oversight of the nuclear security enterprise;
 - (xii) the length of the terms and suggested qualifications for senior officials of the Federal agency responsible for the nuclear security enterprise;
 - (xiii) contracting, budget planning, program management, and regulatory changes to reduce the cost of programs and administration without eroding mission effectiveness or requirements and ensuring robust protection of the health and safety of workers and the public; and

- (xiv) Statutory, regulatory, and policy changes necessary for implementing the recommendations of the advisory panel.
- (D) An assessment of if and how the recommendations of the advisory panel will lead to greater mission focus and more effective and efficient program management for the nuclear security enterprise.
- (E) Any other information or recommendations relating to the future of the nuclear security enterprise that the advisory panel considers appropriate.
- (e) FUNDING.—Of the amounts authorized to be appropriated by this Act or otherwise made available for fiscal year 2013 for the Department of Defense, not more than \$3,000,000 shall be made available to the advisory panel to carry out this section.
- (f) TERMINATION.—The advisory panel shall terminate not later than ~~June 1, 2014~~ September 31, 2014.

Appendix B

Panel Members

Dr. Michael R. Anastasio

Michael Anastasio is Director Emeritus, Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL)

Currently, Dr. Anastasio is laboratory associate at LANL. He serves on the Department of Defense (DOD) Defense Science Board, the Department of State (DOS) International Security and Arms Control Board, the Draper Laboratory Corporation, and is a Special Advisor to the Commander, U.S. Strategic Command (STRATCOM). He is a member of the Boards of Governors of Los Alamos National Security LLC and Lawrence Livermore National Security LLC, and a member of the National Academy of Sciences Committee on Peer Review and Design Competition at the NNSA Laboratories.

Dr. Anastasio received his BA, with Honors, from The Johns Hopkins University and PhD in Theoretical Nuclear Physics from Stony Brook University. He performed research in physics in Saclay, France and Julich, West Germany and was a Visiting Assistant Professor at Brooklyn College.

In 1980, Dr. Anastasio joined LLNL as a physicist dealing with the science of nuclear design, and rose to lead the nuclear weapons program, and then in 2002, to Laboratory Director. In 2006, he became Director of LANL.

Mr. Norman R. Augustine

Norman Augustine, a graduate of Princeton University and retired chairman and Chief Executive Officer (CEO) of Lockheed Martin, has held positions in government, industry, academia, and the nonprofit sector. He has served as Under Secretary and acting Secretary of the Army, chairman and CEO of Martin Marietta, and Lecturer with the Rank of Professor at Princeton University. He has been chairman of the National Academy of Engineering and was a sixteen year member of the President's Council of Advisors on Science and Technology.

Mr. Augustine chaired the Congressionally-mandated National Academies' committee that produced the Gathering Storm report on education and competitiveness. He is a Regent of the University System of Maryland, a former trustee of the Massachusetts Institute of Technology (MIT) and Princeton, a trustee emeritus of Johns Hopkins, has been awarded the National Medal of Technology by the President of the United States, and holds thirty-three honorary degrees. He has been chairman of the Defense Science Board, a member of the Department of Energy

Advisory Board, chairman of the Lawrence Berkley National Laboratory Advisory Board, and a member of the Y-12 Incident Investigation Group. He has authored or co-authored four books. He is a member of the National Academy of Sciences, the National Academy of Engineering, the American Philosophical Society, and the American Academy of Arts and Sciences.

Admiral Kirkland H. Donald, U. S. Navy (Retired)

Kirkland Donald joined Systems Planning and Analysis, Inc. (SPA) as the Executive Vice President and a member of the Board of Directors in June 2013. In July 2013, he assumed the role of Chief Operating Officer and became President and CEO in January 2014.

In November 2012, Admiral Donald completed a distinguished thirty-seven year Navy career with his final assignment as Director, Naval Nuclear Propulsion Program and Deputy Administrator, Naval Reactors for the National Nuclear Security Administration. While in the Navy, Admiral Donald served on four submarines, including the *USS Batfish*, *USS Mariano G. Vallejo*, *USS Seahorse*, and as Commanding Officer of the *USS Key West*. He served as Commander, Naval Submarine Forces; Commander, Allied Submarine Command, Atlantic; and Commander, Task Forces 84 and 144 in Norfolk, VA. His other command assignments included Submarine Development Squadron Twelve, Submarine Group Eight and, Submarines Allied Naval Forces South, in Naples, Italy. His shore assignments included the Pacific Fleet Nuclear Propulsion Examining Board and the staff of the Director, Naval Nuclear Propulsion Program. He also held assignments at the Bureau of Naval Personnel, on the Joint Staff, and as Deputy Chief of Staff for C4I, Resources, Requirements and Assessments, U.S. Pacific Fleet.

Admiral Donald is currently a member of the Board of Directors for Entergy Corporation and the Executive Advisory Board for Moelis Capital Partners.

Admiral Donald is a 1975 graduate of the United States Naval Academy, where he earned a Bachelor's Degree in Ocean Engineering. He also holds a Master's Degree in Business Administration from the University of Phoenix and is a graduate of Harvard University's John F. Kennedy School of Government Senior Executive Fellows Program and Stanford University's Directors' Consortium in 2014.

Mr. T. J. Glauthier

T. J. Glauthier served as Deputy Secretary and Chief Operating Officer of the Department of Energy from 1999 to 2001. Prior to that, he held another Presidential appointment, as Associate

Director for Natural Resources, Energy and Science in the Office of Management and Budget for five years. He also served on President Obama's transition team in 2008.

Currently, Mr. Glauthier is co-chairing the Congressionally-mandated Commission to Review the Effectiveness of the National Energy Laboratories, which deals with all seventeen of the DOE national laboratories. He also serves on corporate boards of directors for EnerNOC and VIA Motors, and is an advisor to several energy companies and to the energy practice of Booz Allen Hamilton. In addition, he sits on advisory boards at Stanford, the Lawrence Berkeley National Laboratory, and the National Academy of Sciences.

Mr. Glauthier served as CEO of the Electricity Innovation Institute, an affiliate of the Electric Power Research Institute (EPRI), and spent twenty years in management consulting. He is a graduate of Claremont McKenna College and the Harvard Business School.

Mr. David L. Hobson

Congressman David Hobson (Ret., R-OH) is an experienced former legislator, having served eighteen years in the U.S. House of Representatives representing Ohio's 7th District. While in Congress, Mr. Hobson served as the Chairman and Ranking Member of the House Appropriations Energy and Water Development Subcommittee; Chairman of the Military Construction Appropriations Subcommittee; Senior Member of the Defense Appropriations Subcommittee; and Member of the VA/HUD and Independent Agencies Subcommittee. In addition, he was appointed as the Speaker's delegate to the Budget Committee where he was instrumental in achieving the balanced budget for fiscal years 1998–2001.

In Congress, Mr. Hobson worked to improve and privatize military housing and to invest in defense research and development, including NASA aeronautics and research programs. He is widely credited with improving management practices at the Army Corps of Engineers and for supporting numerous Department of Energy projects. Prior to serving in Congress, Mr. Hobson spent eight years as a Senator in the Ohio Senate, where he served in numerous leadership roles, including President *Pro Tempore*, Majority Whip, Chairman of the Health, Human Services and Aging Committee, and Chairman of the Reference and Oversight Committee.

After retiring from the U.S. House of Representatives, Mr. Hobson joined Vorys, Sater, Seymour and Pease LLP and he co-founded and is chairman of CBD Advisors. He provides strategic counsel, consulting, and lobbying services to businesses and other clients.

Dr. Gregory B. Jaczko

Gregory Jaczko served as Chairman and Commissioner of the U.S. Nuclear Regulatory Commission from January 21, 2005 until July 9, 2012. Prior to assuming the post of Commissioner, Dr. Jaczko served as appropriations director for U.S. Sen. Harry Reid and also served as the Senator's science policy adviser. He began his Washington, DC, career as a congressional science fellow in the office of U.S. Rep. Edward Markey. In addition, he has been an adjunct professor at Georgetown University teaching science and policy. Born in Pennsylvania and raised in upstate New York, Dr. Jaczko earned a bachelor's degree in physics and philosophy from Cornell University, and a doctorate in physics from the University of Wisconsin-Madison.

Admiral Richard W. Mies, U. S. Navy (Retired)

Richard Mies is the CEO of The Mies Group, Ltd. and provides strategic planning and risk assessment advice and assistance to clients on international security, energy, defense, and maritime issues.

A distinguished graduate of the Naval Academy, Admiral Mies completed a thirty-five year career as a nuclear submariner in the U.S. Navy and commanded U.S. Strategic Command (USSTRATCOM) for four years prior to retirement in 2002.

Admiral Mies served as a Senior Vice President of Science Applications International Corporation (SAIC) and as the President and Chief Executive Officer of Hicks and Associates, Inc., a subsidiary of SAIC from 2002 to 2007. He also served as the Chairman of the Department of Defense Threat Reduction Advisory Committee from 2004 to 2010 and as the Chairman of the Board of the Navy Mutual Aid Association from 2003 to 2011. He presently serves as the Chairman of the Strategic Advisory Group of U.S. Strategic Command and Chairman of the Naval Submarine League. He is a member of the Committee on International Security and Arms Control of the National Academy of Sciences, a member of the Boards of Governors of Los Alamos National Laboratory and Lawrence Livermore National Laboratory, and a member of the Board of Directors of Babcock and Wilcox, Exelon, and the U.S. Naval Academy Foundation. He also serves on numerous advisory boards.

Admiral Mies completed post-graduate education at Oxford University, the Fletcher School of Law and Diplomacy, and Harvard University. He holds a master's degree in government administration and international relations.

Mr. Franklin C. Miller

Frank Miller is a Principal at the Scowcroft Group in Washington, DC. A member of the Defense Policy Board and the Strategic Command Advisory Group, he served for thirty-one years in the U.S. government, the bulk of these years in senior positions in the Office of the Secretary of Defense. He spent 2001 to 2005 detailed to the White House, where he was a Special Assistant to President George W. Bush and the Senior Director for Defense Policy and Arms Control on the NSC staff.

He is the Chairman of the Board of Directors of the Charles S. Draper Laboratory and also serves on the Board of Directors of Airbus Group Inc. A member of the Council on Foreign Relations, Mr. Miller is also a Director of the Atlantic Council of the United States and a non-resident Senior Adviser at the Center for Strategic and International Studies (CSIS).

Mr. Miller has been deeply involved in nuclear weapons policy throughout his career. In addition to numerous high-level awards from the Departments of State, Defense, Navy, and Energy, he has been awarded an honorary knighthood by Queen Elizabeth II, the French Legion of Honor, and the Norwegian Royal Order of Merit.

He received his undergraduate degree from Williams College and an MPA from Princeton University's Woodrow Wilson School. He served as a naval officer afloat from 1972 to 1975 and was a reserve officer from 1975 to 1980.

Dr. William Schneider, Jr.

William Schneider Jr. is an Economist and Defense Analyst. Dr. Schneider is the President of International Planning Services, Inc., and a Senior Fellow of the Hudson Institute.

Early in his career, Dr. Schneider served as a Staff Associate of the Subcommittee on Defense and Foreign Operations of the U.S. House Appropriations Committee. Prior to joining the U.S. House staff in 1977, he was a U.S. Senate staff member and a professional staff member of the Hudson Institute. He was designated the Associate Director for National Security and International Affairs at the Office of Management and Budget in the first Reagan Administration, and then became the Under Secretary of State for Security Assistance, Science and Technology (1982–1986).

Dr. Schneider has also served as a consultant to the Departments of State, Defense, and Energy. He has served on numerous Presidential Commissions and government advisory bodies dealing with counterterrorism, intelligence, defense, and economic policy. He was Chairman of the President's General Advisory Committee on Arms Control and Disarmament (1987–1993); a Member of the Japan-U.S. Friendship Commission (operated under the auspices of the United States Information Agency (USIA)), the Commission to Assess the Ballistic Missile Threat to the

United States, and the Commission on the Future of the United States Aerospace Industry. Dr. Schneider is a member of the Defense Science Board, and served as its Chairman from 2001 to 2009. In addition to his government service, Dr. Schneider has served on the boards and advisory councils for numerous civic, commercial, and financial organizations. He has contributed to studies on strategic forces, Soviet affairs, theater nuclear force operations, and arms control. He is the author of several works on defense and foreign policy, U.S. strategic forces, theater nuclear forces, and unconventional warfare. Dr. Schneider received his PhD from New York University in 1968.

Mr. John M. Spratt, Jr.

John Spratt represented the 5th District of South Carolina for twenty-eight years in the U. S. House of Representatives, serving as Ranking Democrat and Chairman of the Budget Committee during the years the Balanced Budget Agreement of 1997 was adopted and implemented. He rose in seniority to become the second ranking member of the Armed Services Committee, and he originated the idea of a Department of Energy Panel, and chaired the panel. He also proposed a special commission to assess the safety and security of the U.S. nuclear arsenal, and arranged the appointment of Sidney Drell, John Foster, and Charles Townes to what became the Drell Commission. Mr. Spratt also served in Congress as a member of the House Oversight Committee, and as chair of several of its subcommittees. He currently co-chairs the United States-Canada Permanent Board on Defense and Homeland Security, and he served recently as court-appointed mediator of an agreement for expansion of the Savannah Port.

Mr. Spratt graduated from Davidson College in 1964; attended Oxford University as a Marshall Scholar, graduating with a master's degree in economics in 1966; and attended Yale Law School, graduating with a LLB in 1969. He served on active duty as a Captain in the Army in the Operations Analysis Group on the staff of the Assistant Secretary of Defense (Comptroller) from 1969 to 71.

Ms. Ellen O. Tauscher

Ellen Tauscher is a former Democratic Member of the U. S. House of Representatives for California's 10th Congressional District (Walnut Creek, CA) from 1996 until 2009. She was confirmed as Under Secretary of State for Arms Control and International Security Affairs on June 25, 2009, she served in this role until February 6, 2012. Ms. Tauscher served as Special Envoy for Strategic Stability and Missile Defense at the State Department from February 7, 2012 until August 31, 2012.

While in the Congress, Ms. Tauscher served on the House Armed Services Committee and became the Chairman of the Strategic Forces subcommittee in 2006.

As Under Secretary of State, Ms. Tauscher was responsible for successfully concluding negotiations of the New START Treaty with the Russian Federation, for representing the United States at the Non-Proliferation Treaty Review Conference at the United Nations in May 2010, which produced the first consensus agreement in ten years, and for negotiating to secure the sites and bilateral agreements to deploy the European Phased Adaptive Approach missile defense system to be deployed with NATO allies in Poland, Romania and Turkey well within the deployment deadline.

Ms. Tauscher currently is the Vice Chair of the Atlantic Council's Brent Scowcroft Center on International Security, a member of the Atlantic Council's Board of Directors and Executive Committee, and a member of the Board of Governors of Lawrence Livermore National Security Corporation LLC, and the Board of Governors of Los Alamos National Security Corporation LLC. Ms. Tauscher also serves on the boards of several public service and health care organizations. In September 2012, she joined Baker Donelson Bearman, Caldwell & Berkowitz, PC as the firm's Strategic Advisor for national security, defense, transportation, export control, and energy policy. Ms. Tauscher graduated in 1974 from Seton Hall University, where she obtained a Bachelor of Science degree. Her early career was on Wall Street, where at age 25, she became one of the first women to become a Member of the New York Stock Exchange.

Dr. Heather A. Wilson

Heather Wilson is President of the South Dakota School of Mines & Technology in Rapid City, SD. The South Dakota School of Mines & Technology prepares leaders in science and engineering at the bachelor's, master's, and doctoral level.

From 1998 through 2009 Dr. Wilson was a member of Congress from New Mexico. She was a senior member of the Energy & Commerce Committee and served on the House Armed Services Committee. Ms. Wilson was the Chair and Ranking Member of the Subcommittee on Technical and Tactical Intelligence.

Dr. Wilson is a graduate of the U.S. Air Force Academy and a Rhodes Scholar with Master and Doctoral degrees from Oxford University. As an Air Force officer, she served in Europe during the Cold War engaged in both the deployment of cruise missiles and arms control. She worked on the National Security Council Staff from 1989 to 1991.

Dr. Wilson has served as an advisor to Los Alamos, Sandia, the Nevada test site, and Oak Ridge as well as a number of intelligence agencies. She is a board member of Peabody Energy (NYSE: BTU) as well as several non-profit organizations.

Appendix C

Proposed Statutory Changes

The Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise submits the following proposed statutory changes to 42 U.S.C. 84 (1977) and to the legislation establishing the National Nuclear Security Agency (NNSA) (Title XXXII of the National Defense Authorization Act for Fiscal Year 2000). Note: Significant modifications and additions are highlighted in bold, red, italics. All other proposed changes are highlighted in red only.

42 U.S. Code Chapter 84 – Department of Energy ***and Nuclear Security***

§ 7131: Establishment

There is established at the seat of government an executive department to be known as the Department of Energy ***and Nuclear Security***. There shall be at the head of the Department a Secretary of Energy ***and Nuclear Security*** (hereinafter in this chapter referred to as the "Secretary"), who shall be appointed by the President by and with the advice and consent of the Senate. The Department shall be administered, in accordance with the provisions of this chapter, under the supervision and direction of the Secretary

The Secretary's Specified Authorities and Responsibilities for the Department's Nuclear Security Mission

In addition to the general duties performed by the Secretary of Energy and Nuclear Security, the position will entail several specific authorities and responsibilities associated with the Department's nuclear security mission:

- ***The Secretary is the lead authority responsible and accountable to the President and Congress for the Department's nuclear security mission, and a chief advisor to the President on nuclear security matters***
- ***The Secretary's Senate confirmation shall entail a joint process involving hearings with both the Senate Armed Services Committee and the Senate Energy and Natural Resources Committee***
- ***The Secretary sets Departmental policy and priorities for executing the mission, conveys full authority to the Director, Office of Nuclear Security for executing the mission, ensures Departmental staffs and resources are provided to serve the nuclear security missions effectively, and conducts appropriate oversight to ensure that the mission is executed effectively and in conformance with the Secretary's policies***
- ***The Secretary will provide annual reviews with Presidential staff and oversight committees of Congress on the status of the nuclear enterprise, its missions, and its support provided to other Agencies of the government***

The Secretary shall be appointed from among persons who have a demonstrated background, qualifications, and interest in the Department's nuclear security mission.

§ 7132. Principal officers

(a) Deputy Secretary

There shall be in the Department a Deputy Secretary, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level II of the Executive Schedule under section 5313 of title 5. The Deputy Secretary shall act for and exercise the functions of the Secretary during the absence or disability of the Secretary or in the event the office of Secretary becomes vacant. The Secretary shall designate the order in which the Under Secretary and other officials shall act for and perform the functions of the Secretary during the absence or disability of both the Secretary and Deputy Secretary or in the event of vacancies in both of those offices

Specified Provisions with Respect to the Department's Nuclear Security Mission

- **The Deputy Secretary shall perform such duties as assigned by the Secretary and act on the delegated authority of the Secretary.**
- **The Deputy Secretary's Senate confirmation shall entail a joint process involving hearings with both the Senate Armed Services Committee and the Senate Energy and Natural Resources Committee.**

The Deputy Secretary shall be appointed from among persons who have a demonstrated background, qualifications, and interest in the Department's nuclear security mission.

(b) ~~Under Secretary Director, Office of Nuclear Security~~

- (1) There shall be in the Department an ~~Under Secretary for~~ Director, Office of Nuclear Security, who shall be appointed by the President, by and with the advice and consent of the Senate. **Senate confirmation shall entail a joint process involving hearings with both the Senate Armed Services Committee and the Senate Energy and Natural Resources Committee.**
- (2) The ~~Under Secretary~~ Director shall be compensated at the rate provided for at level III of the Executive Schedule under section 5314 of title 5.
- (3) **Length of Term - The term of office as Director, Office of Nuclear Security shall be (at least) six years.**
- (4) The ~~Under Secretary~~ Director, shall be appointed from among persons who—
 - (A) have extensive background in national security, organizational

management, and appropriate technical fields; and

(B) are well qualified to manage the nuclear weapons, nonproliferation, and materials disposition programs of the Office of Nuclear Security in a manner that advances and protects the national security of the United States.

(5) ~~The Under Secretary for Nuclear Security shall serve as the Administrator for Nuclear Security under section 2402 of title 50. In carrying out the functions of the Administrator Office of Nuclear Security and section 2402 of title 50 the Under Secretary Director shall be assigned line-management authority and accountability for executing ONS missions, subject to the authority, direction, and control of the Secretary. Such authority, direction, and control may be delegated only to the Deputy Secretary of Energy, without redelegation.~~

(6) ~~Specified authorities and responsibilities of the Director, ONS. In addition to the general authorities specified in paragraph (5), the Director shall~~

- ~~be provided direct access to the President on issues relating to the missions of ONS;~~
- ~~have direct access to the Secretary on all ONS matters;~~
- ~~be assigned risk acceptance responsibility and authority on ONS matters, taking full responsibility and accountability within the Department for executing the Secretary's policies;~~
- ~~be responsible to recommend to the Secretary responses to the findings and recommendations of advisory/oversight groups on all ONS matters;~~
- ~~have full authority to shape and manage the ONS staff, including the selection of any mission-support staff assigned to support and advise ONS and the authority to review the performance of assigned individuals.~~

§ 7144. Establishment of policy for the ~~NNSA~~ **Office of Nuclear Security**

(a) Responsibility for establishing policy

The Secretary shall be responsible for establishing policy for the ~~NNSA~~ **Office of Nuclear Security**.

- ~~The Director shall advise the Secretary on all Departmental policies as they affect the nuclear security mission.~~
- ~~The Director shall be responsible for formulating and assessing options on all Departmental policies regarding ONS, compiling the assessments performed by functional experts, and presenting these to the Secretary for decisions.~~

(b) *Program execution and review* (b) ~~Review of programs and activities~~

- *The Secretary shall devise such Departmental decision processes for executing the nuclear security missions as necessary to implement the Director's authorities, to define relationships among the Department's principal officers and other senior staff, to ensure competing views are provided to the Secretary in decision-making forums, and to ensure the timely resolution of conflicts among the principal officers and senior staff.*
- *The Director shall be responsible for formulating and assessing options on all Departmental mission execution matters regarding ONS, compiling the assessments performed by functional experts, and presenting these to the Secretary for decisions.*

~~The Secretary may direct officials of the Department who are not within the National Nuclear Security Administration to review the programs and activities of the Administration and to make recommendations to the Secretary regarding administration of those programs and activities, including consistency with other similar programs and activities of the Department.~~

c) Staff

The Secretary **and Director** shall have adequate staff to support the Secretary's responsibilities under this section, **while avoiding duplication of roles and functions.**

- *The Secretary will maintain such staffs as necessary to formulate Departmental policy for ONS and provide independent oversight of execution.*
- *The Director will maintain such staffs within ONS as necessary to exercise line-management authority for executing the Secretary's policies.*

THE NUCLEAR ENTERPRISE REFORM ACT

~~[As Amended Through P.L. 112-239, Enacted January 2, 2013]~~

~~Title XXXII of the National Defense Authorization Act for Fiscal Year 2000
(Public
Law 106-65, approved Oct. 5, 1999), as amended~~

**TITLE XXXII—NATIONAL NUCLEAR SECURITY
ADMINISTRATION—*OFFICE NUCLEAR SECURITY***

Sec. 3201. [50 U.S.C. 2401 note] Short title.

Sec. 3202. Under Director, Secretary for *Office of Nuclear Security of Department of Energy and Nuclear Security*.

Sec. 3203. Establishment of policy Secretary's roles and responsibilities for nuclear security matters National Nuclear Security Administration.

Sec. 3204. Organization of Department of Energy and Nuclear Security counterintelligence and intelligence programs and activities.

Subtitle A—Establishment and Organization

Sec. 3211. [50 U.S.C. 2401] Establishment and mission.

Sec. 3212. [50 U.S.C. 2402] Administrator Director, Secretary for Office of Nuclear Security.

Sec. 3213. [50 U.S.C. 2403] Principal Deputy Administrator for Nuclear Security.

Sec. 3214. [50 U.S.C. 2404] Deputy Administrator for Defense Programs.

Sec. 3215. [50 U.S.C. 2405] Deputy Administrator for Defense Nuclear Nonproliferation.

Sec. 3216. [50 U.S.C. 2406] Director Administrator for Naval Nuclear Propulsion Programs.

Sec. 3217. [50 U.S.C. 2407] General counsel.

Sec. 3218. [50 U.S.C. 2408] Staff of Administration.

Sec. 3219. [50 U.S.C. 2409] Scope of authority of Secretary of Energy and Nuclear Security to modify organization of Administration Office of Nuclear Security.

Sec. 3220. [50 U.S.C. 2410] Status of Administration Office of Nuclear Security and contractor personnel within Department of Energy and Nuclear Security.

Subtitle B—Matters Relating to Security

Sec. 3231. [50 U.S.C. 2421] Protection of national security information.

Sec. 3232. [50 U.S.C. 2422] Office of Defense Nuclear Security.

Sec. 3233. [50 U.S.C. 2423] Counterintelligence programs.

Sec. 3234. [50 U.S.C. 2424] Procedures relating to access by individuals to classified areas and information of Administration ONS.

Sec. 3235. [50 U.S.C. 2425] Government access to information on ~~Administration Office of Nuclear Security~~ computers.

Sec. 3236. [50 U.S.C. 2426] Congressional oversight of special access programs.

Subtitle C—Matters Relating to Personnel

Sec. 3241. [50 U.S.C. 2441] Authority to establish certain contracting, program

management, scientific, engineering, and technical positions.

Sec. 3241A. [50 U.S.C. 2441a] Authorized personnel levels of the Office of the ~~Administrator~~ Director, ~~Secretary for~~ Office of Nuclear Security. 3242. Repealed.]

Sec. 3243. Severance pay.

Sec. 3244. Continued coverage of health care benefits.

Subtitle D—Budget and Financial Management

Sec. 3251. [50 U.S.C. 2451] Separate treatment in budget.

Sec. 3252. [50 U.S.C. 2452] Planning, programming, and budgeting process.

Sec. 3253. [50 U.S.C. 2453] Future-years nuclear security program.

Sec. 3254. [50 U.S.C. 2454] Semiannual financial reports on defense nuclear nonproliferation programs.

Sec. 3255. [50 U.S.C. 2455] Comptroller General assessment of adequacy of budget

requests with respect to the modernization and refurbishment of the nuclear weapons stockpile.

Subtitle E—Miscellaneous Provisions

Sec. 3261. [50 U.S.C. 2461] Environmental protection, safety, and health requirements.

Sec. 3262. [50 U.S.C. 2462] Compliance with Federal Acquisition Regulation.

Sec. 3263. [50 U.S.C. 2463] Sharing of technology with Department of Defense.

Sec. 3264. [50 U.S.C. 2464] Use of capabilities of national security laboratories by

entities outside the ~~Administration Office of Nuclear Security~~.

Subtitle F—Definitions

Sec. 3281. [50 U.S.C. 2471] Definitions.

Subtitle G—Amendatory Provisions, Transition Provisions, and Effective Dates

Sec. 3291. [50 U.S.C. 2481] Functions transferred.

[Sec. 3292. Repealed.]

Sec. 3293. Pay levels.

Sec. 3294. Conforming amendments.

[Sec. 3295. Repealed.]

Sec. 3296. [50 U.S.C. 2484] Applicability of preexisting laws and regulations.

[Sec. 3297. Repealed.]

Sec. 3298. [50 U.S.C. 2401 note] Classification in United States Code.
Sec. 3299. [50 U.S.C. 2401 note] Effective dates.

SEC. 3201. 50 U.S.C. 2401 note SHORT TITLE.

~~the National Nuclear Security Administration~~ "The Nuclear Enterprise Reform Act".

SEC. 3202. UNDERDIRECTOR, SECRETARY FOR OFFICE OF NUCLEAR SECURITY OF DEPARTMENT

OF ENERGY and NUCLEAR SECURITY.

[Omitted-Amendment *See revised 42 U.S.C. § 7132 above]

SEC. 3203. ESTABLISHMENT OF POLICY FOR SECRETARY'S ROLES AND RESPONSIBILITIES FOR NATIONAL NUCLEAR SECURITY ADMINISTRATION NUCLEAR SECURITY MATTERS.

[Omitted-Amendment *See revised 42 U.S.C. § 7144 above]

SEC. 3204. ORGANIZATION OF DEPARTMENT OF ENERGY AND NUCLEAR SECURITY COUNTERINTELLIGENCE AND INTELLIGENCE PROGRAMS AND ACTIVITIES.

[Omitted-Amendment]

Subtitle A—Establishment and Organization

SEC. 3211. 50 U.S.C. 2401 ESTABLISHMENT AND MISSION.

(a) ESTABLISHMENT.—There is established within the Department of Energy and Nuclear Security an ~~separately organized agency~~ office to be known as the ~~National Nuclear Security Administration~~ Office of Nuclear Security (in this title referred to as the "Administration" "ONS").

(b) MISSION.—The mission of the ~~National Nuclear Security Administration~~ Office of Nuclear Security shall be the following:

- (1) To enhance United States national security through the military application of nuclear energy.
 - (2) To maintain and enhance the safety, security, reliability, and effectiveness of the United States nuclear weapons stockpile ~~including the ability to~~ through design, production, and testing, in order to meet national security requirements.
 - (3) To provide the United States Navy with safe, militarily effective nuclear propulsion plants and to ensure the safe and reliable operation of those plants.
 - (4) To promote international nuclear safety and nonproliferation.
 - (5) To reduce global danger from weapons of mass destruction.
 - (6) To support United States leadership in science and technology.
- (c) OPERATIONS AND ACTIVITIES TO BE CARRIED OUT CONSISTENT WITH CERTAIN PRINCIPLES.—In carrying out the mission of

the Administration Office of Nuclear Security, the Director ~~for~~ shall ensure that all operations and activities of the Administration Office of Nuclear Security are consistent with the principles of protecting the environment and safeguarding the safety and health of the public and of the workforce of the ONS.

- Where appropriate, the Director will rely on national and international consensus standards for achieving these objectives, with the understanding that that goal is to improve performance while reducing inefficient transaction-centered regulation. The orders and directives should account for unique nuclear and high-hazard conditions that may require special considerations (such as in the use of beryllium); and they should establish performance-based, risk-informed guidelines.
- Within one year, the Director shall provide the cognizant Committees a report on its plan to transition from compliance-based transactional regulation and oversight of the weapons complex to the adoption of industrial standards with expert validation of performance-based approaches and results.

SEC. 3212. 50 U.S.C. 2402 ADMINISTRATOR DEPUTY SECRETARY DIRECTOR, OFFICE OF FOR NUCLEAR SECURITY.

(a) IN GENERAL.—(1) There is at the head of the ONS a Director, Office of Nuclear Security (in this title referred to as the ‘‘Administrator’’ ‘‘Director’’).
~~(2) Pursuant to subsection (c) of section 202 of the Department of Energy Organization Act (42 U.S.C. 7132), the Under Secretary for Nuclear Security of the Department of Energy serves as the Administrator.~~
(b) FUNCTIONS.—*The Director has line-management authority over, and is ultimately responsible for, all programs and activities of the ONS in executing the Secretary’s policies.* (Except for the functions of the Deputy Director, Administrator for Naval Reactors Nuclear Propulsion Program specified in the Executive order referred to in section) *Exercise of the Director’s authority shall be informed by mission-support staffs, but shall not be subject to the advance concurrence or approval of any mission-support staff function or individual within the Department of Energy and National Security other than the Secretary.*

3216(b)) In executing line-management authority for executing the ONS mission, the Director will also be responsible for the successful performance of necessary mission-support functions. The ONS functional responsibilities of the Director include:

- (1) Strategic management.
- (2) Policy development implementation and guidance.
- (3) Budget formulation, guidance, and execution, and other financial matters.
- (4) Resource requirements determination (*including cost estimation and analyses of alternatives*) and allocation.
- (5) Program management and direction.
- (6) Safeguards and security, *to include personnel security matters for all ONS personnel.*
- (7) Emergency management.
- (8) Integrated safety management.

- (9) Environment, safety, and health operations.
- (10) Administration of contracts, including the management and operations of the nuclear weapons production facilities and the national security laboratories.
- (11) Intelligence.
- (12) Counterintelligence.
- (13) Personnel, including the selection, appointment, distribution, supervision, establishing of compensation, and separation of personnel in accordance with subtitle C of this title.
- (14) Procurement of services of experts and consultants in accordance with section 3109 of title 5, United States Code.
- ~~(15) Legal matters.~~
- ~~(16) Legislative affairs.~~
- ~~(17) Public affairs.~~
- (15) Eliminating inventories of surplus fissile materials usable for nuclear weapons.
- (16) Liaison with other elements of the Department of Energy and Nuclear Security and with other Federal agencies, State, tribal, and local governments, and the public.

(c) Matrix Staff Support for ONS

(1) In executing the line management responsibilities and mission-support functions outlined above, and in order to avoid duplication of Departmental staffs, the Director, Office of Nuclear Security will rely to the extent practicable on matrix staff support from those mission-support organizations within the Department responsible for these functions.

(2) Departmental mission-support personnel shall be assigned to support and advise the Director in the execution of ONS missions.

- The Director will propose an ONS staffing plan to the Secretary that enables the effective and efficient execution of the ONS mission.*
- The Director will have the authority to select or remove individuals assigned to support and advise ONS.*
- When on assignment to ONS, individuals will report to the Director.*
- When on assignment to ONS, the job performance of individuals will be reviewed by the Director.*

(3) The Departmental executives with the lead responsibility for these mission-support functions will be accountable to the Secretary and Director for the successful execution of their functions in support of the ONS mission. The Director will annually provide the Secretary with an assessment of the performance of each executive responsible for such mission-support functions.

(d) PROCUREMENT AUTHORITY.—The AdministratorDirector is the senior procurement executive for the Administration ONS for the purposes of section 16(3) of the Office of Federal Procurement Policy Act (41 U.S.C. 414(3)).

(d) POLICY IMPLEMENTATION AUTHORITY.—The ~~Administrator~~ Director ~~may~~ shall establish ~~Administration~~

~~specific policies implement Department of Energy and Nuclear Security requirements and practices under the direction of the Secretary.~~

- ~~The Director's execution authority shall not be subject to the advance concurrence or approval of any staff function or individual within the Department of Energy and Nuclear Security other than the Secretary.~~
- ~~The Director will inform the Secretary on significant new precedents or policy implementation decisions.~~
- ~~Disagreements on the interpretation and implementation of policy between the Director and the other Departmental principal officers and the Secretary's senior staff shall be resolved by the Secretary through a timely process led by the Secretary; the Director will be responsible to summarize the issues and alternatives for the Secretary's decision.~~

(e) MEMBERSHIP ON JOINT NUCLEAR WEAPONS COUNCIL.—The ~~Administrator~~ Director serves as a member of the Joint Nuclear Weapons Council under section 179 of title 10, United States Code.

(f) REORGANIZATION AUTHORITY.—Except as provided by subsections

(b) and (c) of section 3291:

- (1) ~~The Administrator~~ Director may establish, abolish, alter, consolidate, or discontinue any organizational unit or component of the ~~Administration~~ ONS, or transfer any function of the ~~Administration~~ ONS.
- (2) Such authority does not apply to the abolition of organizational units or components established by law or the transfer of functions vested by law in any organizational unit or component.

SENIOR Office of Nuclear Security STAFF

- ~~The positions of the Deputy Directors who are presidentially appointed, and Senate confirmed within the NNSA structure, will be converted in the ONS organization to positions filled directly by the Director, ONS. These include the positions of Principal Deputy Director, the Deputy for Defense Programs, and the Deputy for Defense Nuclear Nonproliferation.~~
- ~~The Deputies will perform duties as assigned by the Director. They will be accorded such rank and delegated authority as is necessary to perform their assignments and to interact effectively as peers with senior officials elsewhere in Department and in other government agencies.~~

SEC. 3213. 50 U.S.C. 2403 PRINCIPAL DEPUTY ADMINISTRATOR FOR NUCLEAR SECURITY.

(a) IN GENERAL. (1) There is in the ~~Administration~~ a ~~Principal~~ Deputy Administrator, who is appointed by the President, by and with the advice and consent of the Senate.

(2) The ~~Principal~~ Deputy Administrator shall be appointed from among persons who have extensive background in organizational management and are well qualified to manage the nuclear

~~weapons, nonproliferation, and materials disposition programs of the Administration in a manner that advances and protects the national security of the United States.~~

~~(b) DUTIES. Subject to the authority, direction, and control of the Administrator, the Principal Deputy Administrator shall perform such duties and exercise such powers as the Administrator may prescribe, including the coordination of activities among the elements of the Administration. The Principal Deputy Administrator shall act for, and exercise the powers of, the Administrator when the Administrator is disabled or the position of Administrator is vacant.~~

SEC. 3214. 50 U.S.C. 2404 DEPUTY ADMINISTRATOR FOR DEFENSE PROGRAMS.

~~(a) IN GENERAL. There is in the Administration a Deputy Administrator for Defense Programs, who is appointed by the President, by and with the advice and consent of the Senate.~~

~~(b) DUTIES. Subject to the authority, direction, and control of the Administrator, the Deputy Administrator for Defense Programs shall perform such duties and exercise such powers as the Administrator may prescribe, including the following:~~

~~(1) Maintaining and enhancing the safety, reliability, and performance of the United States nuclear weapons stockpile, including the ability to design, produce, and test, in order to meet national security requirements.~~

~~(2) Directing, managing, and overseeing the nuclear weapons production facilities and the national security laboratories.~~

~~(3) Directing, managing, and overseeing assets to respond to incidents involving nuclear weapons and materials.~~

SEC. 3215. 50 U.S.C. 2405 DEPUTY ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION.

~~(a) IN GENERAL. There is in the Administration a Deputy Administrator for Defense Nuclear Nonproliferation, who is appointed by the President, by and with the advice and consent of the Senate.~~

~~(b) DUTIES. Subject to the authority, direction, and control of the Administrator, the Deputy Administrator for Defense Nuclear Nonproliferation shall perform such duties and exercise such powers as the Administrator may prescribe, including the following:~~

~~(1) Preventing the spread of materials, technology, and expertise relating to weapons of mass destruction.~~

~~(2) Detecting the proliferation of weapons of mass destruction worldwide.~~

~~(3) Eliminating inventories of surplus fissile materials usable for nuclear weapons.~~

~~(4) Providing for international nuclear safety.~~

SEC. 3216. 50 U.S.C. 2406 DEPUTY DIRECTOR , ADMINISTRATOR FOR NAVAL NUCLEAR

PROPELLION PROGRAM REACTORS.

(a) IN GENERAL.—(1) There is in the Administration ONS a Deputy Administrator Director, for Naval Nuclear Propulsion Program. The director of the Naval Nuclear Propulsion Program provided for under the Naval Nuclear Propulsion Executive Order shall serve as the Deputy Administrator for Naval Reactors.

(2) Within the Department of Energy and Nuclear Security, the Deputy Director, Naval Nuclear Propulsion Program Administrator shall report to the Secretary of Energy and Nuclear Security through the Administrator Director, Office of Nuclear Security and shall have direct access to the Secretary and other senior officials in the Department.

(b) DUTIES.—The Deputy Director, Naval Nuclear Propulsion Program Administrator shall be assigned the responsibilities, authorities, and accountability for all functions of the Office of Naval Reactors under the Naval Nuclear Propulsion Program Executive Order.

(c) EFFECT ON EXECUTIVE ORDER.—Except as otherwise specified in this section and notwithstanding any other provision of this title, the provisions of the Naval Nuclear Propulsion Program Executive Order remain in full force and effect until changed by law.

(d) NAVAL NUCLEAR PROPULSION Program EXECUTIVE ORDER.—As used in this section, the Naval Nuclear Propulsion Program Executive Order is Executive Order No. 12344, dated February 1, 1982 (42 U.S.C. 7158 note) (as in force pursuant to section 1634 of the Department of Defense Authorization Act, 1985 (Public Law 98-525; 42 U.S.C. 7158 note)). 2

SEC. 3217. 50 U.S.C. 2407 GENERAL COUNSEL.

There is a General Counsel of the Administration. The General Counsel is the chief legal officer of the Administration

SEC. 3218. 50 U.S.C. 2408 STAFF.

(a) IN GENERAL.—The Administrator Director shall maintain within the Administration ONS sufficient staff to assist the Administrator Director in carrying out the duties and responsibilities of the Administrator Director.

(b) RESPONSIBILITIES.—The staff of the Administration ONS shall perform, in accordance with applicable law, such of the functions of the Administrator Director as the Administrator Director shall prescribe. The Administrator shall assign to the staff responsibility for the following functions:

(1) Personnel.

(2) Legislative affairs.

(3) Public affairs.

(4) Liaison with the Department of Energy's Office of Intelligence and Counterintelligence.

~~(5) Liaison with other elements of the Department of Energy and with other Federal agencies, State, tribal, and local governments, and the public.~~

SEC. 3219. 50 U.S.C. 2409 SCOPE OF AUTHORITY OF SECRETARY OF ENERGY AND NUCLEAR SECURITY TO MODIFY ORGANIZATION OF ADMINISTRATIONONS.

Notwithstanding the authority granted by section 643 of the Department of Energy Organization Act (42 U.S.C. 7253) or any other provision of law, the Secretary of Energy **and Nuclear Security** may not establish,

abolish, alter, consolidate, or discontinue any organizational unit or component, or transfer any function, of the **Administration ONS**, except as authorized by subsection (b) or (c) of section 3291.

SEC. 3220. 50 U.S.C. 2410 STATUS OF ADMINISTRATION ONS AND CONTRACTOR PERSONNEL WITHIN DEPARTMENT OF ENERGY AND NUCLEAR SECURITY.

(a) STATUS OF ADMINISTRATION ONS PERSONNEL.—Each officer or employee of the **Administration ONS**—

(1) shall be responsible to and subject **only** to the authority, direction, and control of—

(A) the Secretary acting through the **Administrator Director** and consistent with section 202(c)(3) of the Department of Energy Organization Act;

(B) the **Administrator Director**; or

(C) the **Administrator's Director's** designee within the **Administration ONS**; and

(2) shall not be responsible to, or subject to the authority, direction, or control of, any other officer, employee, or agent of the Department of Energy **and Nuclear Security**.

(3) No ONS staff function shall be subject to the concurrence, review or approval of a duplicate function within the Department of Energy and Nuclear Security.

(c) STATUS OF CONTRACTOR PERSONNEL.—Each officer or employee of a contractor of the **Administration ONS** shall not be responsible to, or subject to the authority, direction, or control of, any officer, employee, or agent of the Department of Energy **and Nuclear Security** who is not an

employee of the **Administration ONS**, except for the Secretary of Energy **and Nuclear Security**

consistent with section 202(c)(3) of the Department of Energy Organization Act.

(1) No employee or agent of the Department of Energy and Nuclear Security who is not an employee of the ONS shall levy requirements or task contractor personnel executing the mission of the ONS.

(c) CONSTRUCTION OF SECTION.—Subsections (a) and (b) may not be interpreted to in any way preclude or interfere with the communication of technical findings derived from, and in accord with, duly authorized activities between (1) the head, or any contractor

employee, of a national security laboratory or of a nuclear weapons production facility, and (2) the Department of Energy **and Nuclear Security**, the

President, or Congress.

(d) PROHIBITION ON DUAL OFFICE HOLDING.—Except in accordance with sections 3212(a)(2) and 3216(a)(1):

(1) An individual may not concurrently hold or carry out the responsibilities of—

(A) a position within the ~~Administration ONS~~; and

(B) a position within the Department of Energy **and Nuclear Security** not within the ~~Administration ONS~~.

(2) No funds appropriated or otherwise made available for any fiscal year may be used to pay, to an individual who concurrently holds or carries out the responsibilities of a position specified in paragraph (1)(A) and a position specified in paragraph (1)(B), the basic pay, salary, or other compensation relating to any such position.

(e) STATUS OF INTELLIGENCE AND COUNTERINTELLIGENCE PERSONNEL.—

Notwithstanding the restrictions of subsections (a) and

(b), each officer or employee of the ~~Administration ONS~~, or of a contractor of the ~~Administration ONS~~, who is carrying out activities related to intelligence or counterintelligence shall, in carrying out those activities,

be subject to the authority, direction, and control of the

Secretary of Energy **and Nuclear Security** or the Secretary's delegate.

Subtitle B—Matters Relating to Security

SEC. 3231. 50 U.S.C. 2421 PROTECTION OF NATIONAL SECURITY INFORMATION.

(a) POLICIES AND PROCEDURES REQUIRED.—The ~~Administrator Director~~ shall establish procedures to ensure the maximum protection of classified information in the possession of the ~~Administration ONS~~.

(b) PROMPT REPORTING.—The ~~Administrator Director~~ shall establish procedures to ensure prompt reporting to the ~~Administrator Director~~ of any significant problem, abuse, violation of law or Executive order, or deficiency relating to the management of classified information by personnel of the ~~Administration ONS~~.

SEC. 3232. 50 U.S.C. 2422 OFFICE OF DEFENSE NUCLEAR SECURITY.

(a) ESTABLISHMENT.—There is within the Administration an Office of Defense Nuclear Security, headed by a Chief appointed by the Director, ONS..

(b) CHIEF OF DEFENSE NUCLEAR SECURITY.—(1) The head of the Office of Defense Nuclear Security is the Chief of Defense Nuclear Security, who shall report to the ~~Administrator Director~~ and shall implement the security policies directed by the Secretary and ~~Administrator Director~~.

(2) The Chief shall have direct access to the Secretary and all other officials of the Department and the contractors of the Department concerning security matters.

(3) The Chief shall be responsible for the development and implementation of security programs for the ~~Administration Director~~, including the protection, control and accounting of materials, and for the physical and cyber security for all facilities of the ~~Administration ONS~~.

SEC. 3233. 50 U.S.C. 2423 COUNTERINTELLIGENCE PROGRAMS.

(a) NATIONAL SECURITY LABORATORIES AND NUCLEAR WEAPONS PRODUCTION FACILITIES.—The Secretary of Energy ~~and Nuclear Security~~ shall, at each national security laboratory and nuclear weapons production facility, establish and maintain a counterintelligence program adequate to protect national security information at that laboratory or production facility.

(b) OTHER FACILITIES.—The Secretary of Energy ~~and Nuclear Security~~ shall, at each ~~Administration ONS~~ facility not described in subsection (a) at which Restricted Data is located, assign an employee of the Office of Counterintelligence of the Department of Energy ~~and Nuclear Security~~ who shall be responsible for and assess counterintelligence matters at that facility.

SEC. 3234. 50 U.S.C. 2424 PROCEDURES RELATING TO ACCESS BY INDIVIDUALS TO CLASSIFIED AREAS AND INFORMATION OF ADMINISTRATION.

The ~~Administrator Director~~ shall establish appropriate procedures to ensure that any individual is not permitted unescorted access to any classified area, or access to classified information, of the ~~Administration ONS~~ until that individual has been verified to hold the appropriate security clearances.

SEC. 3235. 50 U.S.C. 2425 GOVERNMENT ACCESS TO INFORMATION ON ADMINISTRATION ONS COMPUTERS.

(a) PROCEDURES REQUIRED.—The ~~Administrator Director~~ shall establish procedures to govern access to information on ~~Administration ONS~~ computers. Those procedures shall, at a minimum, provide that any individual who has access to information on an ~~Administration ONS~~ computer shall be required as a condition of such access to provide to the ~~Administrator Director~~ written consent which permits access by an authorized investigative agency to any ~~Administration ONS~~ computer used in the performance of the duties of such employee during the period of that individual's access to information on an ~~Administration ONS~~ computer and for a period of three years thereafter.

(b) EXPECTATION OF PRIVACY IN ~~ADMINISTRATION ONS~~ COMPUTERS.— Notwithstanding any other provision of law (including any provision of law enacted by the Electronic Communications Privacy Act of 1986), no user of an ~~Administration ONS~~ computer shall have any expectation of privacy in the use of that computer.

(c) DEFINITION.—For purposes of this section, the term ''authorized

investigative agency'' means an agency authorized by law or regulation to conduct a counterintelligence investigation or investigations of persons who are proposed for access to classified information to ascertain whether such persons satisfy the criteria for obtaining and retaining access to such information.

SEC. 3236. 50 U.S.C. 2426 CONGRESSIONAL OVERSIGHT OF SPECIAL ACCESS PROGRAMS.

(a) ANNUAL REPORT ON SPECIAL ACCESS PROGRAMS.—(1) Not later than February 1 of each year, the ~~Administrator~~ Director shall submit to the congressional defense committees a report on special access programs of the ~~Administration~~ ONS.

(2) Each such report shall set forth—

(A) the total amount requested for such programs in the President's budget for the next fiscal year submitted under section 1105 of title 31, United States Code; and

(B) for each such program in that budget, the following:

(i) A brief description of the program.

(ii) A brief discussion of the major milestones established for the program.

(iii) The actual cost of the program for each fiscal year during which the program has been conducted before the fiscal year during which that budget is submitted.

(iv) The estimated total cost of the program and the estimated cost of the program for (I) the current fiscal year, (II) the fiscal year for which the budget is submitted, and (III) each of the four succeeding fiscal years during which the program is expected to be conducted.

(b) ANNUAL REPORT ON NEW SPECIAL ACCESS PROGRAMS.—(1)

Not later than February 1 of each year, the ~~Administrator~~ Director shall submit to the congressional defense committees a report that, with respect to each new special access program, provides—

(A) notice of the designation of the program as a special access program; and

(B) justification for such designation.

(2) A report under paragraph (1) with respect to a program shall include—

(A) the current estimate of the total program cost for the program; and

(B) an identification of existing programs or technologies that are similar to the technology, or that have a mission similar to the mission, of the program that is the subject of the notice.

(3) In this subsection, the term ''new special access program'' means a special access program that has not previously been covered in a notice and justification under this subsection.

(c) REPORTS ON CHANGES IN CLASSIFICATION OF SPECIAL ACCESS PROGRAMS.—(1) Whenever a change in the classification of a

special access program of the ~~Administration~~ ONS is planned to be made

or whenever classified information concerning a special access program of the ~~Administration ONS~~ is to be declassified and made public, the ~~Administrator Director~~ shall submit to the congressional defense committees a report containing a description of the proposed change, the reasons for the proposed change, and notice of any public announcement planned to be made with respect to the proposed change.

(2) Except as provided in paragraph (3), any report referred to in paragraph (1) shall be submitted not less than 14 days before the date on which the proposed change or public announcement is to occur.

(3) If the ~~Administrator Director~~ determines that because of exceptional circumstances the requirement of paragraph (2) cannot be met with respect to a proposed change or public announcement concerning a special access program of the ~~Administration ONS~~, the ~~Administrator Director~~ may submit the report required by paragraph (1) regarding the proposed change or public announcement at any time before the proposed change or public announcement is made and shall include in the report an explanation of the exceptional circumstances.

(d) NOTICE OF CHANGE IN SAP DESIGNATION CRITERIA.—Whenever there is a modification or termination of the policy and criteria used for designating a program of the ~~Administration ONS~~ as a special access program, the ~~Administrator Director~~ shall promptly notify the congressional

defense committees of such modification or termination.

Any such notification shall contain the reasons for the modification or termination and, in the case of a modification, the provisions of the policy as modified.

(e) WAIVER AUTHORITY.—(1) The ~~Administrator Director~~ may waive any requirement under subsection (a), (b), or (c) that certain information be included in a report under that subsection if the ~~Administrator Director~~ determines that inclusion of that information in the report would adversely affect the national security. The ~~Administrator Director~~ may waive the report-and-wait requirement in subsection (f) if the ~~Administrator Director~~ determines that compliance with such requirement would adversely affect the national security. Any waiver under this paragraph shall be made on a case-by-case basis.

(2) If the ~~Administrator Director~~ exercises the authority provided under paragraph (1), the ~~Administrator Director~~ shall provide the information described

in that subsection with respect to the special access program concerned, and the justification for the waiver, jointly to the chairman and ranking minority member of each of the congressional defense committees.

(f) REPORT AND WAIT FOR INITIATING NEW PROGRAMS.—A special access program may not be initiated until—

(1) the congressional defense committees are notified of the program; and

(2) a period of 30 days elapses after such notification is received.

Subtitle C—Matters Relating to Personnel

**SEC. 3241. 50 U.S.C. 2441 AUTHORITY TO ESTABLISH CERTAIN CONTRACTING,
PROGRAM MANAGEMENT, SCIENTIFIC, ENGINEERING,
AND TECHNICAL POSITIONS.**

The ~~Administrator~~ Director may, for the purposes of carrying out the responsibilities of the ~~Administrator~~ Director under this title, establish contracting, program management, scientific, engineering, and technical positions in the ~~Administration~~ ONS, appoint and dismiss individuals

in such positions, and fix the compensation of such individuals.

Subject to the limitations in the preceding sentence, the authority of the ~~Administrator~~ Director to make appointments and fix compensation

with respect to positions in the ~~Administration~~ ONS under this section shall be equivalent to, and subject to the limitations of, the authority under section 161 d. of the Atomic Energy Act of 1954 (42 U.S.C. 2201(d)) to make appointments and fix compensation with respect to officers and employees described in such section. To ensure that the excepted positions established under this section are used, the ~~Administrator~~ Director, to the extent practicable, shall

appoint an individual to such an excepted position to replace the vacancy of a nonexcepted position.

**SEC. 3241A. 50 U.S.C. 2441a AUTHORIZED PERSONNEL OF
THE OFFICE OF THE ~~ADMINISTRATOR~~ DIRECTOR.**

(a) FULL-TIME EQUIVALENT PERSONNEL LEVELS.—

(1) *Within one year of the enactment of this legislation, the Director will review government personnel requirements, and provide the cognizant Congressional Committees with a report on efficiency measures needed to staff ONS. This report will include approximate numbers and skill mix of the workforce.*

(b) COUNTING RULE.—(1) A determination of the number of employees in the Office of the ~~Administrator~~ Director under subsection (a) shall be expressed on a full-time equivalent basis.

(2) Except as provided by paragraph (3), in determining the total number of employees in the Office of the ~~Administrator~~ Director under subsection (a), the ~~Administrator~~ Director shall count each employee of the Office without regard to whether the employee is located at the headquarters of the ~~Administration~~ ONS, a site office of the ~~Administration~~ ONS,

a service or support center of the ~~Administration~~ ONS, or any other location.

(3) The following employees may not be counted for purposes of determining the total number of employees in the Office of the ~~Administrator~~ Director under subsection (a):

(A) Employees of the Office of Naval Reactors.

(B) Employees of the Office of Secure Transportation.

(C) Members of the Armed Forces detailed to the ~~Administration~~ ONS.

(D) Personnel supporting the Office of the ~~Administrator~~ Director pursuant to the mobility program under subchapter VI of chapter 33 of title 5, United States Code (commonly referred to as the ''Intergovernmental Personnel Act Mobility Program'').

(c) VOLUNTARY EARLY RETIREMENT.—In accordance with section 3523 of title 5, United States Code, the ~~Administrator~~ Director may offer voluntary separation or retirement incentives to achieve an effective and efficient ONS organization.

(d) USE OF IPA.—The ~~Administrator~~ Director shall ensure that the expertise of the national security laboratories and the nuclear weapons production facilities is made available to the ~~Administration~~ ONS, the Department of Energy ~~and Nuclear Security~~, the Department of Defense, other Federal agencies, and Congress through the temporary assignment of personnel from such laboratories and facilities pursuant to the Intergovernmental Personnel Act Mobility Program and other similar programs.

[Section 3242 repealed by section 3132(c)(1)(A) of division C of Public Law 112-239.]

SEC. 3243. SEVERANCE PAY.

[Omitted-Amendment]

SEC. 3244. CONTINUED COVERAGE OF HEALTH CARE BENEFITS.

[Omitted-Amendment]

Subtitle D—Budget and Financial Management

SEC. 3251. 50 U.S.C. 2451 SEPARATE TREATMENT IN BUDGET.

(a) PRESIDENT'S BUDGET.—In each budget submitted by the President to the Congress under section 1105 of title 31, United States Code, amounts requested for the ~~Administration~~ ONS shall be set forth separately within the other amounts requested for the Department of Energy ~~and Nuclear Security~~.

(b) BUDGET JUSTIFICATION MATERIALS.—(1) In the budget justification materials submitted to Congress in support of each such budget, the amounts requested for the ~~Administration~~ ONS shall be specified in individual, dedicated program elements.

(2) In the budget justification materials submitted to Congress in support of each such budget, the ~~Administrator~~ Director shall include an assessment of how the budget maintains the core nuclear weapons skills of the ~~Administration~~ ONS, including nuclear weapons design, engineering, production, testing, and prediction of stockpile aging.

SEC. 3252. 50 U.S.C. 2452 PLANNING, PROGRAMMING, AND BUDGETING PROCESS.

- (a) PROCEDURES REQUIRED.—The ~~Administrator~~ Director shall establish procedures to ensure that the planning, programming, budgeting, and financial activities of the ~~Administration~~ ONS comport with sound financial and fiscal management principles. Those procedures shall, at a minimum, provide for the planning, programming, and budgeting of activities of the ~~Administration~~ ONS
- (b) ANNUAL PLAN FOR OBLIGATION OF FUNDS.—(1) Each year, the ~~Administrator~~ Director shall prepare a plan for the obligation of the amounts that, in the President's budget submitted to Congress that year under section 1105(a) of title 31, United States Code, are proposed to be appropriated for the ~~Administration~~ ONS for the fiscal year that begins in that year (in this section referred to as the "budget year") and the two succeeding fiscal years.
- (2) For each program element and construction line item of the ~~Administration~~ ONS, the plan shall provide the goal of the ~~Administration~~ ONS for the obligation of those amounts for that element or item for each fiscal year of the plan, expressed as a percentage of the total amount proposed to be appropriated in that budget for that element or item.
- (c) SUBMISSION OF PLAN AND REPORT.—The ~~Administrator~~ Director shall submit to Congress each year, at or about the time that the President's budget is submitted to Congress under section 1105(a) of title 31, United States Code, each of the following:
- (1) The plan required by subsection (b) prepared with respect to that budget.
- (2) A report on the plans prepared with respect to the preceding years' budgets, which shall include, for each goal provided in those plans—
- (A) the assessment of the ~~Administrator~~ Director as to whether or not that goal was met; and
- (B) if that assessment is that the goal was not met—
- (i) the reasons why that goal was not met; and
- (ii) the plan of the ~~Administrator~~ Director for meeting or, if necessary, adjusting that goal.

SEC. 3253. 50 U.S.C. 2453 FUTURE-YEARS NUCLEAR SECURITY PROGRAM.

- (a) SUBMISSION TO CONGRESS.—The ~~Administrator~~ Director shall submit to Congress each year, at or about the time that the President's budget is submitted to Congress that year under section 1105(a) of title 31, United States Code, a future-years nuclear security program (including associated annexes) reflecting the estimated expenditures and proposed appropriations included in that budget.
- Any such future-years nuclear security program shall cover the fiscal year with respect to which the budget is submitted and at least the four succeeding fiscal years.
- (b) ELEMENTS.—Each future-years nuclear security program shall contain the following:

- (1) A detailed description of the program elements (and the projects, activities, and construction projects associated with each such program element) during the applicable five-fiscal year period for at least each of the following:
- (A) For defense programs—
- (i) directed stockpile work;
- (ii) campaigns;
- (iii) readiness in technical base and facilities; and
- (iv) secure transportation asset.
- (B) For defense nuclear nonproliferation—
- (i) nonproliferation and verification, research, and development;
- (ii) arms control; and
- (iii) fissile materials disposition.
- (C) For naval reactors, naval reactors operations and maintenance.
- (2) A statement of proposed budget authority, estimated expenditures, and proposed appropriations necessary to support each program element specified pursuant to paragraph (1).
- (3) A detailed description of how the funds identified for each program element specified pursuant to paragraph (1) in the budget for the ~~Administration ONS~~ for each fiscal year during that five-fiscal year period will help ensure that the nuclear weapons stockpile is safe and reliable, as determined in accordance with the criteria established under section 4202(a) of the Atomic Energy Defense Act (50 U.S.C. 2522(a)).
- (4) A description of the anticipated workload requirements for each ~~Administration ONS~~ site during that five-fiscal year period.
- (5) A statement of proposed budget authority, estimated expenditures, and proposed appropriations necessary to support the programs required to implement the plan to transform the nuclear security enterprise under section 4214 of the Atomic Energy Defense Act, together with a detailed description of how the funds identified for each program element specified pursuant to paragraph (1) in the budget for the ~~Administration ONS~~ for each fiscal year during that five-fiscal-year period will help ensure that those programs are implemented. The statement shall assume year-to-year funding profiles that account for increases only for projected inflation.
- (6) A plan, developed in consultation with the ~~Director of the Office of~~ Associate Under Secretary for Environment, Health, Safety, and Security of the Department of Energy ~~and Nuclear Security~~, for the research and development, deployment, and lifecycle sustainment of the technologies employed within the nuclear security enterprise to address physical and cyber security threats during the applicable five-fiscal year period, together

with—

(A) for each site in the nuclear security enterprise, a description of the technologies deployed to address the physical and cyber security threats posed to that site;

(B) for each site and for the nuclear security enterprise, the methods used by the ~~National Nuclear Security Administration ONS~~ to establish priorities among investments in physical and cyber security technologies; and

(C) a detailed description of how the funds identified for each program element specified pursuant to paragraph

(1) in the budget for the ~~National Nuclear Security Administration ONS~~ for each fiscal year during that five-fiscal year period will help carry out that plan.

(c) CONSISTENCY IN BUDGETING.—(1) The ~~Administrator Director~~ shall ensure that amounts described in subparagraph (A) of paragraph

(2) for any fiscal year are consistent with amounts described in subparagraph (B) of paragraph (2) for that fiscal year.

(2) Amounts referred to in paragraph (1) are the following:

(A) The amounts specified in program and budget information submitted to Congress by the ~~Administrator Director~~ in support of expenditure estimates and proposed appropriations in the budget submitted to Congress by the President under section 1105(a) of title 31, United States Code, for any fiscal year, as shown in the future-years nuclear security program submitted pursuant to subsection (a).

(B) The total amounts of estimated expenditures and proposed appropriations necessary to support the programs, projects, and activities of the ~~Administration ONS~~ included pursuant to paragraph (5) of section 1105(a) of such title in the budget submitted to Congress under that section for any fiscal year.

(d) TREATMENT OF MANAGEMENT CONTINGENCIES.—Nothing in this section shall be construed to prohibit the inclusion in the future-years nuclear security program of amounts for management contingencies, subject to the requirements of subsection (c).

SEC. 3254. 50 U.S.C. 2454 SEMIANNUAL FINANCIAL REPORTS ON DEFENSE NUCLEAR NONPROLIFERATION PROGRAMS.

(a) SEMIANNUAL REPORTS REQUIRED.—The ~~Administrator Director~~ shall submit to the Committees on Armed Services of the Senate and the House of Representatives a semiannual report on the amounts available for the defense nuclear nonproliferation programs of the ~~Administration ONS~~. Each such report shall cover a half of a fiscal year (in this section referred to as a “fiscal half”) and shall be submitted not later than 30 days after the end of that fiscal half.

(b) CONTENTS.—Each report for a fiscal half shall, for each such defense nuclear nonproliferation program for which amounts are available for the fiscal year that includes that fiscal half, set

forth the following:

- (1) The aggregate amount available for such program as of the beginning of such fiscal half and, within such amount, the uncommitted balances, the unobligated balances, and the unexpended balances.
- (2) The aggregate amount newly made available for such program during such fiscal half and, within such amount, the amount made available by appropriations, by transfers, by reprogrammings, and by other means.
- (3) The aggregate amount available for such program as of the end of such fiscal half and, within such amount, the uncommitted balances, the unobligated balances, and the unexpended balances.

SEC. 3255. 50 U.S.C. 2455 COMPTROLLER GENERAL ASSESSMENT OF ADEQUACY OF BUDGET REQUESTS WITH RESPECT TO THE MODERNIZATION AND REFURBISHMENT OF THE NUCLEAR WEAPONS STOCKPILE.

- (a) GAO STUDY AND REPORTS.—(1) For the nuclear security budget materials submitted in each fiscal year by the ~~Administrator~~ Director, the Comptroller General of the United States shall conduct a study on whether both the budget for the fiscal year following the fiscal year in which such budget materials are submitted and the future-years nuclear security program submitted to Congress in relation to such budget under section 3253 provide for funding of the nuclear security enterprise at a level that is sufficient for the modernization and refurbishment of the nuclear security enterprise.
(2) Not later than 90 days after the date on which the ~~Administrator~~ Director submits the nuclear security budget materials, the Comptroller General shall submit to the congressional defense committees a report on the study under paragraph (1), including—
 - (A) the findings of such study; and
 - (B) whether the nuclear security budget materials support the requirements for infrastructure recapitalization of the facilities of the nuclear security enterprise.
- (b) DEFINITIONS.—In this section:
 - (1) The term “budget” means the budget for a fiscal year that is submitted to Congress by the President under section 1105(a) of title 31, United States Code.
 - (2) The term “nuclear security budget materials” means the materials submitted to Congress by the ~~Administrator~~ Director in support of the budget for a fiscal year.

Subtitle E—Miscellaneous Provisions

SEC. 3261. 50 U.S.C. 2461 ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH REQUIREMENTS.

- (a) COMPLIANCE REQUIRED.—The ~~Administrator~~ Director shall ensure

that the ~~Administration~~ ONS complies with all applicable environmental, safety, and health statutes and substantive requirements. ~~. and substantive requirements.~~

~~(b) PROCEDURES REQUIRED. The Administrator shall develop procedures for meeting such requirements.~~

~~(eb) RULE OF CONSTRUCTION.—Nothing in this title shall diminish the authority of the Secretary of Energy and Nuclear Security to ascertain and ensure that such compliance occurs.~~

SEC. 3262. 50 U.S.C. 2462 COMPLIANCE WITH FEDERAL ACQUISITION REGULATION.

The ~~Administrator~~ Director shall establish procedures to ensure that the mission and programs of the ~~Administration~~ ONS are executed in full compliance with all applicable provisions of the Federal Acquisition Regulation issued pursuant to the Office of Federal Procurement Policy Act (41 U.S.C. 401 et seq.).

SEC. 3263. 50 U.S.C. 2463 SHARING OF TECHNOLOGY WITH DEPARTMENT OF DEFENSE.

The ~~Administrator~~ Director shall, in cooperation with the Secretary of Defense, establish procedures and programs to provide for the sharing of technology, technical capability, and expertise between the ~~Administration~~ ONS and the Department of Defense to further national security objectives.

SEC. 3264. 50 U.S.C. 2464 USE OF CAPABILITIES OF NATIONAL SECURITY LABORATORIES BY ENTITIES OUTSIDE THE ADMINISTRATIONONS.

The Secretary, in consultation with the ~~Administrator~~ Director, shall establish appropriate procedures to provide for the use, in a manner consistent with the national security mission of the ~~Administration~~ ONS under section 3211(b), of the capabilities of the national security laboratories by elements of the Department of Energy and Nuclear Security not within the ~~Administration~~ ONS, other Federal agencies, and other appropriate entities, including the use of those capabilities to support efforts to defend against weapons of mass destruction.

Subtitle F—Definitions

SEC. 3281. 50 U.S.C. 2471 DEFINITIONS.

For purposes of this title:

- (1) The term “national security laboratory” means any of the following:
 - (A) Los Alamos National Laboratory, Los Alamos, New Mexico.
 - (B) Sandia National Laboratories, Albuquerque, New Mexico, and Livermore, California.
 - (C) Lawrence Livermore National Laboratory, Livermore,

California.

(2) The term "nuclear weapons production facility" means any of the following:

(A) The Kansas City Plant, Kansas City, Missouri.

(B) The Pantex Plant, Amarillo, Texas.

(C) The Y-12 National Security Complex, Oak Ridge, Tennessee.

(D) The Savannah River Site, Aiken, South Carolina.

(E) The Nevada National Security Site, Nevada.

(F) Any facility of the Department of Energy **and Nuclear Security** that the Secretary of Energy **and Nuclear Security**, in consultation with the **Administrator Director**

and the Congress, determines to be consistent with the mission of the **Administration-ONS**.

(3) The term "classified information" means any information that has been determined pursuant to Executive Order

No. 12333 of December 4, 1981 (50 U.S.C. 401 note), Executive Order No. 12958 of April 17, 1995 (50 U.S.C. 435 note), or successor orders, to require protection against unauthorized disclosure and that is so designated.

(4) The term "Restricted Data" has the meaning given such term in section 11 y. of the Atomic Energy Act of 1954 (42 U.S.C. 2014(y)).

(5) The term "congressional defense committees" means—

(A) the Committee on Armed Services and the Committee on Appropriations of the Senate; and

(B) the Committee on Armed Services and the Committee on Appropriations of the House of Representatives.

(6) The term "nuclear security enterprise" means the physical facilities, technology, and human capital of the national security laboratories and the nuclear weapons production facilities.

Subtitle G—Amendatory Provisions, Transition Provisions, and Effective Dates

SEC. 3291. 50 U.S.C. 2481 FUNCTIONS TRANSFERRED.

(a) TRANSFERS.—There are hereby transferred to the **Administrator Director** all national security functions and activities performed immediately before the date of the enactment of this Act by the following elements of the Department of Energy **and** :

(1) The Office of Defense Programs.

(2) The Office of Nonproliferation and National Security.

(3) The Office of Fissile Materials Disposition.

(4) The nuclear weapons production facilities.

(5) The national security laboratories.

(6) The Office of Naval Reactors.

(b) AUTHORITY TO TRANSFER ADDITIONAL FUNCTIONS.—The

Secretary of Energy and Nuclear Security may transfer to the **Administrator**

Director any other facility, mission, or function that the Secretary, in consultation with the **Administrator Director** and Congress, determines to be consistent with the mission of the **Administration ONS**.

(c) ENVIRONMENTAL REMEDIATION AND WASTE MANAGEMENT

ACTIVITIES.—In the case of any environmental remediation and waste management activity of any element of the **Administration ONS**, the Secretary of Energy and Nuclear Security may determine to transfer responsibility

for that activity to another element of the Department.

(d) TRANSFER OF FUNDS.—(1) Any balance of appropriations that the Secretary of Energy and Nuclear Security determines is available and needed to finance or discharge a function, power, or duty or an activity that is transferred to the **Administration ONS** shall be transferred to the **Administration ONS**

and used for any purpose for which those appropriations were originally available. Balances of appropriations so transferred shall—

(A) be credited to any applicable appropriation account of the **Administration ONS**; or

(B) be credited to a new account that may be established on the books of the Department of the Treasury; and shall be merged with the funds already credited to that account and accounted for as one fund.

(2) Balances of appropriations credited to an account under paragraph (1)(A) are subject only to such limitations as are specifically applicable to that account. Balances of appropriations credited to an account under paragraph (1)(B) are subject only to such limitations as are applicable to the appropriations from which they are transferred.

(e) PERSONNEL.—(1) With respect to any function, power, or duty or activity of the Department of Energy that is transferred to the **Administration ONS**, those employees of the element of the Department of Energy from which the transfer is made that the Secretary of Energy determines are needed to perform that function, power, or duty, or for that activity, as the case may be, shall be transferred to the **Administration ONS**.

(2) The authorized strength in civilian employees of any element of the Department of Energy from which employees are transferred under this section is reduced by the number of employees so transferred.

[Section 3292 repealed by section 3132(c)(1)(B) of division C of Public Law 112-239.]

SEC. 3293. PAY LEVELS.

[Omitted-Amendment]

SEC. 3294. CONFORMING AMENDMENTS.

[Omitted-Amendment]

[Section 3295 repealed by section 3132(c)(1)(C) of division C of Public Law 112-239.]

SEC. 3296. 50 U.S.C. 2484 APPLICABILITY OF PREEXISTING LAWS AND REGULATIONS.

With respect to any facility, mission, or function of the Department of Energy that the Secretary of Energy and Nuclear Security transfers to the ~~Administrator~~ Director

under section 3291, unless otherwise provided in this title, all provisions of law and regulations in effect immediately before the date of the transfer that are applicable to such facility, mission, or function shall continue to apply to the corresponding functions of the ~~Administration~~ ONS.

[Section 3297 repealed by section 3132(c)(1)(D) of division C of Public Law 112-239.]

SEC. 3298. 50 U.S.C. 2401 note CLASSIFICATION IN UNITED STATES CODE.

Subtitles A through F of this title (other than provisions of those subtitles amending existing provisions of law) shall be classified to the United States Code as a new chapter of title 50, United States Code.

SEC. 3299. 50 U.S.C. 2401 note EFFECTIVE DATES.

(a) IN GENERAL.—Except as provided in subsection (b), the provisions of this title shall take effect ~~on March 1, 2000.~~

~~(b) EXCEPTIONS. (1) Sections 3202, 3204, 3251, 3295, and 3297 shall take effect on the date of the enactment of this Act.~~

~~(2) Sections 3234 and 3235 shall take effect on the date of the enactment of this Act. During the period beginning on the date of the enactment of this Act and ending on the effective date of this title, the Secretary of Energy shall carry out those sections and any reference in those sections to the Administrator and the Administration shall be treated as references to the Secretary and the Department of Energy, respectively.~~

Appendix D

Testimony, Site Visits, and Interviews

Table D-1. Testimony of Government & Weapons Complex Officials

Name	Role
Atkins-Duffin, Cindy	Assistant Director for Nuclear Matters, Office of Science and Technology Policy
Barton, Matthew	Special Assistant to the Acting Director, Domestic Nuclear Detection Office, DHS
Beausoleil, Geoffrey	Field Office Manager, Sandia National Laboratory
Benedict, Terry	VADM U.S. Navy, Director, Strategic Systems Program (SSP)
Cook, Donald	Deputy Administrator for Defense Programs, NNSA
Creedon, Madelyn	Assistant Secretary of Defense (Global Strategic Affairs)
Dearolph, Douglas	Field Office Manager, Savannah River Site
Elliott, Michael	Director for Strategic Programs, The Joint Staff
Epstein, Jon	Professional Staff, Senate Armed Services Committee
Erhart, Steven	NNSA Production Office Manager, Pantex and Y-12 Plants
Falcone, Patricia	Associate Director for National Security and International Affairs, OSTP
Gentile, Chris	Plant Manager, Kansas City National Security Campus
Harencak, Garrett	US Air Force, Strategic Deterrence & Nuclear Integration
Held, Bruce	Acting Administrator, NNSA
Holecek, Mark	Field Office Manager, Kansas City National Security Campus
Hommert, Paul	Director, Sandia National Laboratory
Juzaitis, Ray	Plant Manager, Nevada National Security Site
Kendall, Frank	Under Secretary for Acquisition, Technology, and Logistics,
Khol, Curl	Professional Staff, Cost Assessment and Program Evaluation (CAPE), OSD
Knapp, Bret	Acting Director, Lawrence Livermore National Laboratory
Kusnezov, Dimitri	Senior Advisor to the Secretary, DOE
Lawrence, Steven	Field Office Manager, Nevada National Security Site

Name	Role
Lebak, Kimberly	Field Office Manager, Lawrence Livermore National Laboratory
Limage, Simon	Deputy Assistant Secretary of State, Bureau of International Security & Nonproliferation, DOS
McMillan, Charles	Director, Los Alamos National Laboratory
Moniz, Ernest	Secretary of Energy
Moody, III David	Plant Manager, Savannah River Site
Morrison, Timothy	Professional Staff, House Armed Services Committee
Poneman, Daniel	Deputy Secretary, DOE
Reis, Vic	Special Advisor to the Secretary, DOE
Soofer, Robert	Professional Staff, Senate Armed Services Committee
Spencer, Chuck	Plant Manager, Y-12 Plant
Tomero, Leonor	Professional Staff, House Armed Services Committee
Trautman, Steve	Deputy Director, Naval Reactors
Walter, Drew	Professional Staff, House Armed Service Committee
White, William	Field Office Manager, Los Alamos National Laboratory
Winokur, Peter	Chairman, Defense Nuclear Facilities Safety Board (DNFSB)
Woolery, John	Plant Manager, Pantex Plant

Table D-2. Testimony of Independent Experts

Name	Role
Beckner, Everett	Former Director, Defense Programs
Brooks, Linton	Former Administrator, NNSA
Browne, John	Former Director, Los Alamos National Laboratory
D'Agostino, Thomas	Former Director, NNSA
Davis, Jay	Former Director, Defense Threat Reduction Agency
Deutch, John	Former Deputy Secretary, DOD
Guidice, Steve	Former Production Program Director, DOE Defense Programs
Harvey, John	Former PDASD, Nuclear, Chemical, Biological Defense Programs
Hunter, Thomas	Former Director, Sandia National Laboratory
John, Mim	Former Director, Sandia National Laboratory, Livermore
Kuckuck, Robert	Former Director, Defense Programs
Lehman, Ronald	DOD-NNSA
Miller, George	Former Director, Lawrence Livermore National Laboratory
Miller, Neile	Former Deputy Director, NNSA
Nanos, George	Former Director, Los Alamos National Laboratory
Ostendorff, William	Member, Nuclear Regulatory Council
Przybylek, Charles	Former Associate Director, NNSA
Robinson, Paul	Former Director Sandia National Laboratory
Selden, Robert	Former Deputy Director, Los Alamos National Laboratory
Smolen, Robert	Former Deputy Director, NNSA
Tegnelia, James	Former Director, Defense Threat Reduction Agency
Younger, Steven	Former Director, National Nuclear Security Site

Table D-3. Testimony of British Nuclear Program Experts

Name	Role
Baker, Michael	British Defense Staff
Mackinder, Andy	AWE (UK)
Taylor, Paul	AWE (UK)
Pinfield, Lynsey	British Defense Staff

Table D-4. Testimony of Lead Authors of Key Prior Studies

Name	Study
Chiles, Henry (Hank)	<i>Report of the Commission on Maintaining United States Nuclear Weapons Expertise</i>
Foster, John	<i>Report of the Defense Science Board Task Force on Nuclear Capabilities</i>
Overskei, David	<i>Recommendations for the Nuclear Weapons Complex of the Future</i>
Patel, C. Kumar	<i>The Quality of Science and Engineering at the NNSA National Security Laboratories</i>
Schwitters, Roy	JASONs
Shank, Charles	<i>Managing for High Quality Science and Engineering at the NNSA National Security Laboratories</i>
Turpen, Elizabeth	<i>Leveraging Science for Security: A Strategy for the Future of the Nuclear Weapons Laboratories</i>
Welch, Larry	<i>Report of the Defense Science Board Task Force on Nuclear Capabilities</i>

Table D-5. Testimony of Officials from M&O Contractors' Parent Organizations

Name	Organization
Howanitz, John	Bechtel
Johnson, Ray	Lockheed Martin
Madsen, Michael	Honeywell
Mara, Glenn	University of California

Table D-6. Organizationally Focused Fact Finding

Organizational Site Visits / Interviews	
AFL-CIO	
Civil nuclear power industry	
Various (on non-attribution basis)	
Congress	
Congressman James Cooper	Senator Jefferson Sessions
Congressman Michael J. Rogers	Senator Mark E. Udall
Congressman Adam Smith	
Congressman Mack Thornberry	
Committee Staffs	
House Committee on Appropriations, Energy and Water subcommittee	House Committee on Armed Services, Strategic Forces subcommittee
House Committee on Energy and Commerce	Senate Committee on Armed Services, Strategic Forces subcommittee
House Committee on Energy and Commerce, Oversight and Investigations subcommittee	Senate Committee on Energy and Natural Resources
Defense Nuclear Facilities Safety Board (DNFSB)	
Department of Defense	
Vice Chairman, Joint Chiefs of Staff	Assistant Secretary of Defense, Global Strategic Affairs
Under Secretary of Defense (Acquisition, Technology and Logistics)	OSD, Cost Assessment and Program Evaluation
Under Secretary of Defense (Policy)	Assistant Secretary of Defense (Nuclear, Chemical and Biological Defense Programs)
Deputy Assistant Secretary of Defense (Nuclear Matters)	
Department of Energy Headquarters	
Chief Financial Officer	Health, Safety, and Security
Environmental Management	Human Capital
Health, Safety and Security	Nuclear Energy
Human Capital	Office of Management
Inspector General	Office of Science
International Affairs	S&T Advisor
International Nuclear Energy Policy	

Organizational Site Visits / Interviews	
Department of Energy Field	
Los Alamos National Laboratory	Kansas City Plant
Lawrence Livermore National Laboratory	Pantex
Sandia National Laboratories	Savannah River Site
Nevada National Security Site	Y-12
Department of Homeland Security	
Domestic Nuclear Detection Office	Science & Technology
Office of National Laboratories	
Department of Health and Human Services	
Centers for Disease Control and Prevention	
Department of Justice/Federal Bureau of Investigation	
Weapons of Mass Destruction Directorate	
Department of State	
Arms Control and International Security	Arms Control, Verification and Compliance
Federal Aviation Administration	
Air Traffic Organization	
National Aeronautics and Space Administration (NASA)	
Department of the Navy	
Naval Reactors	Strategic Systems Programs (SSP)
Nuclear Regulatory Commission	
Office of the Director of National Intelligence	
National Counterproliferation Center	
Office of Management and Budget (OMB)	
Occupational Safety and Health Administration (OSHA)	
Office of Science and Technology Policy	

Appendix E

Alternative Structural Models

As directed by Congress, the panel explored a range of options for the organizational structure of the nuclear enterprise. Any possible variation has both strengths and weaknesses. There is no ideal organizational structure for an orphaned mission of exceptional significance to U.S. national security posture and global leadership position. The panel's overarching conclusion was that, regardless of placement within the government, systemic and cultural barriers must be addressed to ensure the enterprise's ultimate success and sustainability. The organizational problems inherent in the current *separately organized* model, which are not insignificant, exacerbate the existing cultural proclivities within the current DOE/NNSA governance approach. In sum, a risk-averse organizational culture is exacerbated by the lack of leadership, insufficient clarity regarding authorities and the absence of integrated decision making.

The panel first considered the option of reorganizing NNSA, but maintaining its semi-autonomous status within DOE (effectively, an improved status quo). This was rejected because numerous studies and the panel's own fact-finding revealed that the *semi-autonomous* model has failed. The panel found no evidence to suggest that previous attempted reforms have improved effectiveness or that mission execution and proven management principles can be implemented within the existing organizational structure. The current system is broken and minor adjustments are not sufficient to correct either the organizational or cultural problems.

The panel also explored the notion of NNSA as an independent agency; namely, the panel evaluated in detail the National Aeronautic and Space Administration (NASA) as a potential model. Although some aspects of this model are incorporated in the panel's management recommendations on integrated decision making and M&O fee structures, the panel concluded that an independent NNSA was not a viable option for several reasons: First and foremost, the panel concluded that a mission this important to U.S. national security requires Cabinet-level ownership and support. Secondly, an independent agency would require a high-level commitment and consistent support across the Executive Branch and Congress. Such a commitment must convey from administration to administration. Given the shortfalls in national leadership enumerated elsewhere in this report, this seemed politically infeasible and costly in the short-term and very high-risk with respect to providing a sustainable solution. Third, the transition to an independent agency would be a protracted and costly undertaking. The panel also evaluated three variants of a greater role for the Department of Defense. As the most radical version of the three, all elements of NNSA's national security programs would be fully incorporated into DOD. This option did not appear appropriate for several reasons. First, moving the enterprise to DOD would not necessarily solve the fundamental problem of ensuring a coherent, fully financed, and executable weapons program. Second, there is considerable uncertainty about DOD's willingness and ability to integrate an organization with a very

different scientific and civilian culture. Stated simply, the need to nurture world-class, leading-edge scientific laboratories is not a strong suit of the Department of Defense. Lastly, the panel questioned the viability of other elements within NNSA’s portfolio, as well as the weapons work, within a DOD environment and concluded that such a move could be deleterious to both.

A second, less radical option would be for the Department of Defense to act as the weapons program customer, remaining in control of the funding, and also providing for recapitalization in support of the weapons work. This model would be highly similar to how current Interagency Work (formerly “Work for Others”) projects are initiated, funded, and executed. While this approach might be helpful in obtaining incremental deliverables specific to warheads, it is circumscribed by the weapons-specific function of the enterprise as opposed to NNSA’s broader portfolio.

Finally, the panel also considered the idea of creating a dual-hatted position, one in which the NNSA Deputy Administrator would also have a senior-level position in DOD, perhaps as Assistant Secretary of Defense (Nuclear, Chemical, Biological). This position would parallel the Naval Reactors model of dual-hatted leadership. While this could simplify cross-fertilization between NNSA and DOD, the panel concluded that a one-person solution would not be able to address the plethora of challenges facing NNSA. In addition, the portfolio across NNSA and ASD(NCB) is much more complex and wide-ranging than is the case for Naval Reactors. Whether one individual could effectively manage the scope and tasks across both agencies is highly questionable.

The panel therefore has concluded that the best option is to bolster ownership and accountability at the Secretary level within the newly-named Department of Energy and Nuclear Security and amend portions of the NNSA Act to eliminate duplication and ensure mission performance. This option assumes changes beyond DOE and NNSA as well—particularly from the White House and Congress; it also will require sweeping reform within the Department.

Appendix F

Benchmarking

To make informed recommendations for revising the governance structure, mission, and management of the nuclear security enterprise it was necessary for the panel to examine other organizations engaged in high-risk, technologically complex work and ask what characteristics are most commonly associated with success. Specifically, are there organizations more effective than NNSA in performing similar functions? If so, why do they perform better? And, what lessons can be extracted and applied to improve NNSA's performance?

Although the nuclear security enterprise embodies a unique combination of missions and facilities, a number of organizations engaged in dangerous technological endeavors, requiring high reliability and involving government-private sector collaborative relationships, were identified that provide a reasonable basis for comparison. These include government-owned contractor-operated relationships as well as private industry subject to strict Federal regulation. It would be fair to say that all the organizations identified would currently be judged as performing better than NNSA; however, the duration of high performance varies from decades-long high performers to organizations that have only recently achieved high levels of success.

The analytical approach taken was to first review the literature on high-reliability organizations (HRO)—organizations engaged in hazardous operations that manage to sustain near error-free performance over long periods of time. Later, fact-finding interviews were conducted with HROs and other organizations involved in high-risk, technologically complex work. For both the literature review and interviews, the objectives were to

- Document the relevant governance and management approaches employed in these activities, and, as appropriate, the organizations' assessments of their successes and problems
- Identify common best practices
- Assess the strengths and weaknesses of these approaches as models for employment in the nuclear security enterprise

Literature Review Summary

For over thirty years there has been a significant interdisciplinary research program devoted to the study of HROs, with recent work moving beyond hazardous industries to study “reliability-seeking” more generally. Much of this program is built on a few early detailed case studies in areas such as defense, energy, and aviation. Overall, the literature suggests certain traits are more commonly associated with *successful* organizations than others. While they may

not be present in every single case, or to the same degree, the following principles appear to be highly correlated with a *culture of reliability*:

- Focus on eliminating failure at the lowest level
- Continuous learning and improvement
- Fluid and open communication channels
- Extremely competent personnel
- Clearly defined roles and responsibilities
- Redundancy
- Interdependence
- Program and management stability

A focus on failure as opposed to success is an essential, yet counterintuitive principle of HROs. Rather than encourage success and repress failure, these organizations explicitly acknowledge the fallible and dangerous nature of their operations, and because of this, relentlessly seek out error in an attempt to eliminate or remediate it at the lowest levels possible in the organization, thereby becoming successful. To accomplish this, HROs are in a perpetual training mode. New personnel master standard operating procedures while more experienced individuals socialize incremental improvements through lessons learned, technical diffusion, and controlled innovation. Equally important, information moves easily and quickly throughout the organization, both upstream and downstream, so that leadership is made aware of potential problems and staff has a clear understanding of mission priorities. The end result of this emphasis on failure and training in an open environment is extremely competent personnel, confident and responsible to root out and fix problems.

A number of vital structural conditions support the principles of a culture of reliability. First, from the organization's mission to all other aspects of the organization, there are clearly defined roles and responsibilities that are well known and codified. This provides the direction necessary to instill a sense of organizational and personal responsibility but also ensures obvious lines of accountability. Second, in addition to technical redundancies there are also organizational redundancies, such as duplicate monitors, that protect against single points of failure in critical areas. Although these redundancies would be seen as inefficient in most other organizations, they are a necessary component of high-reliability operations. Third, interdependence among units, as opposed to strong separation (stove piping), creates a shared responsibility for group performance and further enables redundancy through personnel cross-training and organizational awareness. Fourth, without program stability and management constancy these principles cannot be sustained and lines of accountability erode.

Fact Finding Interviews

To more deeply understand organizational success, interviews were conducted with numerous HROs and other organizations engaged in high-risk, technologically complex work. Participants included the following: (1) Navy's Strategic Systems Programs (SSP), (2) Naval Reactors, (3) NASA, (4) Centers for Disease Control & Prevention's National Center for Environmental Health chemical weapons demilitarization program, (5) Civilian nuclear power industry,⁸⁴ (6) Federal Aviation Administration's Air Traffic Organization (ATO), (7) DOE Office of Science, and (8) UK Atomic Weapons Establishment. For those organizations with their own operations and for which sufficient information was available, Table F-1 demonstrates how they accord with the HRO principles previously mentioned.

Table F-1. High Reliability Organization Principles

HRO Principles:	SSP	Naval Reactors	NASA	Civilian Nuclear	ATO
Focus on eliminating failure at the lowest level	Strong; disciplined	Strong; highly disciplined	*Unknown	Strong; Disciplined	Unknown
Continuous learning and improvement	Strong; deliberate staff planning	Strong; deliberate staff planning	Aided by evolving missions	Strong; deliberate staff planning; industry support	Strong
Fluid and open communication channels	Strong	Strong; regimented	Collaborative model	Strong	Strong
Extremely competent personnel	Strong	Strong; highly disciplined	Strong	Strong	Strong
Clearly defined roles and responsibilities	Strong; clear risk owner	Strong; clear risk owner	Documented model	Strong; clear risk owner	Strong
Redundancy and interdependence	Self assessment; oversight offices	Individual responsibility; correspondence; oversight offices	Refocused intensity	Self assessment; industry support	Unknown
Program and management stability	Reliable program; career oriented	Reliable program; career oriented	Program flux; career oriented	Reliable program; career oriented	Unknown

*Unknown: Not enough information obtained to comment

⁸⁴ Non-attributable.

Conclusion

It became clear following the interviews that there are a number of characteristics which contribute to organizational success both including, and in addition to, those typically associated with reliability. No single trait or sub-set of traits is sufficient. Instead, it seems a large variety of interdependent and reinforcing qualities work together over time to produce and sustain highly effective organizations. These characteristics, delineated in Table F-2, collectively represent an archetype for the successful management of high-risk, technologically complex enterprises.

Table F-2. Criteria for Success

General	<ul style="list-style-type: none">• Universally understood and accepted purpose• Effective culture developed over many years by transformative leadership and maintained by mentoring carefully selected personnel• Adequate visibility with external stakeholders
Structure	<ul style="list-style-type: none">• Clearly established, codified, and reinforced lines of authority, responsibility, and accountability• Formal, inclusive, decisive, prompt, and documented decision-making processes• Deliberative body, such as a Board of Directors or Management Council, which obliges the organization to collectively engage in risk-based resource allocation decisions to accomplish mission• Mission and support functions are separate but line management is responsible for both
Personnel	<ul style="list-style-type: none">• Long-tenured director and/or senior leadership with extensive experience• Technically proficient and accomplished staff• Exceptional candidates recruited early in their careers to instill and sustain culture• Professional development programs emphasizing problem identification/solving, continuous learning, leadership, and the socialization of best practices
Communications	<ul style="list-style-type: none">• Organization priorities are aligned with mission and frequently communicated by senior leadership• Information flows freely and quickly up and down the organization, and decisions are made at the appropriate levels• Few if any obstacles (people or processes) prevent bad news from moving up the chain of command• Mechanisms exist for field oversight offices and site managers to communicate regularly and directly with the head of the organization
Planning and Budget	<ul style="list-style-type: none">• Single strategic planning reference document guides all decisions• Unwavering adherence to a disciplined planning and budget process, which is comprehensive and detailed

Program Management	<ul style="list-style-type: none"> • In a government operation, government program managers oversee efforts, but contractors execute the work within established policies • Lean and authoritative field offices have sufficient technical and operational expertise to effectively oversee the work • Stakeholders are included early in project life cycle and strive to understand all requirements and regulations upfront • Technical and financial elements of programs are scrutinized in order to validate efforts and control costs • The more hazardous the operation, the more safety is considered part and parcel of mission performance • Specialized ES&H and security standards are used only when more generally accepted standards (e.g., industrial standards, OSHA standards) are shown to be inadequate or unclear
Contracts	<ul style="list-style-type: none"> • Contracts focused and evaluated on costs and mission performance, not award fees related to aspects other than meeting the mission • Contracts consolidated where appropriate to achieve economies of scale • Contracts typically are Cost Plus Fixed Fee (with very low fees for labs and FFRDCs) with no incentive/bonus awards or Fixed Price Incentive (based on mission performance), depending on the work being done

Appendix G

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Appendix H

Acronyms

AFB	Air Force Base
AFL-CIO	American Federation of Labor and Congress of Industrial Organization
ALOO	Albuquerque Operations Office
AOA	Analysis of Alternatives
CAPE	Cost Assessment and Program Evaluation
CMRR	Chemistry and Metallurgy Research Replacement
DART	Days Away Restricted or Transferred (Case Rate)
DHS	U. S. Department of Homeland Security
DMAG	Deputy Management Action Group
DNFSB	Defense Nuclear Facilities Safety Board
DOD	U. S. Department of Defense
DOE	U. S. Department of Energy
DOE&NS	Department of Energy and Nuclear Security
DSB	Defense Science Board
DSW	Defense Stockpile Work
ECF	Extended Core Facility
ES&H	Environment, Safety, and Health
FAR	Federal Acquisition Regulation
FFRDC	Federally Funded Research and Development Center
FTE	Full Time Equivalent
FY	Fiscal Year
FYDP	Future Years Defense Program
FYNSP	Future Year Nuclear Security Plan
GAO	Government Accountability Office

GOCO	Government-contractor
HASC	House Armed Services Committee
HSS	Health, Safety and Security (DOE)
ICBM	Intercontinental Ballistic Missile
ICE	Independent Cost Estimate
ISO	International Organization for Standardization
IW	Interagency Work
JASPER	Joint Actinide Shock Physics Experimental Research Facility
LANL	Los Alamos National Laboratory
LDRD	Laboratory Directed Research and Development
LEP	Life Extension Program
LLC	Limited Liability Company
LLNL	Lawrence Livermore National Laboratory
M&O	Management and Operating
MEC	Mission Executive Council
MESA	Microsystems and Engineering Sciences Application
MOU	Memorandum of Understanding
MOX	Mixed-Oxide Fuel Fabrication Facility
NA-APM	NNSA – Acquisition & Project Management
NA-MB	NNSA – Management & Budget
NA-SH	NNSA – Safety & Health
NA-00	NNSA – Infrastructure & Operations
NA-10	NNSA – Defense Programs
NA-20	NNSA – Defense Nuclear Nonproliferation
NA-40	NNSA – Emergency Operations
NA-70	NNSA – Defense Nuclear Security
NA-80	NNSA – Counterterrorism and Counter-proliferation
NASA	National Aeronautics and Space Administration

NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NSC	National Security Council
NWC	Nuclear Weapons Council
NWSM	Nuclear Weapon Stockpile Memorandum
NWSP	Nuclear Weapon Stockpile Plan
OAPM	Office of Acquisition and Project Management
OCL	Obligation Control Level
OIG	Office of the Inspector General
OMB	Office of Management and Budget
ONS	Office of Nuclear Security
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
PEP	Performance Evaluation Plan
PF-4	Plutonium Facility at Technical Area 55 (TA-55), LANL
PIDAS	Perimeter Intrusion Detection and Assessment System
PM	Program Manager
PPBS	Planning, Programming and Budgeting system
PPD	Presidential Policy Directive
R&D	Research and Development
RTFB	Readiness in Technical Base and Facilities
S&T	Science and Technology
SASC	Senate Armed Services Committee
SES	Senior Executive Service
SNL	Sandia National Laboratories
SSMP	Strategic Stockpile Management Plan
SSC	Standing and Safety Committee
SSiFR	Sandia Silicon Fab Replacement

SSP	Strategic Systems Programs, U.S. Navy
STEM	Science, Technology, Engineering and Mathematics
TRC	Total Recordable Case (Rate)
UPF	Uranium Processing Facility
Y-12	Y-12 National Security Complex

