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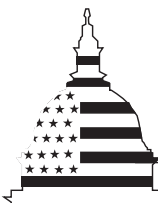
Report to the Ranking Minority  
Member, Committee on Governmental  
Affairs, U.S. Senate

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June 2001

# DEPARTMENT OF ENERGY

## Status of Achieving Key Outcomes and Addressing Major Management Challenges



G A O

Accountability \* Integrity \* Reliability

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Accountability \* Integrity \* Reliability

United States General Accounting Office  
Washington, DC 20548

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June 29, 2001

The Honorable Fred Thompson  
Ranking Minority Member  
Committee on Governmental Affairs  
United States Senate

Dear Senator Thompson:

As you requested, we reviewed the Department of Energy's (DOE) fiscal year 2000 performance report and fiscal year 2002 performance plan required by the Government Performance and Results Act of 1993 (GPRA) to assess the agency's progress in achieving selected key outcomes that you identified as important mission areas for the agency.<sup>1</sup> These selected key outcomes are

- energy systems are secure, competitive, and serve the needs of the public;
- energy use is more efficient and productive, while environmental impacts are limited;
- contaminated nuclear weapons and research sites are cleaned up;
- national and global nuclear security threats are reduced; and
- science and technology innovations are achieved at reduced costs.

As agreed, using the selected key outcomes for DOE as a framework, we (1) assessed the progress DOE has made in achieving these outcomes and the strategies the agency has in place to achieve them; and (2) compared DOE's fiscal year 2000 performance report and fiscal year 2002 performance plan with the agency's prior year performance report and plan for these outcomes. Additionally, we agreed to analyze how DOE addressed its major management challenges, including the governmentwide high-risk areas of strategic human capital management and information security, which we and DOE's Office of Inspector General (OIG) identified. Appendix I provides detailed information on how DOE addressed these challenges.

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<sup>1</sup>This report is one of a series of reports on the 24 Chief Financial Officers (CFO) Act agencies' fiscal year 2000 performance reports and fiscal year 2002 performance plans.

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## Results in Brief

Generally, in its fiscal year 2000 performance and accountability report, DOE states that it is making overall progress in achieving its selected key outcomes while recognizing that, in some areas, more work remains to be done. However, the performance report does not always effectively demonstrate the Department's progress in achieving its key outcomes because it includes (1) unclear, jargon-laden measures that do not always support superceding objectives; (2) performance assessments that are inconsistent with actual performance; (3) objectives with insufficient performance measures; and (4) a lack of explanation for shortfalls in performance. In its fiscal year 2002 performance plan, DOE generally outlines broad, clear strategies for achieving the objectives under the selected key outcomes. However, DOE does not consistently provide detailed, specific actions required to achieve some of the outcomes. Specifically,

- *Planned Outcome: Energy Systems Are Secure, Competitive, and Serve the Needs of the Public.* DOE reported continued progress toward achieving this outcome. However, it is impossible to tell precisely how much progress has been made because the annual performance goals and measures included in the report are often unclear and sometimes do not support their superceding objectives. DOE provides a multitude of strategies for achieving this outcome for fiscal year 2002 and while in some cases, these strategies are clear, in most instances the language is vague and is merely a restatement of the general performance goal.
- *Planned Outcome: Energy Use Is More Efficient and Productive, While Environmental Impacts Are Limited.* DOE also reported continued progress toward achieving this outcome. However, DOE considers this key outcome as an objective under the outcome discussed above—ensuring that energy systems are secure, competitive, and serve the needs of the public. Consequently, many of the concerns—such as lack of clarity—that we have identified for the prior outcome also apply to this one. Accordingly, it is difficult to determine what progress DOE has made toward achieving this outcome and how the Department's efforts contributed to this outcome. In contrast to the above outcome, in most cases, the strategies described for this outcome for fiscal year 2002 are detailed, clear, and relevant. Moreover, the strategies provide an important conceptual linkage between the more general strategic objectives and the annual performance goals.
- *Planned Outcome: Contaminated Nuclear Weapons and Research Sites Are Cleaned Up.* DOE generally reported progress toward achieving this key outcome. Overall, DOE's cleanup performance goals clearly supported

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their respective objectives, were relevant, and were quantified, where appropriate. However, DOE did not effectively demonstrate progress in every case. In some cases, the assessment of performance did not match actual performance; inadequate information was provided for specific measurement data that appeared questionable; and inadequate explanations were provided for significant shortfalls in performance. Generally, DOE provided relevant strategies for fiscal year 2002 for this outcome. However, DOE did not always highlight known problems with its strategies and did not always address how it will correct performance shortfalls from the fiscal year 2000 report for this outcome.

- *Planned Outcome: Further Strengthen National Security and Reduce the Global Danger From Weapons of Mass Destruction.* Overall, DOE reported mixed progress in its efforts to achieve this key outcome. For example, while DOE was able to certify that the nation's nuclear weapons stockpile remains safe and reliable, its Stockpile Stewardship Program continued to have a mixed record in meeting its goals and targets. Similarly, while DOE reported progress in reducing the global danger from weapons of mass destruction through its nonproliferation and international safety programs, it also reported a mixed record for its fissile materials disposition programs. However, assessing DOE's progress for this outcome is not always possible, because in some cases goals and measures are missing for important efforts, some measures are process-oriented, and some measures do not clearly link to the relevant strategic objective. For fiscal year 2002, DOE will continue with many of the strategies that are in place for fiscal year 2001 for this outcome. However, some key strategies that should be included under this outcome are missing, such as a strategy with dedicated objectives and measures for the establishment of the National Nuclear Security Administration (NNSA).
- *Planned Outcome: Science and Technology Innovations Are Achieved at Reduced Costs.* DOE reported that it was making progress toward achieving this key outcome. However, it is impossible to tell precisely how much progress has been made because annual performance goals and measures for this outcome vary in clarity and descriptiveness, and the level of detail in the results sections of the report varies by individual program, with little consistency among them. DOE's science and technology-related strategies in its fiscal year 2002 plan do not specifically address whether innovations will be achieved at reduced costs. Instead, the strategies address such topics as leadership, foundations, and breakthroughs in the physical sciences; environmental protection and cleanup; exploring matter and energy at the atomic scale; and providing the

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infrastructure and workforce to support the physical, biological, environmental, and computational sciences.

DOE's fiscal year 2000 performance and accountability report and fiscal year 2002 performance plan represent an overall improvement over previous reports and plans. Specifically, the fiscal year 2000 report organizes information by departmental decision unit to better track with the budget, and it includes improved linkages between objectives and funding. Similarly, the fiscal year 2002 plan includes general performance goals that are linked to each budgetary decision unit. However, both the report and the plan continue to have some weaknesses. In particular, the report does not always provide a clear picture of how much progress has actually been made, nor does it always outline detailed strategies for making further progress when targets were not met. In addition, the report continues to provide minimal information on procedures to validate and verify performance information. Similarly, the plan does not provide adequate explanations for changes made to objectives, goals, and measures, and it often contains vague descriptions, such as "promote" and "enhance," for some strategies that make it difficult to get a clear picture of the Department's intended performance. Finally, DOE does not disclose data limitations in either the performance plan or the report for the key outcomes.

Most of the major management challenges identified by GAO have been included as departmental challenges in DOE's fiscal year 2000 report and fiscal year 2002 plan. However, at the outcome level, DOE's treatment of these management challenges varies greatly, and few if any details are included in the report or plan that explain how much progress DOE has made in addressing these challenges or how these challenges will be addressed in the future. For example, in the fiscal year 2002 plan, under DOE's science and technology outcome, the importance of the scientific workforce is addressed as a strategic human capital management challenge and some targets have been outlined. However, for the other key outcomes, there are generally no objectives, goals, or measures related to the strategic human capital management challenge in either the report or the plan. Similarly, although DOE reports that it is making progress in improving information security, some of DOE's performance measures are process-oriented and do not always provide an assessment of real, meaningful, and measurable improvements in information security. Moreover, most of DOE's performance measures for fiscal year 2002 for this challenge are still under development.

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We provided a copy of a draft of this report to DOE for review and comment. DOE officials generally agreed with the information presented in the report.

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## Background

GPRA is intended to shift the focus of government decisionmaking, management, and accountability from activities and processes to the results and outcomes achieved by federal programs. New and valuable information on the plans, goals, and strategies of federal agencies has been provided since federal agencies began implementing GPRA. Under GPRA, annual performance plans are to clearly inform the Congress and the public of (1) the annual performance goals for agencies' major programs and activities, (2) the measures that will be used to gauge performance, (3) the strategies and resources required to achieve the performance goals, and (4) the procedures that will be used to verify and validate performance information. These annual plans, issued soon after transmittal of the president's budget, provide a direct linkage between an agency's longer term goals and mission and day-to-day activities.<sup>2</sup> Annual performance reports are to subsequently report on the degree to which performance goals were met. The issuance of the agencies' performance reports, due by March 31, represents a new and potentially more substantive phase in the implementation of GPRA—the opportunity to assess federal agencies' actual performance for the prior fiscal year and to consider what steps are needed to improve performance and reduce costs in the future.<sup>3</sup>

DOE's missions are to foster a reliable and sustainable energy system, maintain the nation's nuclear weapons capabilities, clean up the contamination resulting from prior nuclear weapons activities, and promote U.S. leadership in science and technology. DOE also works with the Departments of Defense and State to help prevent the proliferation of nuclear weapons and other weapons of mass destruction. In the post-Cold War environment, securing U.S. nuclear weapons materials and information remains vital to U.S. national interests. To carry out its missions, DOE has been appropriated about \$17 billion annually in recent years and has almost 16,000 federal employees. The Department has more than 50 major facilities in 35 states. DOE contracts for the management

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<sup>2</sup>The fiscal year 2002 performance plan is the fourth of these annual reports under GPRA.

<sup>3</sup>The fiscal year 2000 performance report is the second of these annual reports under GPRA.

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and operation of its major facilities—including its national laboratories, nuclear weapons production facilities, and those facilities undergoing environmental cleanup—and has more than 100,000 prime contractor employees at its facilities. In fiscal year 1999, DOE obligated about \$15.5 billion to contracts. Organizationally, DOE is structured along four business lines to carry out its four primary functions—Energy Resources, National Nuclear Security, Environmental Quality, and Science. DOE’s GPRA-related documents are also organized around these four business lines.

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## Assessment of DOE’s Progress and Strategies in Achieving Selected Key Outcomes

This section discusses our analysis of DOE’s performance in achieving its selected key outcomes and the strategies the agency has in place, particularly strategic human capital management<sup>4</sup> and information technology, for accomplishing these outcomes. In discussing these outcomes, we provide information from our prior work on the extent to which the agency has provided assurance that the performance information it is reporting is credible.

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## Secure, Competitive Energy Systems Serving the Public

In its fiscal year 2000 performance and accountability report, DOE reports continued progress toward achieving its outcome of ensuring that energy systems are secure, competitive, and serve the needs of the public—which is the key outcome under DOE’s Energy Resources business line. However, while DOE may be making progress toward achieving this outcome, it is impossible to tell precisely how much progress has been made based on the information presented in the report. This is because annual performance goals and measures are often not clear and sometimes do not seem to support their superceding objectives. For example, for this outcome DOE presents the strategic objective to “develop alternative transportation fuels and more efficient vehicles that can reduce year 2010 projected oil imports...by 5 percent.” The Department supports this objective with four performance goals for fiscal year 2000, such as “complete solicitation for, and selection of, candidate industrial teams for the Entry Entrance Coproduction Plant Project....” Although DOE states that it has met this goal, it is difficult to tell how much closer the accomplishment of this goal brings the Department to meeting its

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<sup>4</sup>Key elements of modern human capital management include strategic human capital planning and organizational alignment; leadership continuity and succession planning; acquiring and developing staffs whose size, skills, and deployment meet agency needs; and creating results-oriented organizational cultures.

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objective of reducing oil imports by 5 percent. In addition, the achievement of this outcome relies on strategic objectives, such as “boosting the nation’s production of domestic oil,” that are determined more by market forces than DOE’s actions. Although the Department discusses the influence of factors such as world oil prices in its fiscal year 2002 performance plan, these factors are not mentioned in the accountability report. Thus, it is unclear whether DOE considered them when assessing the relevance of its performance goals in achieving its longer term strategic objectives.

DOE’s fiscal year 2002 performance plan describes a multitude of strategies for achieving secure and competitive energy systems that serve the needs of the public.<sup>5</sup> These strategies include (1) conducting research and development to increase the generating capacity and use of renewable energy system; (2) maintaining an effective Strategic Petroleum Reserve; (3) collaborating with industry to develop large, high efficiency, advanced power systems; (4) performing research and development to improve the performance of older fossil and nuclear power plants; and (5) promoting the use of alternative fuel vehicles in selected markets and increasing refueling infrastructure for alternative fuels. In some cases, these strategies provide a clear description of DOE’s approach for reaching its general performance goals. For example, for its general goal, “conducting R&D [research and development] to increase the use of renewable, distributed and hybrid energy systems,” the Department provides a strategy that seeks to improve the reliability of the electricity infrastructure system through “development of real time control and information systems” and “increasing the production of high temperature superconducting wires.” This strategy provides the detail necessary to understand the types of research the Department is pursuing to achieve this goal. However, for most of the strategies within this outcome, the plan uses language that is vague and seems little more than a restatement of a general performance goal. For instance, one of the Department’s general performance goals is to “enhance the economics and environmental performance of electricity generation by expanding the use of multi-product facilities that can also produce heat, clean fuels, and/or chemical products.” The Department’s strategy for reaching this goal is to “promote power systems R&D [research and development] that incorporates a focused and collaborative effort between government and industry to

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<sup>5</sup>For this particular outcome, we cite descriptions of general performance goals as strategies because they explain in general terms how DOE plans to achieve this outcome.



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achieve the environmental and economic goals of the technologies.” This description provides little information about the steps DOE intends to take or its intended level of effort in this area. In those cases where the Department describes its strategy it uses words such as “developing,” “promoting,” or “enhancing” without specific details about the actions that will be taken, consequently, almost any action DOE takes could probably satisfy the strategy.

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## Efficiency of Energy Use and Limiting Environmental Impacts

In its fiscal year 2000 performance and accountability report, DOE reports continued progress toward achieving its outcome to increase the efficiency and productivity of energy use, while limiting environmental impacts. In the fiscal year 2000 report, this key outcome is included as one of the objectives under the outcome discussed above. Consequently, many of the concerns—such as lack of clarity—that we have identified for the prior outcome also apply to this one. For example, in its report, DOE presents for this outcome, the strategic objective “by 2010, improve the building stock by reducing annual energy consumption by 2 quadrillion Btu relative to what would have been consumed.” DOE supports this objective with five performance goals such as “recruit 5 utility partners to promote Energy Star products; an additional 2,100 retail stores to promote Energy Star products; and 40 window partners to promote Energy Star windows.” However, this goal appears to be remote from and indirectly related to its superceding objective, and it is difficult to tell how meeting this goal will bring the Department closer to achieving its objective. Moreover, several of the performance goals under this outcome entail significant involvement of private industry or academia. It is therefore difficult to determine, based on the material DOE presents in the performance report, precisely what the Department’s contribution was to the achievement of this outcome. As a result, the report does not provide a good indicator of what DOE has accomplished to achieve this outcome.

To achieve this outcome, DOE includes several key strategies in its fiscal year 2002 performance plan, including: (1) conducting research and development to assist the introduction of lightweight materials and fuel cells for vehicles of the future; (2) developing products that increase the efficiency of residential and commercial buildings; and (3) developing technologies, as well as providing financial and technical assistance, that will assist energy-intensive industries such as agriculture and steel. In most cases, these strategies clearly describe the Department’s approach for achieving its general performance goals for this outcome. For example, the performance goal, “designing and delivering the vehicles of the future,” contains a strategy that will, among other things, focus on the use of

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lightweight materials and enhance marketability through decreases in battery costs for electric vehicles and the cost of fuel cell systems. This strategy provides a clear picture of the technologies that the Department has targeted to achieve its performance goal. Most of the strategies for this outcome provide a level of detail that helps the reader understand how the Department intends to reach its goals and what collaborative efforts DOE plans to undertake with other entities to achieve this outcome. Moreover, the strategies provide an important conceptual linkage between the more general strategic objectives and the more narrow annual performance goals.

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## Cleanup of Contaminated Nuclear Weapons and Research Sites

DOE reported progress toward clean up of its contaminated nuclear weapons and research sites, which is the key outcome under the Department's Environmental Quality business line. In its fiscal year 2000 performance and accountability report, DOE claimed success in meeting its annual performance measures for five of the six strategic environmental quality objectives. Overall, DOE's cleanup performance goals clearly supported their respective objectives and represented both final outcome and intermediate annual goals used to track progress in an ongoing cleanup effort that will take decades to complete. The annual performance goals used were relevant and, where appropriate, quantified. For example, under the objective "to clean up as many as possible of the Department's 44 remaining contaminated geographic sites by 2006," DOE reported progress in achieving this objective by, among other things, completing cleanup at two geographic sites and deploying 202 new technologies that will expedite other site cleanup efforts. Under another objective, "to safely and expeditiously dispose of waste generated by nuclear weapons and civilian nuclear research and development programs," DOE reported exceeding waste-volume disposal goals for various types of radioactive wastes and resolving delays that prevented meeting goals for waste shipments to the newly opened repository in New Mexico.

While DOE's performance measures were generally relevant and appropriate, we noted three areas of weakness. First, in some cases, DOE's assessment of performance measures did not match actual performance. For example, DOE reported meeting a measure to complete cleanup at two geographic sites, despite noting that additional work was identified at one of those sites. We question whether DOE should count as complete any site where additional work was identified. Second, DOE did not always provide adequate information on what efforts it undertook to ensure data validation and verification—especially for some site-related

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measurement data that appeared questionable. For example, DOE did not discuss the reliability of the reported number for new technology deployments—which was triple the goal. We have previously noted problems with verification of site-reported new technology deployments and whether they meet the Department’s criteria for counting as full deployments.<sup>6</sup> Third, DOE did not provide adequate explanation for some significant shortfalls in performance. For example, under its objective to reduce the most serious risks first, DOE reported that progress in a key goal—moving spent nuclear fuel to dry storage—was below expectations. DOE explained that “only one transfer was completed because of multiple operational and regulatory issues.” In fiscal year 1999, DOE stated that failure to meet the same measure was due to activities being greatly affected by a nuclear safety issue. Therefore, it is not clear whether DOE missed its target in fiscal year 2000 because of new problems or because of the continuation of problems from the previous year.

Generally, DOE’s fiscal year 2002 performance plan includes strategies for the Environmental Quality business line that focus on activities for six objectives and provide brief discussions of priorities, program direction, and collaboration with other agencies. For example, for the technology development and deployment objective, the plan states “investments in science and technology will continue to be planned and managed in an interactive, coordinated, participatory relationship with EM cleanup project managers and stakeholders.” Activities will not be funded unless they address priority needs, reduce the cost of cleanup projects and technological risk, accelerate and increase technology deployment, or contribute to a targeted scientific research agenda. However, we noted two areas of weakness in DOE’s fiscal year 2002 strategies for achieving the objectives under this key outcome. First, DOE did not always highlight known problems with its strategies. For example, under the waste management objective, the plan stated that DOE would continue to ship nuclear waste to New Mexico for disposal and continue operations to produce disposal-ready, high-level waste canisters. However, the plan did not mention the obstacles to the nuclear waste shipments or problems encountered with the Hanford site high-level waste stabilization project that were discussed in the fiscal year 2000 performance report. Similarly, the plan does not address DOE’s ongoing problems with development of alternatives to the failed tank waste separation project at the Savannah

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<sup>6</sup> *Nuclear Waste: Further Actions Needed to Increase the Use of Innovative Cleanup Technologies* (GAO/RCED-98-249, Sept. 25, 1998).

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River site. Both GAO and the National Research Council have reported management problems with this project.<sup>7</sup> Second, DOE's strategies did not always address how the Department would correct performance shortfalls that were very briefly addressed in the fiscal year 2000 performance report. For example, DOE reported shortfalls under its objective to "reduce risks to workers..." but offered limited corrective action plans for the two goals under this objective. The Department claimed that the "operational and regulatory issues for the spent nuclear fuel transfer problem" have been "resolved" and that "recovery plans are being developed" to meet commitments to stabilize the inventory of plutonium. Such corrective action statements do not provide information as to the nature of DOE's corrective efforts and do not convey the extent to which further problems may be experienced in meeting these goals and the related objective. In fact, the Department's baselines and outside reviews indicate that DOE is not likely to meet its plutonium stabilization goals at the Rocky Flats Environmental Technology Site. Moreover, we recently reported that the Rocky Flats plutonium stabilization program was a significant and complex challenge and that there was significant uncertainty as to whether the plutonium stabilization program would successfully meet its milestones.<sup>8</sup>

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## National Nuclear Security and the Global Danger from Weapons of Mass Destruction

Overall, DOE reported mixed progress in its efforts to further strengthen national security and reduce the global danger from weapons of mass destruction, which is the key outcome under its National Nuclear Security business line. DOE's efforts toward achieving this key outcome included the Stockpile Stewardship Program, security improvements, the Naval Reactors program, and nonproliferation and international nuclear security efforts.<sup>9</sup> DOE reported progress for many of these efforts but also highlighted the need for further work in the same areas. For example, although DOE was able to certify that the nation's nuclear weapons

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<sup>7</sup> *Nuclear Waste: Process to Remove Radioactive Waste From Savannah River Tanks Fails to Work* (GAO/RCED-99-69, Apr. 30, 1999). *Alternatives for High-Level Waste Salt Processing at the Savannah River Site*, Committee on Cesium Processing Alternatives for High-Level Waste at the Savannah River Site, National Research Council (2000).

<sup>8</sup> *Nuclear Cleanup: Progress Made at Rocky Flats, but Closure by 2006 Is Unlikely, and Costs May Increase* (GAO-01-284, Feb. 28, 2001).

<sup>9</sup> Most of these efforts fall under the responsibility of the newly created National Nuclear Security Administration (NNSA), although DOE's Security and Emergency Operations Office has the lead role in developing security policy and overseeing security-related functions.

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stockpile remains safe and reliable, its Stockpile Stewardship Program continued to have a mixed record in meeting its strategic goals and performance targets. The Department reported meeting its goals for some of its most important programs and projects such as tritium production and maintaining testing readiness at the Nevada test site. Nevertheless, the Department also reported that for the second straight year it had not been able to meet all of its weapons maintenance and refurbishment schedules and that not all of its facilities required by the Stockpile Stewardship Program were fully operational. In the security area, DOE reported that it was making progress in improving the security of its nuclear materials, facilities, and sensitive information. While progress is evident, DOE also acknowledges that many actions have to be fully implemented, finalized, and allowed to mature. We note, however, that implementation has historically been the weak link in improving DOE security.<sup>10</sup> Many of the policies, procedures, and technologies mentioned will have to be fully implemented and sustained throughout DOE to show meaningful results. Finally, DOE reported that it had made progress in reducing the global danger from weapons of mass destruction through its nonproliferation and international safety programs. DOE noted particular progress in supporting arms control efforts, developing nonproliferation technology, minimizing the risks of proliferation from the former Soviet Union, and improving the safety of Soviet-designed reactors. However, DOE reported a more mixed record of progress in its fissile materials disposition

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<sup>10</sup> *Nuclear Security: Information on DOE's Requirements for Protecting and Controlling Classified Documents* (GAO/T-RCED-00-47, July 11, 2000); *Department of Energy: National Security Controls Over Contractors Traveling to Foreign Countries Need Strengthening* (GAO/RCED-00-140, June 26, 2000); *Information Security: Vulnerabilities in DOE's Systems for Unclassified Civilian Research* (GAO/AIMD-00-140, June 9, 2000); *Nuclear Security: Security Issues at DOE and Its Newly Created National Nuclear Security Administration* (GAO/T-RCED-00-123, Mar. 14, 2000); *Department of Energy: Views on DOE's Plan to Establish the National Nuclear Security Administration* (GAO/T-RCED-00-113, Mar. 2, 2000); *Nuclear Security: Improvements Needed in DOE's Safeguards and Security Oversight* (GAO/RCED-0062, Feb. 24, 2000); *Department of Energy: Key Factors Underlying Security Problems at DOE Facilities* (GAO/T-RCED-99-159, Apr. 20, 1999); and *Department of Energy: DOE Needs to Improve Controls Over Foreign Visitors to Weapons Laboratories* (GAO/T-RCED-99-28, Oct. 14, 1998).

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programs, an area DOE recognizes as a departmental challenge.<sup>11</sup> DOE reported continued problems with access to Russian facilities and slower than expected progress in the design of U.S. plutonium disposition facilities.

However, DOE's reported progress for the national security outcome was not always clear because of several shortcomings in the Department's goals, objectives, and measures. First, in some cases, there are missing goals and measures for important efforts under this outcome. For example, there is no explanation, other than the acknowledgement of some organizational and logistical issues, and no goals or measures that focus on fully establishing NNSA and implementing NNSA-led initiatives in the areas of reorganization, human capital, and planning and budgeting. Also, while the report refers to the important role for human capital in maintaining the vitality of DOE's national security enterprise, it contains no direct human capital performance measures for the Stockpile Stewardship Program. Second, some of DOE's measures are process-oriented and do not always provide an assessment of real, meaningful, and measurable improvements in performance. For example, DOE's Office of Counterintelligence reported that it performed 11 inspections during fiscal year 2000, but it failed to note what security improvements resulted from these inspections. Third, DOE uses some performance measures that fail to clearly state how they link to the relevant strategic objective. For example, DOE fails to explain how the installation of safety parameter display systems and simulators improves the safety of Soviet-designed reactors. Likewise, the Department does not explain the roles that the planned mixed oxide fuel fabrication facility and the pit disassembly and conversion facility will play in the disposition of excess plutonium. Without detailed knowledge of these programs, these measures have limited value. Finally, DOE did not provide much information on actions to validate and verify the reported progress or how the Department will collaborate with other public and private entities for the national security-related outcome. This is especially notable in the nonproliferation and

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<sup>11</sup> *Nuclear Nonproliferation: Security of Russia's Nuclear Material Improving; Further Enhancements Needed* (GAO-01-312, Feb. 28, 2001); *Nuclear Nonproliferation: Implications of the U.S. Purchases of Russian Highly Enriched Uranium* (GAO-01-148, Dec. 15, 2000); *Nuclear Nonproliferation: Limited Progress in Improving Nuclear Material Security in Russia and the Newly Independent States* (GAO/RCED/NSIAD-00-82, Mar. 6, 2000); *Weapons of Mass Destruction: U.S. Efforts to Reduce Threats from the Former Soviet Union* (GAO/T-NSIAD/RCED-00-119, Mar. 6, 2000); *Nuclear Nonproliferation: Status of Transparency Measures for U.S. Purchase of Russian Highly Enriched Uranium* and (GAO/RCED-99-194, Sept. 22, 1999).

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international nuclear safety strategic objectives, where DOE's programs are part of a much broader, multiorganizational U.S. government effort.

DOE's fiscal year 2002 performance plan continues with many of the strategies that were in place in fiscal year 2001. DOE's discussion of general goals in the fiscal year 2002 plan is a useful addition to understanding its programs. However, despite progress in outlining strategies toward its general goals, DOE's strategies for measuring progress toward more specific objectives continue to have shortcomings. For example, while the fiscal year 2002 plan mentions the creation of NNSA and notes that ongoing high-level reviews of national security have the potential to affect performance goals for fiscal year 2002 and beyond, the plan does not discuss this as a challenge, nor does it include any dedicated performance objectives or measures for establishing NNSA. This is surprising because NNSA is in the process of implementing changes to its management, planning and budgeting, organizational alignment, and human capital that have the potential to address some of the major management challenges that we and others have identified at DOE. Similarly, DOE's strategy for measuring two of its most important Stockpile Stewardship objectives—conducting campaigns<sup>12</sup> and ensuring the vitality of its national security enterprise—raises questions. DOE proposes measuring these goals through meeting (1) milestones in 17 campaign plans and (2) facility operating plans and construction schedules in facility operation plans. While our recent review noted that DOE has a multitude of plans and planning levels, historically DOE's planning efforts have not been integrated and have not been linked or integrated with management controls such as budgets and contracts.<sup>13</sup> Although there are planning and budgeting initiatives underway at NNSA to correct these shortcomings, there are no objectives or performance measures included in the fiscal year 2002 plan for these initiatives. Until these planning and budgeting initiatives are successfully implemented, DOE's existing plans and milestones may not be adequate indicators of performance.

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<sup>12</sup> Campaigns are technically challenging, multiyear, multifunctional efforts conducted across the nuclear weapons complex. They are designed to develop and maintain the critical capabilities needed to enable the continued certification of the stockpile into the foreseeable future, without underground testing. Campaigns have milestones and specific end-dates or goals, effectively focusing research and development activities on clearly defined deliverables.

<sup>13</sup> *Nuclear Weapons: Improved Management Needed to Implement Stockpile Stewardship Program Effectively* (GAO-01-48, Dec. 14, 2000).

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## Science and Technology Innovations

DOE's fiscal year 2000 performance and accountability report indicates that the Department is making progress toward achieving the outcome of improving the management of its research activities at reduced costs, which is a key outcome under the Science business line. In its fiscal year 2000 report, DOE states that it met or exceeded all but one of its seven goals related to this outcome. The goals for this outcome addressed a range of activities from Fusion Energy Sciences, Biological and Environmental Research, Basic Energy Sciences, and Advanced Computing Research. For the goal that was "nearly met," DOE provided a plan of action to address the increased demand for computer resources. However, while DOE may be making progress toward achieving science and technology innovations, it is impossible to tell precisely how much progress has been made based on the information presented in the fiscal year 2000 performance report. This is because annual performance goals and measures for this outcome vary in clarity and descriptiveness, and the level of detail in the results sections vary by program with little consistency among them.

Although Office of Management and Budget (OMB) guidance requires that performance measures be described in terms understandable to the casual reader, DOE has not applied this requirement consistently to its science-related outcome. For example, one of the strategic objectives that supports this outcome is to "manage the national laboratories, science-user facilities, and other DOE research providers and research facilities in a more integrated, responsive, and cost-effective way, building on unique core strengths and corresponding roles. Design, construct and operate research facilities in a timely and cost-effective manner." To achieve this objective, DOE presents various performance goals, including to "operate the DIII-D Tokamak facility to test the feasibility of using increased radio frequency heating power and improved power exhaust capabilities to extend the pulse length of advanced operating modes, a requirement for future fusion energy sources." DOE states that "about one half of the new rf [radio frequency] sources became available early this year, and these were used in initial experiments in June." DOE indicates that it met the goal and provides some brief elaboration on the experiments conducted that made "progress towards extending the pulse length of advanced operating modes." Contrary to the OMB guidance, the language used in this description is laden with jargon and is not easy to comprehend.

In contrast, for other performance goals for this objective, such as "obtain data from the second station on the North Slope of Alaska, and make operational the third station in the Tropical Western Pacific on Christmas Island," DOE presents significantly greater detail that is relatively easily to



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understand. For example, DOE explains that these data are targeted at improving climate prediction and a description of data collection efforts that meet most of the elements associated with this performance goal are presented. In addition, DOE indicates that the third station on Christmas Island was deemed unacceptable due to infrastructure improvements that were expected by the Japanese but not completed. A description of why the third station was not completed is provided as well as the steps necessary for installing a new third station.

DOE has significantly revised the materials presented in the fiscal year 2002 performance plan for the Science business line. However, the outcome “science and technology innovations are achieved at reduced costs” is not included as an outcome in the fiscal year 2002 plan, and the new outcomes or objectives included in the plan do not specifically address whether DOE’s science and technology innovations will be achieved at reduced costs. Instead, the new strategies included in the plan address such topics as leadership, foundations, and break throughs in the physical sciences; environmental protection and cleanup; exploring matter and energy at the atomic scale; and providing the infrastructure and workforce to support the physical, biological, environmental, and computational sciences. Some indications on cost savings may be provided through the new set of performance indicators that the Office of Science has established for all of its program activities and plans. These indicators address excellence and relevance, leadership, quality, safety, and health. DOE plans to report on these indicators in 2002. The quality indicator provides an example of how DOE may address the issue of reduced cost through the new indicators. For the quality indicator, DOE states that it expects at least 80 percent of new research projects to be peer reviewed and that all future scientific user facility upgrades and construction must be within 10 percent, on average, of cost and schedule milestones. Finally, for the science outcome, the plan includes several relevant targets for the human capital challenge. For example, the Office of Science is offering graduate fellowships to support the next generation of leaders in computational sciences and using expert panels and peer review committees as a regular evaluation tool to supplement existing DOE staff expertise and ensure that research is focused and outstanding.

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## Comparison of DOE's Fiscal Year 2000 Performance Report and Fiscal Year 2002 Performance Plan With the Prior Year Report and Plan for Selected Key Outcomes

For the selected key outcomes, this section describes major improvements or remaining weaknesses in DOE's (1) fiscal year 2000 performance report in comparison with its fiscal year 1999 report, and (2) fiscal year 2002 performance plan in comparison with its fiscal year 2001 plan. It also discusses the degree to which the agency's fiscal year 2000 report and fiscal year 2002 plan addresses concerns and recommendations by the Congress, GAO, OIG, and others.

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## Comparison of Performance Reports for Fiscal Years 1999 and 2000

DOE has made some improvements in its fiscal year 2000 performance and accountability report when compared to its fiscal year 1999 report. The fiscal year 2000 report organizes detailed performance results by departmental decision unit to better track with the budget. It also provides cross-references so that the reader can easily find the annual performance goals associated with particular outcomes. The fiscal year 2000 report also has improved linkages between performance objectives and funding because it provides a crosswalk between the performance goals and the DOE budget decision units that fund specific programs.

However, like the fiscal year 1999 report, the fiscal year 2000 report still does not consistently present a clear picture of what the Department has accomplished for its major business lines or how it plans to get there. For example, both reports mention the creation of NNSA, but neither includes any goals or performance measures associated with the establishment of NNSA. Similarly, both reports tend to provide very few performance measures for the Stockpile Stewardship Program, relative to the other programs within this business line. Furthermore, neither report provides much information on DOE's actions to validate and verify the reported progress or strategies for measuring progress; nor do they provide much information on DOE's collaboration and coordination activities with other federal agencies. In addition, for both fiscal years, the information provided for annual performance goals and measures for some outcomes varies significantly. Some program-level goals and measures are very detailed and others more general. This variance makes it difficult for the reader to gain an overall perspective of progress within a particular outcome. In addition, sometimes they are so narrowly drawn that, without

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additional information on strategies or longer term goals, it is difficult to determine the Department's objectives or means for achieving them.

Finally, the OIG noted that, overall, DOE's fiscal year 1999 performance measures did not include cost-effectiveness attributes. This observation continues to apply to some of the outcomes in the fiscal year 2000 report. For example, while the environmental quality indicators in the fiscal year 2000 report are good measures of program outputs, they do not capture overall cost-effectiveness or other Department-wide objectives, such as safety and integration of similar cleanup activities among sites. Without such measures that address competing concerns, DOE's performance measures can have unintended consequences. For example, for several years DOE has reported successfully meeting cleanup production goals at the Defense Waste Processing Facility in Savannah River. However, the Defense Nuclear Facilities Safety Board recently expressed concern that large volumes of wastewater from this activity were straining the high level waste tank capacity and reducing the margin of safety at the site.

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### Comparison of Performance Plans for Fiscal Years 2001 and 2002

In our previous reviews of DOE's performance plans, we identified the following weaknesses: (1) DOE's plans did not provide reasons why individual objectives, performance goals, or measures were revised, dropped, or added and (2) some of the performance goals and measures lacked clarity and quantification, making it hard to get a clear picture of intended performance. Our review of DOE's fiscal year 2002 performance plan found that for some outcomes these weaknesses generally remain. While DOE has made an effort to highlight changes to objectives, goals, and measures in the fiscal year 2002 plan, it did not do so in all cases. For example, with minimal explanation the plan dropped some of the Environmental Quality objectives from the previous year, and it no longer has any general or annual performance goals related to (1) long-term stewardship, even though one of the new Environmental Quality strategic objectives specifically refers to such stewardship activities, and (2) pollution prevention, although the plan continues to mention pollution prevention goals under its discussion of waste management strategies. While performance goals should be periodically modified, the Department's accountability would be improved by explaining why these kinds of major revisions occurred.

The Department's fiscal year 2002 performance plan also contains a new item—general performance goals for each budgetary decision unit. This represents a significant improvement over the fiscal year 2001 plan, which failed to link many of the performance indicator results with a specific

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performance objective and therefore obscured the linkage between annual performance and progress toward long-term objectives. The Department states that it included these goals as a way to develop indicators of long-term outcomes. For example, under each general performance goal for the business lines the plan describes the performance indicators that will be used to measure progress for that goal. However, the general performance goals in the fiscal year 2002 performance plan often use words such as “promote,” “develop,” and “enhance” that do not provide a clear idea of how the Department intends to reach its goals. Furthermore, the Department has reduced the number of performance measures associated with most of its goals for both fiscal years. For some goals, the lack of an adequate number of performance measures may lead to future difficulties in fully measuring DOE’s progress in achieving these goals. For some outcomes, such as the national security outcome, the plan states that additional performance indicators for its general goals are in development. It is therefore possible that additional performance measures for some programs may be included in DOE’s final plan. As it currently stands, there are no performance measures for DOE’s Intelligence and Counter Intelligence efforts, and only one broad measure—in use since fiscal year 2000—for DOE’s Security and Emergency Operations.

Finally, although DOE’s fiscal year 2002 performance plan improved its discussion of data validation and verification by discussing the data systems under each program office, the plan falls short of disclosing specific performance data limitations or providing instances where DOE did not verify site-reported data. Such data limitations could be significant in validating the Department’s reported progress. Recently, the Chairman of the House Government Reform Committee affirmed the importance of valid and accurate performance data by requesting the OIG to verify reported data for significant performance measures. The OIG review of 10 selected performance measures found inadequate documentation to validate the results for two measures.

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## DOE’s Efforts to Address its Major Management Challenges Identified by GAO

GAO has identified two governmentwide high-risk areas: strategic human capital management and information security. Regarding strategic human capital management, we found that DOE’s performance report explained its progress in resolving this management challenge for only some of its business lines and that the performance plan did not consistently include goals and measures related to this management challenge for all of its business lines. For example, in its fiscal year 2000 accountability report, DOE reports favorable progress in meeting the strategic human capital management challenge for the science outcome, but it does not provide

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this information for the other outcomes. This is particularly notable for the Environmental Quality outcome, where we have reported that DOE faces significant human management challenges in its oversight of large projects such as the cleanup of hazard waste sites. However, the report did not include specific Environmental Quality goals or measures to address this challenge. In May 2001, the OIG reported that DOE's fiscal year 2000 accountability report did not have any agencywide performance measures that would address its considerable human capital challenge. Similarly, in DOE's fiscal year 2002 performance plan, while the science-related outcome includes goals and measures for strategic human capital management challenges the other outcomes do not. With respect to information security, we found that DOE identified security, which includes cyber and information security, as a departmental challenge in its fiscal year 2000 report and fiscal year 2002 plan, and launched a number of initiatives designed to protect its nuclear materials, facilities, and sensitive information. Overall, the Department reports that it is making progress in improving security. While some progress is evident, some of DOE's performance measures are process-oriented and do not always provide an assessment of real, meaningful, and measurable improvements in information security. Moreover, it appears that most of DOE's security related performance measures for fiscal year 2002 are still under development.

In addition, GAO has identified six major management challenges facing DOE. We found that DOE recognized almost all of the management challenges that we identified as departmental challenges in its fiscal year 2000 report and fiscal year 2002 plan. DOE's performance report generally discussed the Department's progress in resolving most of its management challenges for some of its business lines. However, the level of detail provided across the key outcomes varies extensively, and it is not always possible to comprehensively assess DOE's progress in resolving these management challenges. Of the six major management challenges GAO identified, DOE's fiscal year 2002 performance plan included (1) goals and measures that directly related to one of the challenges, (2) goals and measures that indirectly related to three of the challenges, and (3) no goals and measures related to two of the management challenges.

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## Scope and Methodology

As agreed, our evaluation was generally based on the requirements of GPRA, the Reports Consolidation Act of 2000, guidance to agencies from the Office of Management and Budget for developing performance plans and reports (OMB Circular A-11, Part 2), previous reports and evaluations by us and others, our knowledge of DOE's operations and programs, GAO

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identification of best practices concerning performance planning and reporting, and our observations on DOE's other GPRA-related efforts. We also discussed our review with agency officials in DOE's Office of Policy, OIG, and the Chief Financial Officer. The agency outcomes that were used as the basis for our review were identified by the Ranking Minority Member, Senate Governmental Affairs Committee, as important mission areas for the agency and generally reflect the outcomes for most of DOE's programs or activities. The major management challenges confronting DOE, including the governmentwide high-risk areas of strategic human capital management and information security, were identified by GAO in our January 2001 performance and accountability series and high risk update, and were identified by DOE's Office of Inspector General in December 2000. We did not independently verify the information contained in the performance report and plan, although we did draw from other GAO work in assessing the validity, reliability, and timeliness of DOE's performance data. We conducted our review from April 2001 through June 2001 in accordance with generally accepted government auditing standards.

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## Agency Comments

We provided copies of a draft of this report to DOE for its review and comment. On June 22, 2000, senior officials from DOE's Office of Strategic Planning and Evaluation provided oral comments on the draft report. Overall, the DOE officials stated that the report was well balanced in its description of the strengths and weaknesses of the performance report and plan. However, the officials made two specific comments. First, with regard to the performance plan, the officials felt that DOE had made significant progress in clearly identifying the objectives, goals, and measures that had been revised from the prior year's plan. They did not believe that the plan had to identify reasons for every change made to the objectives, goals, and measures. In particular, they noted that because the performance plan is closely linked to DOE's strategic plan, many of the changes to the fiscal year 2002 plan were a result of changes made to the strategic plan. Because the changes to the strategic plan have already been through an extensive comment and review process, the DOE officials stated that it was not necessary to revisit the reasons for these changes in the performance plan. We have modified the report to acknowledge DOE's efforts to highlight changes to its objectives, goals, and measures in the fiscal year 2002 plan. Secondly, the DOE officials noted that the key outcomes that GAO was asked to review were quite broad and not easily quantifiable. Thus, they believe that it would be difficult to evaluate the Department's progress in achieving these key outcomes without detailed program evaluations. The officials stated that they would like to see the

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nature of GAO's GPRA-related reviews expand to more detailed program evaluations rather than limited to reviews of planning and reporting documents. They said that such reviews would be more helpful in further refining their GPRA related reporting and planning practices. We agree that performance evaluations are a logical step in evaluating an agency's progress in achieving its key outcomes. Consequently, our review of DOE's performance report and plan relied extensively on previous reports and evaluations by us and others, our knowledge of DOE's operations and programs, and our identification of best practices concerning performance planning and reporting. Moreover, GPRA requires agency's to conduct systematic performance evaluations on a regular basis so that they can determine whether their programs have achieved the intended objectives.

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As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to appropriate congressional committees; the Secretary of Energy; and the Director, Office of Management and Budget. Copies will also be made available to others on request.

If you or your staff have any questions, please call me at (202) 512-3841. Key contributors to this report were Mark Gaffigan, Jonathan Gill, Anu Mittal, Diane Raynes, Patricia Rennie, and Daren Sweeney.

Sincerely yours,



Jim Wells  
Director, Natural Resources and Environment

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# Appendix I: Observations on the Department of Energy's Efforts to Address Its Major Management Challenges

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The following table identifies the major management challenges confronting the Department of Energy (DOE), which includes the governmentwide high-risk areas of strategic human capital management and information security. The first column lists the challenges that we and/or DOE's Office of Inspector General (OIG) have identified. The second column discusses what progress, as discussed in its fiscal year 2000 performance report, DOE made in resolving its challenges. The third column discusses the extent to which DOE's fiscal year 2002 performance plan includes performance goals and measures to address the challenges that we and the OIG identified. DOE's performance report generally recognizes almost all of the management challenges that GAO and others have identified as departmental challenges in its fiscal year 2000 report and fiscal year 2002 plan. We found that DOE's performance report discussed the agency's progress in resolving most of the management challenges for some of its business lines. However, the level of detail provided across the key outcomes varied extensively, and it is not always possible to comprehensively assess DOE's progress in resolving these management challenges. For example, we could not determine the level of progress that had been made in resolving management challenges relating to the establishment of the National Nuclear Security Administration. Of DOE's 12 major management challenges identified by both GAO and OIG, the fiscal year 2002 performance plan included (1) goals and measures that directly related to three of the challenges, (2) goals and measures that indirectly related to six of the challenges, and (3) no goals and measures that related to three of the management challenges.



**Appendix I: Observations on the Department of Energy's Efforts to Address Its Major Management Challenges**

**Table 1: Major Management Challenges for the Department of Energy**

Major management challenge	Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report	Applicable goals and measures in the fiscal year 2002 performance plan
<b>GAO-designated governmentwide high risk</b>		
<p><u>Strategic human capital management</u>: GAO has identified shortcomings at multiple agencies involving key elements of modern strategic human capital management, including strategic human capital planning and organizational alignment; leadership continuity and succession planning; acquiring and developing staff whose size, skills, and deployment meet agency needs; and creating results-oriented organizational cultures.</p> <p>(DOE's OIG has also identified strategic human capital management as a management challenge for the agency.)</p>	<p>DOE's fiscal year 2000 report recognizes human capital management as a departmental challenge. However, only two of the four business lines included any goals and measures to address human capital challenges in the report.</p> <p>DOE's Science business line articulates the importance of having the scientific workforce to ensure leadership in the physical, biological, environmental, and computational sciences. Also, under the National Security business line, the report contained one human capital goal in its discussion of nonproliferation goals, but no direct measures for this challenge. Thus, overall, it is difficult to assess what progress DOE as an agency has made in addressing this challenge.</p>	<p>DOE's fiscal year 2002 plan generally does not include goals or measures for the human capital management challenge for three of the four business lines. For the Science business line, the plan does include several relevant targets for the human capital challenge. For example, the Office of Science is offering graduate fellowships to support the next generation of leaders in computational sciences and using expert panels and peer review committees as a regular evaluation tool to supplement existing DOE staff expertise and ensure that research is focused and outstanding.</p>
<p><u>Information security</u>: GAO's January 2001 high-risk update noted that the agencies' and the government's efforts to strengthen information security have gained momentum and expanded. Nevertheless, recent audits continue to show federal computer systems are riddled with weaknesses that make them highly vulnerable to computer-based attacks and place a broad range of critical operations and assets at risk of fraud, misuse, and disruption.</p>	<p>In its fiscal year 2000 performance report, DOE recognized information security as a departmental challenge. In its report, DOE stated it had met its goals on two performance measures designed to improve information security. In addition, DOE reported that it had completed five critical milestones in its Federal Managers Financial Integrity Act (FMFIA) Corrective Action plan designed to improve its information and cyber security. While some progress is evident, most of these measures appear more process- and activity- instead of outcome-oriented.</p> <p>DOE's independent auditor's report for fiscal year 2000, included in the fiscal year 2000 performance report, identified unclassified information system security as a reportable weakness because of repeated network vulnerabilities and access control weaknesses.</p>	<p>In its fiscal year 2002 performance plan, DOE continues to identify security as a departmental challenge. In its statement of general performance goals, DOE describes a number of activities designed to modernize its information security programs to analyze and deter major incidents involving the compromise of classified information. Nevertheless, DOE does not provide a readily accessible and clear picture of how it intends to measure progress on this important goal, since it has few dedicated information security performance measures. Nor does the plan address recognized weaknesses in DOE's unclassified information systems.</p>

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Major management challenge	Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report	Applicable goals and measures in the fiscal year 2002 performance plan
<b>GAO-designated major management challenges</b>		
<p><u>Financial management</u>: For the past 2 years, the independent auditor's report on DOE's consolidated financial statements has reported financial management concerns at the Western Area Power Administration (WAPA). WAPA markets and transmits electric power and provides related services.</p>	<p>DOE's independent auditor's report for fiscal year 2000, included in the fiscal year 2000 performance report, identified financial management at WAPA as a reportable condition. The report notes that WAPA has made improvements over the past year but is still exposed to potential loss of data integrity, reporting inaccuracies, and operational inefficiencies. However, DOE did not list this as a departmental challenge in its fiscal year 2000 performance report.</p>	<p>DOE's fiscal year 2002 plan included a goal to manage financial resources to achieve an independent auditor's unqualified opinion in the Department's annual audit. However, DOE did not address the reportable condition for financial management at WAPA as a targeted measure in its plan under this goal. Addressing the reportable condition would be an appropriate target to assist in meeting the objective of receiving an unqualified audit opinion in the future. The only performance measure included in the plan for this objective is complete implementation of their Business Management Information System nationwide by fiscal year 2002.</p>
<p><u>Nonproliferation issues</u>: Achieving nonproliferation goals requires improved priority setting and program coordination. GAO identified three main challenges that DOE's nonproliferation programs face. These include obtaining better access to information and Russian nuclear weapons laboratories to better target program resources to the greatest risks, verifying the use of program funds, and coordinating several DOE programs involving the newly independent states to increase their effectiveness. Our reviews of DOE's nonproliferation programs recognize that there are inherent difficulties involved in working with Russia and the other newly independent states.</p>	<p>While DOE has over 30 performance measures spread out over three strategic goals related to reducing the global danger from weapons of mass destruction and improving international safety, very few of these measures specifically addressed the management challenges we identified for this area.</p> <p>DOE's report, however, recognized that the disposition of U.S. and Russian surplus fissile materials was a departmental challenge. DOE's report contained 11 performance measures related to this challenge and stated that the Department had made mixed progress in disposing of surplus fissile materials. Several important activities, such as installing monitoring equipment at Russian highly enriched uranium (HEU) conversion facilities and completing title I design of two plutonium disposition facilities fell behind schedule. The Department's performance measures do not convey a coherent picture of the strategy for disposing of surplus U.S. plutonium.</p>	<p>While DOE continues to have a number of performance measures related to reducing the global danger from weapons of mass destruction and improving international safety in its fiscal year 2002 plan, very few of these measures specifically address the management challenges we identified for this area. Within the performance plan, however, there is evidence that DOE has been working actively with Russia and other nations to improve access to information and facilities. For example, DOE officials plan to initiate technical discussions with Russian officials on the installation of monitoring equipment at a Russian HEU conversion facility.</p> <p>The fiscal year 2002 plan continues to recognize that the disposition of U.S. and Russian surplus fissile materials is a departmental challenge. For the plan, DOE has seven performance measures related to this challenge. Efforts will continue to be made in fiscal year 2002 to install monitoring equipment in Russian HEU conversion facilities. While there is a better discussion of the strategy for disposing of U.S. plutonium, realization of this goal may be hampered by reduced design work on the pit disassembly and conversion facility and by suspension of work on a plutonium immobilization facility.</p>
	<p>(Also discussed under outcomes.)</p>	

**Appendix I: Observations on the Department of Energy's Efforts to Address Its Major Management Challenges**

<b>Major management challenge</b>	<b>Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report</b>	<b>Applicable goals and measures in the fiscal year 2002 performance plan</b>
<b>GAO- and IG-designated major management challenges</b>		
<p><u>Nuclear weapons stockpile</u>: GAO and others have found pervasive and long-standing problems with DOE's ability to address project management, planning and budgeting, organizational alignment, and human capital challenges, while effectively and efficiently maintaining nuclear weapons capabilities. DOE has sought to maintain through the Stockpile Stewardship Program, the safety and reliability of U.S. nuclear weapons under a nuclear testing moratorium in the post-Cold War era. The Congress created the National Nuclear Security Administration (NNSA) to deal with many of these problems.</p>	<p>Four of DOE's strategic goals and 11 performance measures involve DOE's Stockpile Stewardship Program. However, DOE uses relatively few performance measures that directly address the major management challenges we have identified in the program. For example, DOE's reported progress in improving management issues is mixed. In addition, DOE does not directly address planning and budgeting issues or strategic human capital management issues in its discussion of the Stockpile Stewardship Program.</p> <p>(Also discussed under outcomes.)</p>	<p>In the fiscal year 2002 plan, three of DOE's goals and nine performance measures involve DOE's Stockpile Stewardship Program, but relatively few of these measures directly address this management challenge. Regarding project management, instead of specific project goals, the plan includes only one broad performance measure to meet established facility operating plans and construction schedules. There are no performance measures related to planning and budgeting, organizational alignment, and human capital issues, even though NNSA is taking specific, congressionally directed actions in all three areas.</p>

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**Appendix I: Observations on the Department  
of Energy's Efforts to Address Its Major  
Management Challenges**

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<b>Major management challenge</b>	<b>Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report</b>	<b>Applicable goals and measures in the fiscal year 2002 performance plan</b>
<p><u>Contract management</u>: Problems in contract management (which includes project management) place DOE at high risk for fraud, waste, abuse, and mismanagement. This has been a challenge for DOE since 1990, especially because DOE relies heavily on contractors to achieve most of its missions. DOE has begun a number of initiatives to improve contractor management, but it is too soon to tell whether the initiatives will be effective in the long-run. In addition, several OIG audits have found that many of DOE's contract reform goals have yet to be achieved.</p>	<p>In the Corporate Management overview section of its fiscal year 2000 report, DOE claims steady progress toward adopting performance-based management as the foundation of its major management contracts. However, the report acknowledges that project management problems continue to adversely affect credibility in the Department's ability to build new facilities or upgrade systems. For example, the Department terminated its \$7 billion contract under the Office of River Protection to stabilize high level tank waste due to concerns about the contractor's performance and rapidly escalating cost estimates. The Department reports that it is acting aggressively to implement project management reforms as recommended by a National Research Council study and other internal and external reviews of the problem. Nevertheless, more time will be needed to achieve intended goals.</p> <p>Overall, DOE's report does not include performance measures related to this challenge for its other four business lines. The Environmental Quality business line includes a performance measure that applies directly to contract management—to monitor and review activities at the Savannah River Operations Office and ensure adherence to project costs and schedules. DOE reported that it conducted several reviews; however, it did not indicate the outcome of those reviews. Similarly, DOE included the continued construction of the National Ignition Facility (NIF) and the rebaselining of NIF as an explicit performance measure in the fiscal year 2000 report but offered no performance measures to ensure that management and oversight problems were being corrected. The report also includes a performance measure to begin the execution of the Defense related project management campaign, within the National Security business line section of the report. However, the discussion is vague, and it is unclear where this activity is being performed in DOE and how this effort is being applied to major national security projects.</p>	<p>DOE's fiscal year 2002 performance plan addresses contract/project management challenges primarily under a Corporate Management general performance objective to ensure public confidence in the Department's contractual transactions. The plan states that performance indicators for this objective are under development and includes annual targets to increase the use of E-government services and performance-based contracts. However, the business line sections of the plan have few general performance objectives or measures that specifically apply to contract/project management. For example, under the Environmental Quality business line, the plan does not measure the cost effectiveness or timeliness of DOE's major environmental projects.</p> <p>In its fiscal year 2001 plan, DOE included a performance measure for the implementation of a six-point plan to improve the project management of NIF. This did not carry over into fiscal year 2002. Instead, the Department intends to gauge the performance of major projects such as NIF, pit production, and tritium readiness through Campaign Program Plans and Campaign Implementation Plans.</p>

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<b>Major management challenge</b>	<b>Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report</b>	<b>Applicable goals and measures in the fiscal year 2002 performance plan</b>
<p><u>Security</u>: Numerous studies have identified pervasive weaknesses in DOE's security controls. Our reports have highlighted weaknesses in computerized information systems, foreign visitor, and foreign travel programs. While DOE has responded to many recommendations, the Department has not always followed through to ensure that improvements are consistently implemented.</p>	<p>DOE identified security as a departmental challenge and launched a number of initiatives designed to protect its nuclear materials, facilities, and sensitive information. For example, the Department listed over 20 detailed performance measures, including performance measures for information security, related to improving security in fiscal year 2000. Overall, the Department reports that it is making progress in improving security.</p> <p>While some progress is evident, some of DOE's performance measures are process-oriented and do not always provide an assessment of real, meaningful, and measurable improvements in security. For example, DOE's Office of Counterintelligence reported that it performed 11 inspections during fiscal year 2000, but it failed to note what security improvements resulted from these inspections. In other areas where DOE said it had met its goals, the policies are currently being reviewed because of implementation concerns and issues raised by DOE field offices.</p> <p>In addition, some important security measures may not be addressed. For example, we noted recently that the creation of NNSA offered DOE a unique opportunity to increase the effectiveness of security for nuclear weapons information and security, but the report fails to mention either the security challenges or the opportunities for improvement presented by the creation of NNSA.</p> <p>DOE acknowledges that many actions have to be fully implemented, finalized, and allowed to mature.</p>	<p>For fiscal year 2002, DOE continues to identify security as a departmental challenge and includes the goal of the effective management of information technology resources in the Department. The fiscal year 2002 plan states that performance indicators for this objective are in development. For example, there are no performance measures listed for DOE's intelligence and counterintelligence programs and only one measure for DOE's Office of Security and Emergency Operations. This one measure – complete the milestones listed in the FMFIA corrective action plan for the departmental challenge of security – is broad and has been a performance measure since fiscal year 2000. Without ready information on what these milestones are, and without further information on additional performance measures, it is difficult to see how the Department will assess its performance in fiscal year 2002.</p>

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<b>Major management challenge</b>	<b>Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report</b>	<b>Applicable goals and measures in the fiscal year 2002 performance plan</b>
<p><u>Environmental cleanup</u>: Over 50 years of nuclear weapons research and production have left a legacy of environmental contamination that poses unacceptable risks. The magnitude of the cleanup effort, which includes technical complexities and uncertainties at 44 remaining sites, ensures that it will remain a departmental challenge for the foreseeable future. The OIG reported that the Department has made progress in defining the cleanup effort, estimating its scope, and prioritizing individual projects; however, increased management attention is needed to achieve intended environmental outcomes.</p>	<p>In its fiscal year 2000 report, DOE's strategic goal for its Environmental Quality business line encompasses this environmental challenge. DOE also includes this challenge under two departmental challenges (Environmental Compliance and Nuclear Waste Disposal). The Department reports progress in implementing an aggressive plan to accelerate site cleanups and complete as many sites as possible by 2006. Numerous Environmental Quality performance objectives and measures monitor the intermediate and final steps toward cleanup and closure of these and other sites. The results of these measures are discussed in the previous section of this report.</p> <p>Our January 2001 report of major management challenges and program risks at DOE also recognized that DOE has made progress in establishing project baselines, which define the scope of work, estimated costs, and schedules. Nevertheless, DOE's largest, most expensive and complex cleanup sites and its most challenging technical problems lie ahead. To meet these challenges, the Department will need to further improve baselines and integrate cleanup activities among sites and within multipurpose sites.</p>	<p>DOE's fiscal year 2002 performance plan continues to address this challenge with its Environmental Quality general performance goals and related performance indicators that monitor progress toward completion of geographic site cleanups, safe disposal of wastes generated from past and current activities, stabilization of nuclear materials and spent nuclear fuel to reduce safety and environmental risks, deployment of innovative technologies to expedite cleanup and reduce costs, and development of a repository for civilian high-level radioactive waste and spent nuclear fuel. The plan adds a performance goal for disposal of the Department's depleted uranium hexafluoride and excess natural uranium inventories and states that performance indicators for this goal are under development.</p>
<p>(Also discussed under outcomes.)</p>		
<b>IG-designated major management challenges</b>		
<p><u>National Nuclear Security Administration</u>: The successful establishment and integration of NNSA may help correct many of DOE's long-standing management problems, but it may be several years before NNSA's progress can be fully assessed. The OIG has identified many logistical, organizational, and policy challenges associated with the establishment of NNSA, which is in charge of most of DOE's important national security missions and nearly one-third of DOE's budget.</p>	<p>DOE's fiscal year 2000 performance report acknowledges that there are logistical and organizational issues surrounding the creation of NNSA. DOE states it is establishing responsibilities and authorities, formalizing new working relationships, resolving cross-cutting funding issues, and working to ensure that its programs brought together under NNSA are integrated and effective. However, the report does not identify any performance objectives or measures associated with the challenge of establishing and integrating NNSA. Therefore, it is impossible to determine what progress DOE has made in resolving this management challenge.</p>	<p>The fiscal year 2002 plan mentions the creation of NNSA and notes that the ongoing high-level reviews of national security have the potential to affect performance goals for fiscal year 2002 and beyond. However, it does not discuss this as a challenge nor does it include any dedicated performance objectives or measures.</p>

**Appendix I: Observations on the Department of Energy's Efforts to Address Its Major Management Challenges**

<b>Major management challenge</b>	<b>Progress in resolving major management challenges as discussed in the fiscal year 2000 performance report</b>	<b>Applicable goals and measures in the fiscal year 2002 performance plan</b>
<p><u>Energy technology</u>: Recent events, coupled with the recent dramatic spike in oil prices, have lead to a renewed national focus on the significance of oil imports and the technology to mitigate energy dependency. Consequently, the OIG has designated this as a major management challenge for DOE.</p>	<p>DOE mentions energy technology under the overall departmental challenge of energy markets in its fiscal year 2000 report. The report describes the Department's efforts as supporting research and development or demonstrating technologies that are designed to boost oil and natural gas production and develop renewable energy sources such as solar and wind. Because DOE does not clearly describe its activities or how much they contribute toward long-term performance goals, it is difficult to determine how much progress the Department made toward this challenge in fiscal year 2000.</p>	<p>DOE's fiscal year 2002 plan describes many goals and measures that are designed to develop energy technologies in oil, natural gas, and renewable energy. However, the plan often describes strategies and goals using words such as "developing" and "enhancing" that make it difficult for the reader to infer precisely what actions the Department plans to take.</p>
<p>(Also discussed under outcomes.)</p>		
<p><u>Information technology</u>: Since 1996, the OIG has issued 10 audit reports identifying problems associated with DOE's implementation of the Clinger-Cohen Act and its management of \$1.6 billion in annual information technology expenditures. Two of the OIG's recent reports concluded that DOE did not have an effective management strategy for information technology, as was illustrated by its many duplicative information systems. The OIG reported that "the development of duplicative or redundant waste information tracking systems at the contractor level consumed significant resources and exacerbated system proliferation problems."</p>	<p>DOE's fiscal year 2000 performance report recognizes information technology as a departmental challenge. However, performance goals and measures are included in the report only for two of the four business lines. For example, for the Science business line, DOE states that it did not meet 75 percent of the requirements of computer facilities and network uses. The demand for computing capabilities far exceeded what current resources were able to provide, with current computers at the National Energy Research Scientific Computing Center (NERSC) providing less than one half of the resources requested this year. DOE expects the pressure to increase in the future as more applications become ready to move from software testing to use for generating new science. To address this problem, only the highest priority research was selected for the available resources, as determined by the Energy Science Network (Esnet) Steering Committee.</p>	<p>While DOE's fiscal year 2002 plan recognizes information technology as a departmental challenge, goals and measures are included for this issue only under two business lines. For example, for the Science business line, the plan articulates the importance of having the scientific workforce and infrastructure to ensure leadership in the computational sciences. For the Advanced Scientific Computing Research Office the fiscal year 2002 targets include providing support for the competitively selected Integrated Software Infrastructure Centers to address critical computer science and systems software issues for terascale computers. Another target is to support the operation of the IBM-SP computer at about 3.5 teraflops "peak" performance. In addition, the plan includes 2002 targets for operating facilities, including NERSC and Esnet, within budget while meeting user needs and satisfying overall Science program requirements.</p>
	<p>In addition, for the National Security business line, the report indicates that DOE either met or exceeded its goals for all but one target under the goal of ensuring that the Department's information systems are based on cost-effective technology solutions.</p>	<p>For the National Security business line, the plan continues to include the goal of ensuring that the Department's information systems are based on cost-effective technology solutions; however, the plan only includes one measure—complete the milestones listed in DOE's corrective action plan for security.</p>

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<p><u>Safety and health</u>: DOE faces difficult safety and health challenges that encompass all activities related to radioactive and hazardous wastes, as well as nuclear safety, occupational safety, and health of workers in construction, scientific, and other departmental activities.</p>	<p>DOE's fiscal year 2000 report recognizes safety and health as one of the departmental challenges. All of DOE's performance objectives and measures pertaining to waste management and disposal encompass safe handling and storage in addition to maximizing waste isolation to reduce risks. Under its performance reporting for Corporate Management, DOE reported progress toward this challenge, including implementation of its Integrated Safety Management (ISM) program at all but two sites and completion of 11 safety management evaluations in fiscal year 2000. The Department also reported correcting 80 of 106 vulnerabilities identified with storage of spent nuclear fuel.</p> <p>DOE's fiscal year 2000 performance objectives under Environmental Quality prioritized certain measures to reduce the greatest risks to the workers, the public, and the environment. As discussed earlier in this report, the Department reported that its efforts toward this objective were partially successful.</p> <p>The Department reported meeting commitments to the Defense Nuclear Facilities Safety Board to ensure the safety of its inventory of depleted uranium hexafluoride.</p>	<p>DOE's fiscal year 2002 performance plan addresses the safety challenge under its Corporate Management performance measures. The general performance goal is to integrate and embed sound environment, safety, and health practices into the performance of DOE's day-to-day work. The Department monitors five indicators, such as the rate of work-related injuries or average worker exposure to radiation, to assess the effectiveness of its ISM program.</p> <p>Under the Environmental Quality business line fiscal year 2002 performance indicator goals that relate specifically to safety include stabilization of nuclear materials, spent nuclear fuel, and depleted uranium hexafluoride containers. To complete its geographic cleanups, the Department states that it will first focus on reducing any worker or public safety and health risks. However, the performance measures under this objective do not directly track DOE's progress in integrating safety practices into its cleanup activities.</p>

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