

January 2001

Major Management Challenges and Performance Risks

Nuclear Regulatory
Commission



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**United States General Accounting Office
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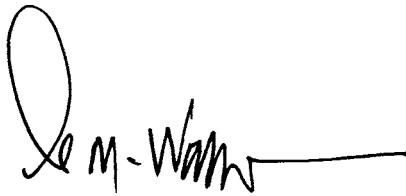
The President of the Senate
The Speaker of the House of Representatives

This report addresses the major performance and accountability challenges facing the Nuclear Regulatory Commission (NRC) as it seeks to ensure adequate protection of public health and safety, promote common defense and security, and protect the environment by regulating the nation's civilian use of nuclear fuels and materials. It includes a summary of actions that NRC has taken and that under way to address these challenges. It also outlines further actions that GAO believes are needed. This analysis should help the new Congress and administration carry out their responsibilities and improve government for the benefit of the American people.

This report is part of a special series, first issued in January 1999, entitled the *Performance and Accountability Series: Major Management Challenges and Program Risks*. In that series, GAO advised the Congress that it planned to reassess the methodologies and criteria used to determine which federal government operations and functions should be highlighted and which should be designated as “high risk.” GAO completed the assessment, considered comments provided on a publicly available exposure draft, and published its guidance document, *Determining Performance and Accountability Challenges and High Risks* (GAO-01-159SP), in November 2000.

This 2001 *Performance and Accountability Series* contains separate reports on 21 agencies—covering each cabinet department, most major independent

agencies, and the U.S. Postal Service. The series also includes a governmentwide perspective on performance and management challenges across the federal government. As a companion volume to this series, GAO is issuing an update on those government operations and programs that its work identified as “high risk” because of either their greater vulnerabilities to waste, fraud, abuse, and mismanagement or major challenges associated with their economy, efficiency, or effectiveness.

A handwritten signature in black ink, appearing to read "D. M. Walker", followed by a long horizontal line extending to the right.

David M. Walker
Comptroller General
of the United States

Overview

The Nuclear Regulatory Commission (NRC) is responsible for ensuring that those who use radioactive material—in generating electricity, for experiments in universities, and for such medical uses as treating cancer—do so in a manner that protects the public, the environment, and workers. NRC has issued licenses to 103 operating commercial nuclear power plants and 10 facilities that produce fuel for these plants. In addition, NRC, or the 32 states that have agreements with NRC, regulate almost 21,000 entities that use nuclear materials (nuclear material licensees).¹ In the medical field alone, licensees annually perform an estimated 10 million to 12 million diagnostic and therapeutic procedures involving radioactive material.

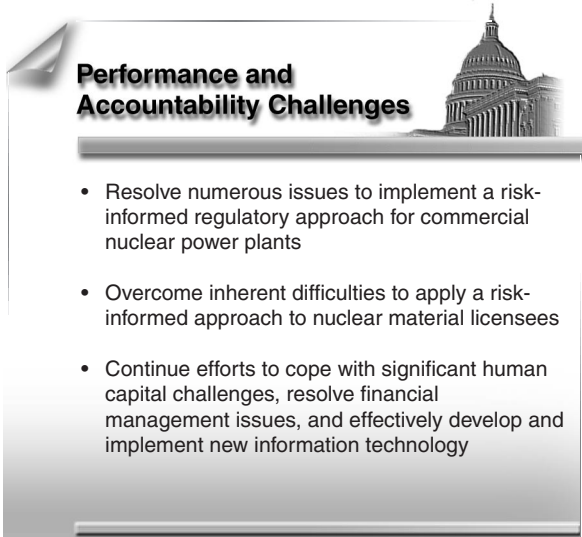
NRC has been moving from its traditional regulatory approach, which was largely developed without the benefit of quantitative estimates of risk, toward more of a risk-informed, performance-based approach. Under this approach, NRC will use risk assessment findings, engineering analysis, and performance history to focus attention on the most important safety-related activities, establish objective criteria to evaluate performance, develop measures to assess licensee performance, and focus on results as the primary basis for making regulatory decisions. Public interest group representatives, the Nuclear Energy Institute, and others believe that risk-informed and performance-based approaches would result in a more transparent, predictable, nonredundant, and efficient regulatory environment.² Successfully implementing these approaches, however, will require NRC to reorient the

¹In addition, about 100,000 entities are authorized to use devices powered by radioactive materials.

²The Nuclear Energy Institute includes members from all utilities licensed to operate commercial nuclear plants in the United States, as well as nuclear plant designers, major architectural/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

culture of its staff, which has a long history with and commitment to the traditional regulatory approach.

GAO, the Nuclear Energy Institute, and others have doubts about NRC's ability to bridge this cultural divide and effectively implement the new approaches. NRC is aware of the complexities involved and the long-term nature of these types of changes. It has initiated a number of activities to address implementation issues, but it continues to face major performance and accountability challenges in managing these fundamental changes. NRC's performance in addressing these challenges will significantly shape its ability to ensure that commercial nuclear power plants and other licensees operate safely and, ultimately, that workers, the public, and the environment are adequately protected.



Performance and Accountability Challenges

- Resolve numerous issues to implement a risk-informed regulatory approach for commercial nuclear power plants
- Overcome inherent difficulties to apply a risk-informed approach to nuclear material licensees
- Continue efforts to cope with significant human capital challenges, resolve financial management issues, and effectively develop and implement new information technology

power plants. In a March 1999 report, we concluded that whatever processes NRC ultimately adopts must be consistent, visible, and clear. This becomes even more important as the nation moves to a competitive electricity environment because utilities will not always be able to pass the costs of regulatory compliance on to consumers. Yet because of concerns about the risks of catastrophic accidents, the public will continue to pressure NRC and the industry to explain their actions. As we recommended in March 1999, a clearly defined strategy would help both NRC and the utilities address the public's concerns as it implements a risk-informed regulatory approach.

In response, NRC initially agreed on the need for a comprehensive strategy that would describe the activities it wanted to risk-inform, the actions needed to make them so, and the schedule and resources needed to accomplish the activities, but it has not done so. Instead, NRC developed the Risk-Informed Regulation Implementation Plan, which includes guidelines to identify, set priorities for, and implement risk-informed changes to regulatory processes. However, the plan is not as comprehensive as it needs to be because it does not identify those items critical to achieving its objectives, activities that cut across the agency, resources, performance measures, or the relationships among these various activities. NRC has made a commitment to having performance measures by the end of December 2000 and to including them in its fiscal year 2002 performance plan.

As we reported in January 2000, NRC also needs to overcome the opposition of its own staff and the public to a risk-informed approach. Both NRC staff and the public have had a long history with the traditional approach and do not fully understand the reasons for implementing a risk-informed approach and the relationship of that approach to maintaining plant safety. Finally, NRC needs to address several questionable

aspects of its relationship with the utilities it regulates. After concluding that it could not demonstrate that a risk-informed approach would be cost-beneficial to utilities, NRC decided that compliance with such an approach would be voluntary. As we previously concluded, NRC will be regulating with two different systems—one for those utilities that choose to comply with a risk-informed approach and another for those that choose to stay with the existing regulatory approach. Furthermore, NRC has not decided whether to allow utilities to “pick and choose” among the specific provisions of the regulations that it risk-informs, which compounds the challenges in an already complex regulatory environment. If NRC successfully addresses these challenges, it will help ensure that commercial nuclear plants operate safely and that it discharges its regulatory responsibilities effectively and efficiently.

Nuclear Material Licensees

NRC also needs to overcome the difficulties inherent in applying a risk-informed regulatory approach for nuclear material licensees. Of most importance, the sheer number of licensees—almost 21,000—and the diversity of activities they conduct—converting uranium, transporting radioactive material, and using radioactive material for industrial, medical, or academic purposes—increase the complexity of developing a risk-informed regulatory approach for material licensees. In addition, NRC will be challenged to define its role, including the size and skill mix of staff both in headquarters and regional offices, as an increasing number of states assume responsibility for regulating nuclear material users within their borders. The decisions that NRC ultimately makes could have budgetary and other implications for the agency.

Management Issues

NRC needs to resolve a number of challenges to effectively and efficiently manage the agency. For example, by the end of fiscal year 2005, about 33 percent

of NRC staff will be eligible to retire. As a result, NRC needs to identify the scientific, engineering, and technical core competencies as well as the skills and expertise that staff need to carry out NRC's mission and develop a plan to replenish its workforce. NRC's Chairman has said that maintaining technical competency may be the biggest challenge confronting the agency. NRC must also ensure that staff hired to replace those who retire or leave the agency receive the training needed to effectively and efficiently carry out their responsibilities. In October 2000, we recommended that NRC identify the skills needed for those who will replace its technical training instructors and develop a succession plan to ensure that qualified staff are available and trained to minimize the disruption of the technical training provided. NRC's human capital problems can be seen as part of a broader pattern of human capital shortcomings that have eroded mission capabilities across the federal government. See our *High-Risk Series: An Update* (GAO-01-263, January 2001) for a discussion of human capital as a newly designated governmentwide high risk area.

Like most other federal agencies, NRC also needs to improve its financial management by developing and implementing a cost accounting system. NRC's Office of the Inspector General (OIG) identified the lack of a cost accounting process as a material weakness constituting a substantial noncompliance with the Federal Financial Management Improvement Act. Finally, the problems NRC experienced with its new document capture and retrieval system illustrate that the agency must ensure that its information technology acquisitions are developed and implemented as intended to minimize staff dissatisfaction and maximize its resources.

Major Performance and Accountability Challenges

NRC's primary mission is to ensure that those entities using radioactive materials do so in a manner that protects the public, the environment, and workers. Identifying safety problems and making sure that the licensees correct them promptly are essential to NRC's safety mission. NRC faces a number of challenges as it moves from its traditional regulatory approach, which was largely developed without the benefit of quantitative estimates of risk, to an approach—termed risk-informed regulation—that considers relative risk in conjunction with engineering analyses and operating experience. NRC has also been moving to a performance-based regulatory approach. A risk-informed, performance-based approach uses risk assessment results and findings, engineering analysis, and performance history to focus attention on the most important activities, establish objective criteria to evaluate performance, develop measures to assess licensee performance, and focus on results as the primary basis for making regulatory decisions. NRC also faces significant challenges in managing these changes.

NRC Needs to Resolve Numerous Issues to Implement a Risk-Informed Approach for Commercial Nuclear Power Plants

Public interest group representatives, the Nuclear Energy Institute, and others believe that risk-informed and performance-based approaches would result in a more transparent, predictable, nonredundant, and efficient regulatory environment. We previously concluded that whatever processes NRC ultimately adopts must be consistent, visible, and clear. The need for clarity may be even more important today than it has been in the past because in a competitive electricity environment, utilities will not always be able to pass the costs of regulatory compliance on to consumers. Yet because of concerns about the risks of catastrophic accidents, the public will continue to pressure NRC and the industry to explain their actions. A clearly defined strategy would help both NRC and the utilities address the public's concerns.

However, NRC does not have comprehensive plans to implement a risk-informed regulatory approach or a performance-based approach. As early as 1996, NRC's OIG recommended that the agency define the elements of a performance-based approach and develop a plan to implement it.¹ NRC subsequently identified the elements and in September 2000 published "high-level" guidance for identifying the regulations that could be performance based. NRC staff tested the guidelines by applying them to two regulations. They concluded that the test cases clearly support the utility of the guidelines, but to maximize the performance-based potential, the guidelines need to be applied to both the regulations selected and their implementing guidance to ensure effective results.

NRC staff plan to develop a management directive to support agencywide implementation of the guidelines in ongoing and future rulemakings and other regulatory activities. They also expect to develop a communications plan to promote broader awareness of performance-based approaches among external stakeholders. As a result, NRC staff do not believe that a comprehensive strategy or plan to implement a performance-based approach is needed. However, until it completes these efforts and demonstrates the efficacy of the guidance, it is not clear whether NRC will achieve its goals or whether it will need to resolve other challenges.

In March 1999, we recommended that NRC develop a comprehensive strategy to guide the process of moving to a risk-informed regulatory approach. In response, NRC initially agreed on the need for a comprehensive

¹*Better Definition and Planning Needed to Guide NRC's Transition to a Risk-Informed, Performance-Based Regulatory System* (OIG-96E-18, Oct. 4, 1996).

strategy that would describe the activities the agency wanted to risk-inform, the actions needed to make them so, and the schedule and resources needed to accomplish the activities, but it has not done so. As one NRC Commissioner said in March 2000, “we really are . . . inventing this as we go along [and] given how much things are changing, it’s very hard to plan even 4 months from now, let alone years from now.” Instead, NRC developed the Risk-Informed Regulation Implementation Plan, which includes guidelines to identify, set priorities for, and implement risk-informed changes to regulatory processes. The plan also identifies specific tasks and projected milestones.

The Risk-Informed Regulation Implementation Plan is not as comprehensive as it needs to be because it does not identify performance measures, the items that are critical to achieving its objectives, activities that cut across its major offices, resources, or the relationships among the more than 40 separate activities (more than 20 pertain to nuclear power plant safety). For example, risk-informing NRC’s regulations will be a formidable task because they are interrelated. Amending one regulation can potentially affect other regulations governing other aspects of nuclear plant operations. NRC recognized this problem when, in developing a risk-informed approach for one regulation, it identified over 20 regulations that would need to be made consistent. NRC expects that its efforts to change its regulations applicable to nuclear power plants to focus more on relative risk will take 5 to 8 years.

Another example of the many challenges to implementing a risk-informed approach for commercial nuclear power plants relates to the development and implementation of risk-based performance indicators. NRC may need until at least fiscal year 2005 to fully integrate risk-based indicators into its new safety oversight process for commercial nuclear power plants.

The risk-based indicators would supplement the performance indicators, inspections, and risk-significance determination process of the new safety oversight process. The Nuclear Energy Institute, public interest groups, and one state official have raised a number of issues about NRC's development of the indicators: the (1) scope and source of the data for them, (2) resources required to develop them, (3) need for risk assessments to reflect actual conditions at the plants, and (4) impact on inspection coverage at the plants.

For example, the nuclear power industry has suggested that NRC could reduce its inspection coverage after implementing the risk-based performance indicators. On the other hand, the Union of Concerned Scientists and one state official oppose this suggestion. The state official noted that NRC needs to conduct more inspections than the few it does now. NRC staff expect to report in November 2001 on their efforts to develop reliable risk-based performance indicators for safety equipment, fire protection, and industrywide trends and, in the spring of 2003, on the feasibility of developing such indicators for earthquakes and other external events. However, NRC has not determined whether or when such indicators would be included in the new safety oversight process.

According to staff, NRC intends the Risk-Informed Regulation Implementation Plan to be a high-level plan, with other agency documents, such as operating plans prepared by its major program offices, providing the day-to-day linkages and interrelationships among the various activities. NRC has made a commitment to define performance measures by the end of December 2000 and to include them in its fiscal year 2002 performance plan. It also expects to elicit both its staff's and the public's comments on the plan. At a November 2000 briefing, several NRC Commissioners acknowledged that the agency still "had a ways to go" to have a strategy to guide its actions. Until the staff

complete these activities, NRC, the Congress, and other stakeholders cannot determine whether the Risk-Informed Regulation Implementation Plan will provide the comprehensive roadmap that we recommended.

**Management
Leadership Needed
for Staff to
Successfully
Implement, and the
Public to Accept,
NRC's New
Direction**

NRC needs to obtain staff “buy in” and ensure that the public is confident about its new regulatory approach. As we concluded in January 2000, a large number of NRC staff did not believe that management was effectively leading the change process or involving them in the changes being made. More important, only about 25 percent of the Office of Nuclear Reactor Regulation staff believed that a risk-informed approach had been accepted by NRC staff.² With such limited staff acceptance, it will be difficult for NRC to effectively implement its new regulatory approach. NRC recently began an initiative to identify options to help staff accept and effectively implement the agency's new direction and to ensure that they understand the reasons for implementing a risk-informed approach and the relationship of that approach to maintaining plant safety. Because NRC started this initiative in October 2000, it is too early to determine whether it would help the agency achieve greater staff buy-in.

NRC also needs to ensure that the public is confident that a risk-informed approach would afford the same level of safety as its traditional regulatory approach. For example, NRC has approved more than 100 license amendments for nuclear power plants using a risk-informed approach. This approval was based on interim guidance that NRC used to determine if utilities' risk assessments adequately supported the proposed

²The Office of Nuclear Reactor Regulation is responsible for ensuring that commercial nuclear power plants operate safely and do not endanger the public or the environment.

amendments. Risk assessments are one of the main tools to identify and focus on those structures, systems, and components of nuclear plants that pose the greatest risk to safety. NRC used the interim guidance because standards for the quality and scope of risk assessments are currently under development by the American Society of Mechanical Engineers, the American Nuclear Society, and others.

While NRC believes that most of these new standards will be made final in 2001, this issue is far from being resolved because NRC will have to adopt the standards and obtain public comment on them. Furthermore, NRC will have to develop a mechanism to make updated risk assessment results available to the public. Currently, the public has access only to information that is 10 or more years old. In October 2000, the Advisory Committee on Reactor Safeguards noted that without ready access to updated assessment results, the public may not have confidence in regulatory decisions that use risk assessments.³

**Selective
Implementation of
Regulations Could
Exacerbate an
Already Complex
Regulatory
Environment**

Because NRC cannot demonstrate that a risk-informed approach would be cost-beneficial to utilities, it decided that compliance with such an approach will be voluntary. As we previously concluded, NRC will be regulating with two different systems—one for those utilities that choose to comply with a risk-informed approach and another for those that choose to stay with the existing regulatory approach. In addition, NRC has not decided whether to allow utilities to “pick and choose” among the specific provisions of the regulations that it risk-informs (selective implementation). NRC has

³The Advisory Committee on Reactor Safeguards is a statutory committee established to advise NRC on the safety aspects of proposed and existing nuclear facilities as well as to perform other duties as the Commission may request.

not yet issued an agency policy on selective implementation or specified a time frame for doing so.

We believe that selective implementation would compound the challenges in an already complex regulatory environment. According to NRC staff, the agency has had many years of experience in dealing with different nuclear plant designs and different requirements. They also noted that with electricity deregulation, the nuclear power industry is consolidating, which may resolve some of the historic regulatory complexities. This is because standardized policies and practices could result from the consolidation and because NRC will have fewer companies to oversee. NRC recently began to assess the impact of deregulation and its consequences on the agency and the industry in such areas as grid reliability, decommissioning funding, and regional consistency. This assessment could identify other policy, programmatic, or management challenges that NRC will need to address.

**NRC Needs to
Overcome
Inherent
Difficulties to
Apply a Risk-
Informed
Approach to
Nuclear Material
Licensees**

NRC needs to overcome the difficulties inherent in applying a risk-informed regulatory approach for nuclear material licensees. The sheer number of licensees—almost 21,000—and the diversity of the activities they conduct—converting uranium, decommissioning nuclear plants, transporting radioactive materials, and using radioactive material for industrial, medical, or academic purposes—increase the complexity of developing a risk-informed approach that would adequately cover all types of licensees. For example, the diversity of licensees results in varying levels of analytical sophistication; different experience in using risk-informed methods, such as risk assessments and other methods; and uneven knowledge about the analytical methods that would be useful to them.

Because material licensees will be using different risk-informed methods, NRC has grouped them by the type of material used and the regulatory requirements for that material. For example, licensees that manufacture casks to store spent reactor fuel could be required to use formal analytical methods, such as a risk assessment. Other licensees, such as those that use nuclear material in industrial and medical applications, would not be expected to conduct risk assessments. Rather, NRC staff said that they will use other methods to determine those aspects of the licensees' operations that have significant risk, using an approach that considers the hazards (type, form, and quantity of material) and the barriers or physical and administrative controls that prevent or reduce exposure to these hazards.

Another example of the challenges in implementing a risk-informed approach for material licensees is the proposal to implement a new safety and safeguards oversight process for fuel cycle facilities. Unlike commercial nuclear power plants, which have a number of design similarities, most of the 10 fuel cycle facilities perform separate and unique functions. For example, one facility converts uranium to a gas for use in the enrichment process, two facilities enrich or increase the amount of uranium-235 in the gas, and five facilities fabricate the uranium into fuel for commercial nuclear power plants. These facilities possess large quantities of materials that are potentially hazardous (i.e., explosive, radioactive, toxic, and/or combustible) to workers. Their diversity of activities makes it particularly challenging for NRC to design a "one-size-fits-all" safety oversight process and develop indicators and thresholds of performance. NRC has yet to resolve such issues as the structure of the problem identification, resolution, and corrective action program; the mechanics of the risk-significance determination process; and the regulatory responses that NRC would take when changes in performance occur. NRC had planned to pilot-test the new oversight process for fuel cycle facility

safety in fiscal year 2001, but staff told us that this schedule could slip.

NRC also faces challenges in redefining its role in a changing regulatory environment. As the number of agreement states increases beyond the existing 32, NRC must continue to ensure the adequacy and consistency of the states' programs as well as its own effectiveness and efficiency in overseeing licensees that are not regulated by an agreement state. NRC has been working with the Conference of Radiation Control Program Directors (primarily state officials) and the Organization of Agreement States to address these challenges. However, NRC has not yet addressed such questions as the following: (1) Would NRC continue to need staff in all four of its regional offices as the number of agreement states increases? (2) What are the appropriate number, type, and skills needed for headquarters staff? and (3) What should NRC's role be in the future?

In June 2000, one NRC Commissioner noted that the agency has more expertise on the use of nuclear material than any other agency in the world, and it would be unfortunate to lose that expertise if NRC no longer had materials licensees to regulate. In May 2001, a NRC/state working group expects to provide the Commission with various options for the materials program of the future. NRC staff said that the agency wants to be in a position to plan for needed changes because, in 2003, it anticipates that 35 states will have agreements with NRC and oversee more than 85 percent of all material licensees.

**NRC Needs to
Address Human
Capital, Financial
Management, and
Information
Technology Issues**

NRC needs to resolve a number of human capital, financial management, and information technology challenges to effectively and efficiently manage itself. Specifically, it needs to develop a succession plan for the skills and expertise needed to replace its workforce, improve its financial management by developing and implementing a cost accounting system, and ensure that it effectively and efficiently develops and implements new information technologies.

**NRC Faces Human
Capital Challenges**

As one NRC Commissioner said, “There is a crisis looming in government” because an entire generation of employees is going to retire or will be eligible to retire in the near future. In fiscal year 2001, about 16 percent of NRC staff are eligible to retire and by the end of fiscal year 2005, about 33 percent will be eligible. In its fiscal year 2000 performance plan, NRC identified the need to maintain core competencies and staff as an issue that could affect its ability to achieve its performance goals. NRC noted that maintaining the correct balance of knowledge, skills, and abilities is critical to accomplishing its mission and is affected by various factors. These factors include the labor market for experienced professionals, the workload as projected by the nuclear industry, and the declining university enrollment in nuclear engineering studies and other fields related to nuclear safety.

As we recently reported, in February 2000, NRC’s Commissioners directed the staff to develop a comprehensive plan that links the abilities needed to carry out NRC’s mission with the training offered. According to NRC’s senior managers, the lack of a computer system that is tied to its personnel system has hampered the staff’s efforts to conduct the skills assessment. NRC wants to collect the data for all staff and have a mechanism to automatically update the data as warranted. The senior managers noted that without a

link to its personnel system, the skills assessment data will be of limited use. They estimated that NRC could initiate the skills assessment sometime in fiscal year 2001.

In addition, in October 2000, NRC's Chairman requested that, by the end of January 2001, the staff have a plan to assess the scientific, engineering, and technical core competencies NRC needs and propose specific strategies to ensure that the agency maintains that competency. The Chairman noted that maintaining technical competency may be the biggest challenge confronting NRC. NRC also must ensure that staff hired to replace those who retire or leave the agency receive the training needed to effectively and efficiently carry out their responsibilities. In October 2000, we recommended that NRC identify the skills needed for those who will replace its technical training instructors and develop a succession plan to ensure that qualified staff are available and trained to minimize the disruption of the technical training provided.

To help alleviate these concerns, NRC requested funds for fiscal years 2001, 2002, and 2003 to actively recruit qualified college graduates and to provide not only specialized training but also rotational assignments in various offices for them. It has established a tuition assistance program, relocation bonuses, and other inducements to encourage qualified individuals to accept and continue their employment with the agency. NRC staff said that the agency is doing the best it can with the tools available to hire and retain staff, but more needs to be done to provide agencies with other tools to encourage acceptance of federal employment.

**NRC Needs to
Improve Its
Financial
Management**

In its independent audit of financial statements for fiscal year 1999, NRC's OIG noted that the agency did not have a cost accounting system. Such a system, required by the Government Performance and Results Act of 1993, would provide managers with information to support their responsibilities for planning and controlling costs, making decisions, and evaluating performance. NRC has experienced delays in developing and implementing the cost accounting system because of problems it encountered with the contractor initially selected to develop the core system.

NRC's OIG concluded that the lack of a cost accounting process is a material weakness constituting a substantial noncompliance with the Federal Financial Management Improvement Act. Since then, NRC has contracted with a new vendor and purchased a software package to develop the core system. NRC staff are optimistic that by April 2001 the agency will have implemented a substantial portion of the cost accounting system to provide managers with time and labor charges by strategic arena, which they believe should resolve the material weakness the OIG identified.

**Despite the Controls
Instituted, NRC
Experienced
Problems
Implementing a
Major Information
Technology
Initiative**

NRC's information technology report describes the major systems that it is developing, and its capital asset plan shows the estimated funding required for each system as well as the justification, funding basis, benefits to be derived, and other information. NRC uses a Capital Planning and Investment Control Process to scrutinize each information technology initiative, and its Executive Council is responsible for reviewing variances to the development of new computer systems and requiring corrective action before the variances become significant. Despite these controls, NRC has had problems implementing new information technologies, such as the Agency Documents Access and Management System (ADAMS).

NRC has spent more than \$24 million to develop, implement, and maintain ADAMS. The system is intended to support document creation, capture, and retrieval, including those documents that will be made available to the public. ADAMS, which was implemented in April 2000, is NRC's "file cabinet" as it strives to implement a more efficient and effective work environment. However, NRC experienced a number of start-up problems with the system as well as NRC staff and public dissatisfaction with it. Some examples of the start-up problems include security issues with some non-NRC users and not recognizing that staff needed additional training on using the system. In addition, the public had complained about the unavailability of documents that were supposed to be in ADAMS and the difficulty of accessing documents in the system. A nuclear industry publication reported, for example, that Citizens Awareness Network asked NRC to extend the time for filing a hearing request and petition to intervene in a license transfer action because it was unable to print needed documents from ADAMS.

NRC's own staff identified hundreds of problems in using the system. They noted, for example, that the system overall is slow in performing the most basic tasks. Like the public, NRC staff also experienced problems printing files stored in ADAMS: They noted that it was time-consuming, cumbersome, and inefficient to print a document. The Advisory Committee on Reactor Safeguards noted that ADAMS diverts critical resources from the timely performance of normal work processes. According to staff in the Office of the Chief Information Officer, they were aware of these problems and had identified solutions for them. These staff also noted that NRC staff were asked to identify the problems during the time they were learning the system and adapting to new agency guidance concerning the dissemination of documents. They said that such problems typically arise when implementing new information technology systems.

Nevertheless, in May 2000, NRC's Chairman directed the staff to evaluate the problems that its major offices had encountered in using the system and determine whether and when the agency can resolve them. In August 2000, NRC's Chairman endorsed the staff's recommendations to address the problems identified. The staff consolidated the problems into 10 challenges that will take 12 to 18 months to complete, including improving data integrity, the search and retrieval system, public access, training and user support, and guidance on using the system. Of the numerous issues identified, NRC staff said that about half will be resolved by the end of calendar year 2000 by transferring document entry responsibilities to the Office of the Chief Information Officer and by implementing a new software package. According to a senior manager who worked with the staff, one of the most significant findings was that NRC needed to standardize its business practices, including the distribution of mail by its various offices. Without such standardization, ADAMS may not achieve its full potential.

According to staff, ADAMS is providing NRC and external users with timely information. For example, on average, NRC adds 1,900 documents each week to the system, and during a typical day, about 285 NRC and 25 non-NRC users concurrently access the system. Finally, NRC had taken weeks to make documents publicly available but since the implementation of ADAMS, the agency does so in 5 business days. Under its processes, NRC is required to prepare a lessons learned analysis 6 months after implementing a new information technology system. NRC staff expects to report on the lessons learned for ADAMS by the end of December 2000. This report could identify further changes that NRC needs to make to, among other things, its Capital Planning and Investment Control Process and internal guidance.

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Related GAO Products

Facility Relocation: NRC Based Its Decision to Move Its Technical Training Center on Perceived Benefits, Not Costs (GAO-01-54, Oct. 19, 2000).

Radiation Standards: Scientific Basis Inconclusive, and EPA and NRC Disagreement Continues (GAO/RCED-00-152, June 30, 2000).

Observations on the Nuclear Regulatory Commission's Fiscal Year 1999 Performance Report and Fiscal Year 2001 Performance Plan (GAO/RCED-00-200R, June 30, 2000).

Fire Protection: Barriers to Effective Implementation of NRC's Safety Oversight Process (GAO/RCED-00-39, Apr. 19, 2000).

Nuclear Regulation: Regulatory and Cultural Changes Challenge NRC (GAO/T-RCED-00-115, Mar. 9, 2000).

Nuclear Regulation: NRC Staff Have Not Fully Accepted Planned Changes (GAO/RCED-00-29, Jan. 19, 2000).

Nuclear Regulation: Better Oversight Needed to Ensure Accumulation of Funds to Decommission Nuclear Power Plants (GAO/RCED-99-75, May 3, 1999).

Nuclear Regulation: Strategy Needed to Regulate Safety Using Information on Risk (GAO/RCED-99-95, Mar. 19, 1999).

Nuclear Regulatory Commission: Strategy Needed to Develop a Risk-Informed Safety Approach (GAO/T-RCED-99-71, Feb. 4, 1999).

Performance and Accountability Series

Major Management Challenges and Program Risks: A Governmentwide Perspective (GAO-01-241)

Major Management Challenges and Program Risks: Department of Agriculture (GAO-01-242)

Major Management Challenges and Program Risks: Department of Commerce (GAO-01-243)

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Department of Transportation (GAO-01-253)*

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