

DOE/IG-0538

SPECIAL
REPORT

MANAGEMENT CHALLENGES
AT THE
DEPARTMENT OF ENERGY



DECEMBER 2001

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
OFFICE OF AUDIT SERVICES



U. S. DEPARTMENT OF ENERGY
Washington, DC 20585

December 21, 2001

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman (Signed)
Inspector General

SUBJECT: INFORMATION: Special Report on "Management Challenges at the Department of Energy"

BACKGROUND

At the request of congressional leadership, the Office of Inspector General has for the past several years identified what it considers to be the most significant management and performance challenges facing the Department of Energy. This effort, which was codified as part of the Reports Consolidation Act of 2000, is now done on an annual basis and includes an assessment of the agency's progress in addressing each challenge area. As in the past, the methodology employed by this office relies on recent and on-going audit, inspection, and investigation work. The process places great emphasis on the identification of those programs and operations with demonstrated performance problems and those which are, in our judgment, inherently the most difficult to manage. While any analysis of this sort is subjective, we believe that the result is a balanced, comprehensive depiction of Department-wide challenges.

RESULTS

The following are the most serious challenge areas that the Department will need to address in 2002 and beyond:

- Contract Administration
- Energy Supply
- Environmental Standards and Stewardship
- Human Capital
- Information Technology
- Infrastructure and Asset Management
- Performance Management
- Research and Development Investment
- Security and Safety
- Stockpile Stewardship

Management has initiated a number of positive actions to address some of the management challenges. We have highlighted these actions within each summary area.

Your views as detailed in *The Mission and Priorities of the Department* touched upon many of the challenges identified in this report. In addition, several of the challenge areas correspond to initiatives in *The President's Management Agenda for Fiscal Year 2002*. The Office of Inspector General will continue to evaluate the Department's performance in addressing these and related issues. We look forward to working with you and the Department's senior staff on these matters.

Attachment

cc: Deputy Secretary
Under Secretary for Energy, Science and Environment
Administrator, National Nuclear Security Administration
Director, Office of Management, Budget and Evaluation
Chief of Staff

MANAGEMENT CHALLENGES AT THE DEPARTMENT OF ENERGY

TABLE OF CONTENTS

Overview

Introduction	1
Conclusions and Observations.....	1

Management Challenges at the Department of Energy

Challenge Summaries	4
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Appendices

Fiscal Year 2001-02 Reports Related to the Department's Management Challenges	18
Crosswalk of Challenges.....	26

OVERVIEW

INTRODUCTION

The Department of Energy (Department), established in 1977, conducts programs relating to energy resources, national nuclear security, environmental quality, and science. Its mission is to foster a secure and reliable energy system that is environmentally and economically sustainable; to be a responsible steward of the Nation's nuclear weapons; to clean up the Department's facilities; to lead in the physical sciences and advance the biological, environmental, and computational sciences; and to provide premier scientific instruments for the Nation's research enterprise. In carrying out this multifaceted mission, the Department employs a unique workforce, including over 110,000 Federal and contractor employees and maintains a complex of national laboratories, production facilities, and other buildings on over 2.5 million acres of land.

Accomplishing this significant national mission is replete with management challenges. As such, the Department, the General Accounting Office (GAO), and the Office of Inspector General (OIG) have separately identified and categorized major challenge areas. Further, the President has developed a number of initiatives, contained in *The President's Management Agenda for Fiscal Year (FY) 2002*, which are applicable to the Department. In accordance with the mandate established in the Reports Consolidation Act of 2000, this report sets forth the OIG's conclusions as to the most serious management and performance challenges the Department faces. These conclusions are based on knowledge gained through the performance of audits, inspections and investigations of the Department and its activities. The Department develops its inventory of Departmental challenges in accordance with the Federal Managers' Financial Integrity Act (FMFIA), and GAO has most recently detailed its assessment of the Department's challenges in a January 2001 report *Major Management Challenges and Program Risks, Department of Energy*, (GAO-01-246).

CONCLUSIONS AND OBSERVATIONS

As of the end of Calendar Year 2001, the OIG has identified ten key management challenge areas. Each area is briefly discussed in the body of the report.

- Contract Administration
- Energy Supply
- Environmental Standards and Stewardship
- Human Capital
- Information Technology

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- Infrastructure and Asset Management
 - Performance Management
 - Research and Development Investment
 - Security and Safety
 - Stockpile Stewardship

The report summarizes our observations about the management challenges. In addition, we have cited recent OIG reviews that illustrate or identify key aspects of the challenge issues or specific operations and programs that may not achieve their intended results. We have also included, as appropriate, areas of positive progress in each area and briefly assessed the agency's actions in addressing those challenges. Appendix 1 lists key OIG reports issued during the past year that are associated with each of the challenge areas.

In large measure, the list of challenges in this report, which are listed alphabetically, parallels the lists of years past. While some challenges are amenable to near-term resolution, others can only be addressed by a concerted, continuing effort, resulting in progress over a long period of time. As such, we would expect to continue seeing these challenge areas appear in future years. For example, even under the most optimistic assumptions, the effort to remediate the residual effects of the nuclear weapons program (Environmental Standards and Stewardship) will require decades to complete. It is unrealistic to anticipate that a program of this magnitude can be removed in the near term from a list of major Department challenges. Conversely, areas such as Security and Safety can, in our view, benefit from near term aggressive management action.

Since last year, some of the challenge areas have evolved while others have been combined or re-titled to better capture the nature of the challenge. For example, Environmental Remediation was re-titled Environmental Standards and Stewardship to better reflect the broad scope of the issue and the Department's role in managing the legacy of the nuclear age, including the disposal of civilian spent nuclear fuel. Also, two new areas have been added, Performance Management and Research and Development Investment, to address these significant management challenges. Appendix 2 presents a crosswalk between the current list and the list we provided last year.

The Secretary of Energy touched on many of these challenges in October 2001 when he shared his views on *The Mission and Priorities of the Department*. Prevalent in these views were priorities relating to energy supply, environmental standards and stewardship, human capital, performance management, research and development investment, security and safety, and stockpile stewardship.

Consistent with the requirements of the Government Performance and Results Act, the Department should aggressively work to develop and implement performance goals and measures that directly address each of the management challenges identified in this report. Further, actual performance should be assessed against these goals and measures and be independently validated.

(Signed)

Office of Inspector General

MANAGEMENT CHALLENGES AT THE DEPARTMENT OF ENERGY

Challenge Summaries

The following sections briefly summarize our observations regarding the challenge areas, including, where appropriate, Departmental efforts or accomplishments that have come to our attention. We also briefly assess the Department's progress in addressing each challenge. In addition, we have identified the relationship between these areas and the initiatives in *The President's Management Agenda for Fiscal Year 2002*.

Contract Administration

The Department's programs are largely accomplished through contractors that operate and manage a broad range of scientific and production activities and facilities for the Department. These contracts represent the largest share of the Department's annual budget. Contract Administration, which includes project management, has been a longstanding challenge.

The Department continues to experience difficulties in managing some of its major projects. For the most part, these projects are managed by the Department's prime contractors. Cost overruns, schedule delays and undesirable scope reductions have been recurring problems. Since the early 1990s, the OIG has issued a series of reports critical of the planning, justification, and management of major projects. Most recently, our audit of *Progress of the Spallation Neutron Source Project*, (DOE/IG-0532, November 2001, <http://www.ig.doe.gov/pdf/ig-0532.pdf>) indicated that the project's technical scope was reduced to allow the cost and schedule components to be met. Contrary to original commitments, in June 2006, the anticipated completion date, the project will not:

- Have instruments to address all of the initially planned areas of science;
- Provide complete user facilities; and
- Possess critical spare parts and equipment.

In a *Follow-on Inspection of the Department of Energy's Value Engineering Program* (DOE/IG-0536, December 2001, <http://www.ig.doe.gov/pdf/ig-0536.pdf>), we noted that despite a requirement dating to 1993, the Department had not developed or implemented an effective value engineering program. Value engineering, an analytical management tool, serves to ensure realistic budgets, identify unnecessary costs, and improve program performance. Recent efforts by the Department to address project management issues include development of a Project Analysis and Reporting System, use of earned value management systems, and mandatory acquisition planning.

During the past year, OIG reports have also disclosed continuing challenges associated with performance-based incentives and associated fees at the major contractor locations. For example, our audit of *Use of Performance-Based Incentives at Selected Departmental Sites*, (DOE/IG-0510, July 2001, <http://www.ig.doe.gov/pdf/ig-0510.pdf>) pointed out that the Department's performance-based incentives, which are used to determine fee payments to the contractor, were not consistently structured in a manner that would result in improved contractor performance. In *Inspection of Selected Aspects of the Office of River Protection Performance-Based Incentive Program*, (DOE/IG-0506, June 2001, <http://www.ig.doe.gov/pdf/ig-0506.pdf>), we reported that actions are required by Office of River Protection officials to improve the administration and effectiveness of the performance-based contract incentive program. Further, *Incentive Fees for Bechtel Jacobs Company LLC*, (DOE/IG-0503, May 2001, <http://www.ig.doe.gov/pdf/ig-0503.pdf>) disclosed that the Oak Ridge Operations Office did not finalize performance objectives for the contractor prior to the beginning of the applicable year and then modified performance objectives during the year to reduce expectations.

In addition, our report on *Fixed-Price Contracting for Department of Energy Cleanup Activities*, (CR-B-02-01, October 2001, <http://www.ig.doe.gov/pdf/crb0201.pdf>) noted that the projected savings expected as the result of using fixed-price contracting are unlikely to be fully achieved. Although management did not fully agree with some of our findings, there was a general consensus that improvements could be made in each of these areas. Finally, we also have an ongoing review of *Purchase Card Programs* in which we identified many examples of Government purchase card misuse, including inappropriate purchases of home improvement items, hunting equipment and accessories, electronics, lawn equipment, and power tools.

The Department has recognized that the challenge of greater government and contractor performance lies both with the structure of contracts and also with the efforts of the government team that manages and administers those contracts. A number of actions have been initiated recently to change Department strategy for administering and managing these contracts. These efforts include revised or new guidance, workshops, and studies. Further, the Department's Office of Management Systems was reorganized into the Office of Contract Management and a separate division was established within that office to concentrate on the challenges of contract administration.

While the Department has taken many actions to improve contract administration, more needs to be done. The Department is exploring new governance proposals for some of its contractors. Based on our experience, it is important that the Department maintains an appropriate balance between giving contractors the flexibility to accomplish the Department's missions and ensuring proper stewardship of government resources. In our judgment, improvement in successfully linking contracting to program and performance management represents one of the greatest opportunities for enhancing the economy and efficiency of Departmental operations.

Energy Supply

As evidenced by electricity supply problems in several Western states last summer, the United States continues to face a delicate balance between energy demand and supply. In this regard, if the economy grows over the next 20 years at a rate similar to that of the last 10 years, increases in U.S. energy consumption will significantly outpace production. In fact, the nation's dependence on oil is at an all-time high and is expected to grow. Between 1991 and 2000, Americans used 17 percent more energy than in the previous decade while domestic energy production rose by only 2.3 percent. As the Federal agency responsible for energy policy at the national level, the Department will have a critical role in addressing this challenge.

Our nation imports more than 53 percent of its petroleum, much of it coming from the Persian Gulf region. The Department estimates that this will increase to 62 percent by the year 2020. In 1990, Congress declared that dependence over 50 percent on foreign oil should be considered a peril point. Recent world events have underscored the paramount importance of maintaining an adequate energy supply for national security.

During the past year, OIG reviews have disclosed certain instances where the Department was not achieving the maximum benefit from its energy-related programs. For example, our audit report, *Department of Energy's Super Energy Savings Performance Contracts*, (DOE/IG-0499, April 2001, <http://www.ig.doe.gov/pdf/ig-0499.pdf>), noted that the Department had not maximized the use of its cost-recovery authority. Additionally, our report on *Financial Assistance for Biomass-to-Ethanol Projects*, (DOE/IG-0513, July 2001, <http://www.ig.doe.gov/pdf/ig-0513.pdf>) pointed out that the Department did not meet its programmatic goal of having a full-scale commercial biomass production facility built by 2000.

The Department was a major participant in the President's Energy Policy Development Group, which produced a National Energy Policy. This policy, published in May 2001, is designed to help the private sector and, as appropriate, government at all levels, to ensure that there are adequate energy resources to meet the needs of U.S. citizens. In addition, in November 2001, the President directed the Department to fill the Strategic Petroleum Reserve, which provides protection against oil supply disruptions, to its capacity of 700 million barrels of crude oil.

Energy supply issues represent one of the most important policy and programmatic challenges facing the Department. As the Administration and Congress have recognized, energy supply issues have serious implications for our economic and national security. This, in our view, deserves the Department's priority attention. A variety of audits and inspections are currently ongoing or planned in this area.

Environmental Standards and Stewardship

The Department is charged with the daunting task of protecting human health and the environment by cleaning up sites that supported nuclear weapons production activities. It must also address the need to permanently dispose of defense-related high-level radioactive wastes as well as spent nuclear fuel from civilian nuclear power plants. All of these activities must be carried out consistent with established Federal, state, and local requirements and standards. These environmental stewardship activities are some of the most complex managerial and public policy issues facing this nation, let alone the Department.

Although the Department's goal has been to clean up as many sites as possible by 2006, it may not be able to meet that date in as many cases as anticipated. For example, in our report *Remediation and Closure of the Miamisburg Environmental Management Project*, (DOE/IG-0501, May 2001, <http://www.ig.doe.gov/pdf/ig-0501.pdf>), we found that the estimated date for project completion was December 2009 rather than the planned date of September 2005 and that the estimated cost for the project had more than doubled. In a related report on the remediation of the Ashtabula Environmental Management Project (AEMP), we found that the project was not on schedule to be completed by March 31, 2003. After spending 8 years and \$103 million, the AEMP had twice as much equipment and 84 percent more building space than when the project began. The latest estimate for completion of the project is FY 2012. In addition, GAO reported that the Department is unlikely to meet the December 2006 target closure date for Rocky Flats (GAO-01-284, *Nuclear Cleanup: Progress Made at Rocky Flats, but Closure by 2006 is Unlikely, and Costs May Increase*).

Other OIG reviews have noted the need for increased management attention to achieving intended environmental cleanup outcomes. For example, our audit of *Utilization of the Department's Low-Level Waste Disposal Facilities*, (DOE/IG-0505, May 2001, <http://www.ig.doe.gov/pdf/ig-0505.pdf>) concluded that the Department did not have a comprehensive approach to maximize waste disposal resulting in unused capacity and increased risk. Another report, *Idaho Operations Office Mixed Low-Level Waste Disposal Plans*, (DOE/IG-0527, September 2001, <http://www.ig.doe.gov/pdf/ig-0527.pdf>), found that the Idaho Operations Office had not fully explored more cost-effective options for disposing of its mixed low-level waste.

In April 2001, the Secretary announced a significant new environmental initiative. The Secretary stated, in part, that

...we will begin immediately to conduct a complete assessment of our Environmental Management mission. A number of reviews have been conducted over the last several years including studies by the National Academy of Sciences and the Inspector General that cite high costs, inefficiencies, and a lack of progress in parts of the cleanup program. Much of the Department's cleanup strategy was developed in the early part of the last decade. We've learned a great deal over these years and those lessons should be applied.

Accordingly, our top-to-bottom review will focus on what has prevented us from narrowing the cost and efficiency gap and whether our current strategies are suitable. What is more, DOE's own policies and procedures may well cause much of the inefficiency in the program. I want those identified. And they will change.

We view this effort as encouraging, specifically, the promise that the Secretary's initiative holds for a more efficient and responsive environmental cleanup effort. The OIG will continue to monitor the Department's performance in this critically important area.

Human Capital

Since 1995, the Department has reduced Federal staff (excluding the Power Marketing Administrations) from 13,640 to 10,333 through reductions in force, buyouts, and attrition. During this period, the average age of employees in the Department has increased from 44 to

48. Currently, only nine percent of the workforce is under the age of 35 and the situation is even more severe for the technical workforce, which has only six percent of its population under 35. The high average age combined with a very low number of younger employees leads to concerns about succession planning and the infusion of new ideas and sustaining technical capabilities. In FY 2001, 13 percent of the DOE workforce was eligible to retire. This will increase to 32 percent by FY 2005. It is projected that about one third of the Federal employees now on-board at the Department will retire by FY 2007.

In addition, much of the Department's work on critical missions is conducted by major contractors, which employ over 100,000 workers at production facilities, environmental cleanup sites, and national laboratories across the nation. Some of these contractors have faced similar issues in recruiting and retaining a quality workforce with the appropriate skill mix. The experienced designers and engineers who built the weapons in the stockpile and understand how they work are reaching or past retirement age. The Department is also faced with shortages of technicians skilled in techniques associated with weapons production, such as the plutonium pit manufacturing process. In addition, GAO has cited cost overruns on the National Ignition Facility as being partly attributable to inexperienced managers on the project.

Strategic Management of Human Capital is one of the President's Government-wide initiatives for FY 2002. The Federal workforce as a whole is experiencing many of the same problems that the Department faces, including a workforce that is substantially smaller and has an increasing average age. We have been monitoring the human capital issue through our role in the FMFIA process and other audit work. For example, in our report on *Recruitment and Retention of Scientific and Technical Personnel*, (DOE/IG-0512, July 2001, <http://www.ig.doe.gov/pdf/ig-0512.pdf>) we reported that the Department was unable to recruit and retain critical scientific and technical staff in a manner sufficient to meet identified mission requirements. Based on our analysis of attrition and hiring since 1999, we determined that as of January 2001, the Department faced an immediate need for as many as 577 scientific and technical specialists. Further, if this trend continues, the Department could face a shortage of nearly 40 percent in these classifications within five years.

The Department has recognized the seriousness of its recruitment and retention problems. During 2001, the Department submitted a workforce analysis and a multi-year workforce restructuring plan to the

Office of Management and Budget (OMB) and convened a Human Capital Summit to identify a full range of Human Capital initiatives in support of rebuilding the Department's workforce and making the Department an employer of choice. On August 30, Deputy Secretary Blake announced some short-term human capital initiatives to "jump start" the Department's workforce rebuilding and restructuring process in areas including performance management, management efficiency, recruitment and retention, diversity, leadership development and succession planning. These are good first steps; however, the resolution of human capital issues will take time and need to be addressed in a comprehensive fashion that includes specific measurable goals for closing critical skill gaps.

Information Technology

The Department spent over \$1.1 billion on Information Technology (IT) in FY 2001. Effective IT management is essential to the Department's performance of its multifaceted mission. To enhance the management and control of IT Government-wide, Congress passed the Clinger-Cohen Act of 1996, which establishes comprehensive requirements in the IT area. It requires Federal agencies to appoint a Chief Information Officer (CIO) to manage IT investments and to adopt a performance-and-results-based management approach to acquiring, using, and disposing of IT. In addition, *Expanded Electronic Government* is one of the President's Government-wide initiatives for FY 2002. The goal is for the Federal government to secure greater services at lower cost through electronic government and meet high public demand for services.

This past year we issued a special report on *The Department of Energy's Implementation of the Clinger-Cohen Act of 1996*, (DOE/IG-0507, June 2001, <http://www.ig.doe.gov/pdf/ig-0507.pdf>), which summarized 13 IT related OIG reports. Cumulatively, these reports demonstrated systemic problems with the Department's approach to IT management and its method of addressing requirements of the Act. Specifically, the Department had not satisfied major requirements of the Act to develop and implement an integrated, enterprise-wide, IT architecture, closely monitor policy implementation efforts, and acquire IT related assets in an effective and efficient manner.

The Department has recently taken a number of actions designed to improve the overall management of information technology resources, including making the CIO a direct report of the Secretary. Other ongoing actions include initiatives to:

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- improve computer security,
 - broaden the coverage of the information technology architecture,
 - consolidate shared services,
 - eliminate or reduce the development of duplicative systems, and
 - modernize Departmental systems.

While these initiatives have resulted in certain efficiencies and have great promise, opportunities for additional improvements in IT management and cyber security exist.

Infrastructure and Asset Management

The Department's physical infrastructure includes more than 50 major facilities in 35 states. These facilities include structures ranging from temporary trailer-type buildings, to office space, to state-of-the-art nuclear reactors and laboratories. It has about 125 million square feet of building space, 4,000 miles of roads, over 100 miles of railroad track, and 1.1 million feet of sidewalks and other infrastructure components. For several years, the OIG has reported that the condition of the Department's infrastructure is deteriorating at an alarming pace and may be inadequate in the future to meet mission requirements. Our continuing work in this area indicates that it remains a key challenge for the Department.

Last year we noted, in our report on *Management of the Nuclear Weapons Production Infrastructure*, (DOE/IG-0484, September 2000, <http://www.ig.doe.gov/pdf/ig-0484.pdf>), that the production infrastructure had seriously degraded. Since that time, others have reported similar results and management has initiated various planning and budgetary efforts to resolve this situation.

We have also noted this trend in non-defense related activities. For example, our audit of *Facility Maintenance at the Idaho National Engineering and Environmental Laboratory*, (WR-B-01-04, March 2001, <http://www.ig.doe.gov/pdf/wrb0104.pdf>) noted that the Idaho Operations Office has not maintained its facilities in a safe and economical manner. A sample of recent work orders for preventive maintenance revealed that 51 percent were not completed by the requested due date, and facility problems were often related to untimely completion of maintenance work orders.

In response to one of our prior audits, *Facilities Information Management System*, (DOE/IG-0468, April 2000, <http://www.ig.doe.gov/pdf/ig-0468.pdf>), the Department has taken action to improve its

corporate real property database. In August 2001, fields in the database were revised to include only information essential to real property management, and the Department began a two-step data field population process, with all fields expected to be populated by September 30, 2002.

Our reviews have also noted problems in asset management. An audit on *Accounting for Government-Owned Nuclear Materials Provided to Non-Department Domestic Facilities*, (DOE/IG-0529, October 2001, <http://www.ig.doe.gov/pdf/ig-0529.pdf>) concluded that the Department could not fully account for nuclear materials loaned or leased to domestic licensees. According to records in the Nuclear Materials Management and Safeguards System, substantial amounts of nuclear materials were located at two licensed facilities that no longer existed; several licensed facilities were shown as having negative balances that were not logical; and records were incomplete in that they did not contain information on all reportable Government-owned nuclear materials provided to licensees. In relation to personal property, our audit *Sandia National Laboratories Personal Property Accountability*, (DOE/IG-0523, September 2001, <http://www.ig.doe.gov/pdf/ig-0523.pdf>) disclosed that the fixed asset database maintained by Sandia National Laboratories was not accurate. Similarly, in our report on *Inspection of the Management of Personal Property at the Ashtabula Environmental Management Project*, (DOE/IG-0530, November 2001, <http://www.ig.doe.gov/pdf/ig-0530.pdf>) we concluded that the Ashtabula site was not managing Government-owned personal property in accordance with requirements and that, as a consequence, contractors were stockpiling personal property without a valid need or mission requirement.

While the Department has taken steps to improve its management of infrastructure and asset inventories, such as seeking additional funding for infrastructure purposes, drafting management policy for real property, and demonstrating new technologies to identify and track the locations of assets, more needs to be done. The deterioration of infrastructure in the Department is at a critical stage.

Performance Management

In 1993, Congress enacted the Government Performance and Results Act to get the Federal government to focus federal programs on performance. After eight years of experience, the Department has made some progress toward the use of performance information for program management. However, additional work needs to be done to ensure that the Department has the metrics in place and uses them to manage its programs and activities effectively.

In a *Special Report on Performance Measures at the Department of Energy*, (DOE/IG-0504, May 2001, <http://www.ig.doe.gov/pdf/ig-0504.pdf>), we identified problems with the usefulness and completeness of the performance measures and the validity and accuracy of some of the results reported. Specifically: (1) several measures were not objective or quantifiable, (2) critical measures relating to some of the Department's major challenge areas were not present, and (3) performance results reported for the selected measures were not always accurate and valid.

Performance management challenges are not unique to the Department. In fact, performance measures in the Federal government as a whole tend to be ill-defined and not properly integrated into agency budget submissions or the management and operation of agencies. This was recognized in *The President's Management Agenda for Fiscal Year 2002*, which identified *Budget and Performance Integration* as a Government-wide initiative for FY 2002.

In response to past criticism of its performance management activities, the Department has recently created the Office of Program Analysis and Evaluation and is moving toward a five-year planning, programming budget and evaluation system, which is intended to better integrate improved performance measures with the budget.

To be meaningful, performance measures should be clear and quantifiable. Further, program costs need to be directly tied to outcomes. The Department is in the design phase of implementing a new accounting and financial reporting system (Business Management Information System – Phoenix). This system is intended, among several objectives, to provide expanded capabilities that will facilitate future integration with the Department's performance management system. This initiative is a positive step that will require significant management attention to meet the Department's objectives.

Research and Development Investment

Better R&D Investment Criteria is one of the President's Program Initiatives for FY 2002. Science and technology are critically important to keeping the nation's economy competitive and for addressing challenges we face in health care, defense, energy production and use, anti-terrorism, and the environment. As such, every Federal research and development dollar must be invested as effectively as possible.

During FY 2001, the Department spent about \$7.7 billion on a broad range of research activities, representing more than 40 percent of its budget. However, the OMB has been critical of some of the Department's research and development efforts. For example, it reported that the Department funded development of a midsize turbine that had already been successfully commercialized. OMB also reported that the Department continued to fund gas-to-liquid conversion research even though the process has been commercialized to the point that one multinational oil company is considering investing up to \$6 billion for new plants based upon this technology.

This past year, we focused our attention on examining whether the Department was ensuring that the results of research it funds were being properly disseminated. In this regard, our report *Albuquerque Operations Office's Grant Administration*, (DOE/IG-0524, September 2001, <http://www.ig.doe.gov/pdf/ig-0524.pdf>) noted that Albuquerque was not receiving many of the deliverables specified in its grants. As of May 2001, Albuquerque had not received final deliverables for 11 of the 28 completed grants examined. Another audit, *Peer-Reviewed Scientific Literature Generated at the Department's Light Sources*, (DOE/IG-0520, August 2001, <http://www.ig.doe.gov/pdf/ig-0520.pdf>), disclosed that only 44 percent of the abstracts associated with the research performed at the Department's light source laboratories in FY 2000 were available for public dissemination through the Department's Office of Scientific and Technical Information. A third audit on *Grant Administration at the Oakland Operations Office* has indicated that the results of many science and technology endeavors were not forwarded to the Office of Science and Technology Information for dissemination to the scientific community and the public.

Given the magnitude of the Department's research and development activities and the great benefit that can flow from these activities, significant care needs to be taken in the prioritization and management of these activities. Accordingly, this challenge area will be a continuing area of focus for the OIG.

Security and Safety

The Department's complex is large and multi-faceted with a wide variety of locations, facilities, sensitive materials, and activities that must be kept safe and secure. However, audits and inspections have demonstrated that security and safety controls need to be strengthened.

Specifically, our *Inspection of Department of Energy Activities Involving Biological Select Agents*, (DOE/IG-0492, February 2001, <http://www.ig.doe.gov/pdf/ig-0492.pdf>) concluded that the Department's biological select agent activities lacked organization, coordination, and direction. This resulted in the potential for greater risk to workers and possibly others from exposure to biological select agents and select agent material. Another inspection, *Environment, Safety & Health Issues at the Ashtabula Environmental Management Project* (INS-L-01-05, June 2001, <http://www.ig.doe.gov/pdf/insl0105.pdf>), noted that our physical inspection of buildings and equipment revealed conditions that raised concern about worker safety and health.

In our report, *Lawrence Livermore National Laboratory Protective Force and Special Response Team*, (DOE/IG-0534, December 2001, <http://www.ig.doe.gov/pdf/ig-0534.pdf>), 11 recommendations were made to management that if implemented, will improve the site's ability to comply with the Site Safeguards and Security Plan, improve protection of Special Nuclear Material, and provide clearer guidance for site protective force operations. In addition, a classified report raised concerns over the control of classified matter at the Paducah site.

With reference to *The Department's Unclassified Cyber Security Program*, we determined that while the Department has made improvements in its unclassified cyber security program, the program did not adequately protect data and information systems as required by the Government Information Security Reform Act.

In addition to security for its own sites and systems, the Department has other responsibilities related to ensuring security of the nation. For example, our report on *Accounting for Government-Owned Nuclear Materials Provided to Non-Department Domestic Facilities*, (DOE/IG-0529, October 2001, <http://www.ig.doe.gov/pdf/ig-0529.pdf>) concluded that the Department could not fully account for nuclear materials loaned or leased to domestic licensees. In our judgment, the system used to track this material should be used as an important tool for maintaining the strictest possible control over materials that could, in the wrong hands, threaten national security. In addition GAO has reported challenges the Department faces in its efforts to improve the security of hundreds of tons of nuclear material at various sites throughout Russia.

Security activities have increased in light of the recent national tragedy. Consistent with this increased attention, security and safety continue to be among the most difficult challenges facing the Department.

Stockpile Stewardship

The National Nuclear Security Administration (NNSA) was established in March 2000. Last year, we reported Issues Relating to the Creation of the NNSA as a significant management challenge facing the Department. This challenge focused mainly on creating a new Government enterprise, but referenced other challenges identified in the report. NNSA still has some of these issues to deal with, but this year, we have identified the efficient and effective performance of its primary mission as a significant management challenge—namely, Stockpile Stewardship.

In 1993, the President and Congress reaffirmed the moratorium on underground nuclear testing and directed that a science-based Stockpile Stewardship Program be developed to maintain the nation's stockpile of nuclear weapons. The Department's plan for stockpile stewardship describes it as one of the most complex, scientifically technical programs ever undertaken. The program consists of surveillance, experimentation, computation, and production. Its focus is to maintain "high confidence" in the safety and reliability of the stockpile without nuclear testing.

The Department is required, based on activities conducted under the Stockpile Stewardship Program, to annually certify to the President that the nuclear weapons stockpile is, in fact, safe and reliable and that underground nuclear testing does not need to be resumed. Ultimately, the program's success is dependent upon developing an unprecedented set of scientific tools to better understand nuclear weapons, enhancing stockpile surveillance capabilities, and in the process, extending the life of the weapons that comprise the stockpile. Responsibility for stockpile stewardship rests with the NNSA.

During the past year, OIG reviews have disclosed difficulties the Department is having with meeting this critical mission, which is vital to our national security. For example, our audit of *Stockpile Surveillance Testing*, (DOE/IG-0528, October 2001, <http://www.ig.doe.gov/pdf/ig-528.pdf>) disclosed that the Department has not been meeting its schedule for some flight, laboratory, and component tests; and backlogs are projected to continue for several years. Without a robust and complete surveillance testing program, the Department's

ability to assess the reliability of some nuclear weapons is at risk. In a related review, *Management of the Stockpile Surveillance Programs' Significant Finding Investigations*, (DOE/IG-0535, December 2001, <http://www.ig.doe.gov/pdf/ig-535.pdf>), we determined that the Department was not processing and resolving defects and failures identified during stockpile surveillance testing in a timely manner.

APPENDIX 1

Fiscal Year 2001-02 Reports Related to the Department's Management Challenges

Contract Administration

Issued Reports:

2001-12-20 - Report IG-0536:

Inspection Report on "Follow-on Inspection of the Department of Energy's Value Engineering Program"

2001-11-19 - Report IG-0532:

Audit Report on "Progress of the Spallation Neutron Source Project"

2001-10-15 – Report CR-B-02-01:

Audit Report on "Fixed-Price Contracting for Department of Energy Cleanup Activities"

2001-07-09 - Report IG-0510:

Audit Report on "Use of Performance-Based Incentives at Selected Departmental Sites"

2001-06-14 - Report IG-0506:

Inspection Report on "Inspection of Selected Aspects of the Office of River Protection Performance-Based Incentive Program"

2001-05-09 - Report CR-B-01-01:

Audit Report on "Issues Regarding Fee Structure for Three Environmental Management Contracts"

2001-05-07 - Report IG-0503:

Audit Report on "Incentive Fees for Bechtel Jacobs Company LLC"

2001-03-21 - Report IG-0498:

Audit Report on "Bechtel Jacobs Company LLC's Management and Integration Contract at Oak Ridge"

Ongoing Reviews:

Purchase Card Programs

Kaiser-Hill Closure Project Costs and Fees at the Rocky Flats Environmental Technology Site

Brookhaven Subcontracting

Privatization of Services at the Savannah River Site

Relativistic Heavy Ion Collider Construction Management

Lawrence Livermore Special Employment Program

Energy Efficiency and Renewable Energy- Grant Irregularities

Oak Ridge National Laboratory Directing of Subcontract Task

Carlsbad – Questionable Travel

Energy Supply

Issued Reports:

2001-07-16 - Report IG-0513:
Audit Report on "Financial Assistance for Biomass-to-Ethanol Projects"

2001-04-02 - Report IG-0499:
Audit Report on "Department of Energy's Super Energy Savings Performance Contracts"

Ongoing Reviews:

Repayment Activities
Bi-National Sustainability Laboratory
Efforts to Replace Petroleum Based Motor Fuels
In-House Energy Management Program

Environmental Stewardship

Issued Reports:

2001-11-13 - Report IO1IG001:
Investigation Report on "Review of Alleged Conflicts of Interest Involving a Legal Services Contract for the Yucca Mountain Project"

2001-09-28 - Report IG-0527:
Audit Report on "Idaho Operations Office Mixed Low-Level Waste Disposal Plans"

2001-05-25 - Report IG-0505:
Audit Report on "Utilization of the Department's Low-Level Waste Disposal Facilities"

2001-05-02 - Report IG-0501:
Audit Report on "Remediation and Closure of the Miamisburg Environmental Management Project"

2001-04-23 - Report IO1HQ005:
"Special Review of the Yucca Mountain Project"

2000-11-28 - Report IG-0490:
Audit Report on "Containers Suitable for Shipping Fissile Material"

2000-11-28 - Report IG-0489:
Audit Report on "Americium/Curium Vitrification Project at the Savannah River Site"

Ongoing Reviews:

Groundwater Cleanup Activities at Pantex
Idaho Settlement Agreement Milestones
Waste Isolation Pilot Plant Transportation Plan
Completion of CERCLA and Federal Facility Agreement Milestones
Defense Facilities Site Closure Projects
Salt Processing Facility at Savannah River Site
Remediation of Ashtabula
Plutonium Stabilization and Packaging System at the Rocky Flats Environmental Technology Site
Yucca Mountain Proposed Waste Handling Facility
The Department's Strategy for the Disposal of Plutonium
Remote Treatment Facility at Argonne-West
Hanford Waste Packaging Activities
Legacy Waste at Lawrence Livermore National Laboratory

Human Capital

2001-07-10 - Report IG-0512:
Audit Report on "Recruitment and Retention of Scientific and Technical Personnel"

Information Technology

Issued Reports:

2001-12-21—Report IG-0537
Audit Report on "Telecommunications Infrastructure"

2001-08-23 - Report IG-0516:
Audit Report on "Information Technology Support Services Contracts"

2001-06-28 - Report IG-0509:
Audit Report on "Integrated Planning, Accountability, and Budgeting System-Information System"

2001-06-20 - Report IG-0507:
Special Report on "The Department of Energy's Implementation of the Clinger-Cohen Act of 1996"

2001-03-13 - Report IG-0497:
Inspection Report on "Inspection of Concerns Relating to the Management of the Savannah River Operations Office Learn/Power Information System"

2001-02-13 - Report IG-0494:
Audit Report on "The U.S. Department of Energy's Corporate Human Resource Information System"

2001-02-09 - Report IG-0493:
Audit Report on "Internet Privacy"

Ongoing Reviews:

Super Computer Acquisitions
Business Management Information System for Financial Management Phoenix Project
Nuclear Materials Management and Safeguards System

Infrastructure and Asset Management

Issued Reports:

2001-11-09 - Report IG-0530:
Inspection Report on "Inspection of the Management of Personal Property at the Ashtabula Environmental Management Project"

2001-11-08 - Report INS-O-02-01:
Inspection Report on "Inspection on the Management of Excess Personal Property at Lawrence Livermore National Laboratory"

2001-10-16 - Report WR-B-02-01:
Audit Report on "Power Marketing Administration's Installation of Fiber Optics"

2001-10-26 - Report IG-0529:
Audit Report on "Accounting for Government-Owned Nuclear Materials Provided to Non-Department Domestic Facilities"

2001-09-17 - Report IG-0523:
Audit Report on "Sandia National Laboratories Personal Property Accountability"

2001-07-19 - Report IG-0514:
Audit Report on "Administrative Control of the Hanford Reach National Monument"

2001-06-27 - Report IG-0508:
Audit Report on "Stocked Inventory at the Savannah River Site"

2001-05-07 - Report IG-0502:
Audit Report on "Sale of Land at Oak Ridge"

2001-03-22 - Report WR-B-01-04:
Audit Report on "Facility Maintenance at the Idaho National Engineering and Environmental Laboratory"

2001-02-27 - Report IG-0496:

Audit Report on "Sale of Enriched Uranium at the Fernald Environmental Management Project"

2001-02-20 - Report INS-O-01-01:

Inspection Report on "Inspection of Lawrence Livermore National Laboratory Credit Card Usage and Property Management Concerns"

2001-02-02 - Report WR-B-01-01:

Audit Report on "Richland Operations Office Fleet Management"

Ongoing Reviews:

Government-Owned Nuclear Materials Provided to Foreign Facilities
Planned Construction Activities at Idaho National Engineering and Environmental Laboratory
Surplus Facilities
Modernization of the Oak Ridge National Laboratory
Capital Project Management at the Y-12 National Security Complex
Critical Infrastructure Identification and Protection Measures
Oak Ridge Operations Office Management of Personal Property
Savannah River Site Excess Property Concerns

Performance Management

Ongoing Reviews:

Government-Owned Nuclear Materials Provided to Foreign Facilities
Planned Construction Activities at Idaho National Engineering and Environmental Laboratory
Surplus Facilities
Modernization of the Oak Ridge National Laboratory
Capital Project Management at the Y-12 National Security Complex
Critical Infrastructure Identification and Protection Measures
Oak Ridge Operations Office Management of Personal Property
Savannah River Site Excess Property Concerns

Performance Management

Issued Reports:

2001-09-26 - Report IG-0526:

Audit Report on "Dissemination of Research from the Environmental Molecular Sciences Laboratory"

2001-09-18 - Report IG-0524:
Audit Report on "Albuquerque Operations Office's Grant Administration"

2001-08-31 - Report IG-0521:
Audit Report on "Administration of Small Business Innovation Research Phase II Grants"

2001-08-31 - Report IG-0520:
Audit Report on "Peer-Reviewed Scientific Literature Generated at the Department's Light Sources"

Ongoing Reviews:

Grant Administration at the Oakland Operations Office
Awards to Educational Institutions

Security and Safety

Issued Reports:

2001-12-14 - Report IG-0534:
Inspection Report on "Lawrence Livermore National Laboratory Protective Force and Special Response Team"

2001-12-07 - Report IG-0533:
Inspection Report on "Inspection of the Department of Energy's Automated Export Control System"

2001-11-13 - Report IG-0531:
Inspection Report on "Inspection of Cyber Security Standards for Sensitive Personal Information"

2001-07-30 - Report IG-0515:
Audit Report on "Control of Classified Matter at Paducah"

2001-08-30 - Report IG-0519:
Evaluation Report on "The Department's Unclassified Cyber Security Program"

2001-08-30 - Report IG-0518:
Audit Report on "Evaluation of Classified Information Systems Security Program"

2001-08-24 - Report IG-0517:
Inspection Report on "Inspection of Selected Office of Security and Emergency Operations Firearms Inventories"

2001-06-15 - Report INS-L-01-05:
Letter Report on "Environment, Safety & Health Issues at the Ashtabula Environmental Management Project"

2001-04-12 - Report INS-O-01-04:
Inspection Report on "Inspection of the Purchase of Protective Force Respirators"

2001-04-05 - Report IG-0500:
Audit Report on "Virus Protection Strategies and Cyber Security Incident Reporting"

2001-04-03 - Report I01HQ003:
"Special Review of Profiling Concerns at the Department of Energy"

2001-03-21 - Report INS-O-01-03:
Inspection Report on "Inspection of the Department of Energy's Role in the Commerce Control List and the U.S. Munitions List"

2001-03-13 - Report INS-O-01-02:
Inspection Report on "Inspection of Selected Coordination Activities by the Department of Energy's Office of Transportation Safeguards"

2001-02-02 - Report IG-0492:
Inspection Report on "Inspection of Department of Energy Activities Involving Biological Select Agents"

2000-11-20 - Report IG-0488:
Inspection Report on "Inspection of Selected Aspects of the Department of Energy's Classified Document Transmittal Process"

2000-11-06 - Report INS-L-01-02:
Letter Report on "Security Incident at Technical Area 18, Los Alamos National Laboratory"

2000-10-31 - Report IG-0487:
Audit Report on "The Restructure of Security Services by the Oak Ridge Operations Office"

2000-10-27 - Report IG-0486:
Audit Report on "Federal Energy Regulatory Commission's Dam Safety Program"

Ongoing Reviews:

Personnel Security Clearance and Badge Access Controls
West Valley Security Issues
Status of CI Implementation Plan
SSSP Performance Testing
Improper Collection of Information
Transportation Security at National Nuclear Security Administration – Savannah River
Nuclear Safety Rules at Ohio Sites
Explosives Storage

Sealed Radioactive Sources
Kansas City Plant – Beryllium Exposure Concerns
Los Alamos National Laboratory – Reportable Incident Reports
Deemed Export Follow-up
Office of Transportation Safeguards Coordination Follow-up
Classified Document Transmittal Follow-up
Bio Select Agent Follow-up
Explosive Transportation and Security
Motor Carrier Drives/Security

Stockpile Stewardship Program

Issued Reports:

2001-12-18 - Report IG-0535:
Audit Report on "Management of the Stockpile Surveillance Program's Significant Finding Investigations"

2001-10-05 - Report IG-0528:
Audit Report on "Stockpile Surveillance Testing"

2001-03-13 - Report WR-B-01-03:
Audit Report on "Utilization of the Big Explosives Experimental Facility"

2001-02-12 - Report IG-0495:
Audit Report on "The Need for the Atlas Pulsed Power Experimental Facility"

Ongoing Reviews:

Readiness Within the National Nuclear Security Administration
Pit Manufacturing at Los Alamos National Laboratory
Availability of Weapons Systems Non-Nuclear Components

Management Challenges

Crosswalk of Challenges

New Challenges

Performance Management
Research and Development Investment
Stockpile Stewardship

Continuing Challenges

Contract Administration
Energy Supply
Environmental Standards and Stewardship
Human Capital
Information Technology

Restated Challenges

FY 2001

Infrastructure
Property Controls and Asset Inventories

Safety and Health
Security

FY 2002

Infrastructure and Asset Management

Security and Safety

Deleted Challenge

Initial Operations of the NNSA

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