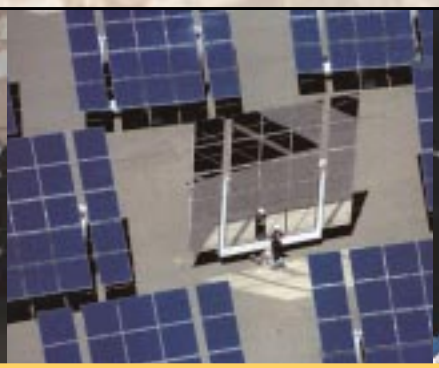
DOE/CR-0069

DEPARTMENT OF ENERGY

ACCOUNTABILITY REPORT



FISCAL YEAR 1999

Contents

Message from the Secretary

Overview

DOE at a Glance 1
Energy Resources 5
National Security 11
Environmental Quality 21
Science and Technology 27
Corporate Management 33
Status of Year 2000 Actions 41
Management's Response to Inspector General Audit Reports 42
Summary of Departmental Challenges 43
Message from the Chief Financial Officer 44
Financial Overview 45

Appendices

Inspector General's Audit Report 53
- Memorandum from the Inspector General .....
- Report on Financial Statements .....
- Report on the Internal Controls .....
- Report on Compliance with Laws and Regulations .....

Principal Financial Statements 77
Required Supplemental Financial Information 123
Detailed Performance Results 131
Mapping of Legal Requirements .....
Reference Index .....

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Contents

Message from the Secretary

Overview

DOE at a Glance 5
Energy Resources 8
National Security 13
Environmental Quality 21
Science and Technology 27
Corporate Management 33
Status of Year 2000 Actions 41
Management's Response to Inspector General Audit Reports 42
Summary of Departmental Challenges 43
Message from the Chief Financial Officer 44
Financial Overview 45

Appendices

Inspector General's Audit Report
- Memorandum from the Inspector General 55
- Report on Financial Statements 57
- Report on the Internal Controls 61
- Report on Compliance with Laws and Regulations 73

Principal Financial Statements 77
Required Supplemental Financial Information 124
Detailed Performance Results 131
Mapping of Legal Requirements 172
Reference Index 173

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More information relating the Department of Energy is available at **www.doe.gov.**

Printed with soy ink on recycled paper

Message From the Secretary

I am pleased to present the Department of Energy's Fiscal Year 1999 Accountability Report. The Report integrates information on our operational performance and financial activities. It is a progress report describing our achievements and the challenges we face. It demonstrates our strong commitment to stewardship and accountability in administering some of the Nation's most important programs on behalf of the American people.

The Department of Energy's responsibilities are important: protecting our national security; advancing the frontiers of science and technology; helping to solve the challenge of global climate change; cleaning up waste sites throughout the country; working to bring down the cost of electricity to the American people; and ensuring a balanced energy portfolio for our Nation. Our work spans a broad range of activities where we are making advances on a number of fronts. Our scientific research is unlocking the mysteries of the quark, the building block of matter. We are mapping the labyrinth that is the human genome, the building block of life. We have joined hands with Russia to ensure our joint national security, working so that nuclear materials stay out of the hands of terrorists. And, we are on the forefront of environmental remediation science, cleaning up the Nation's cold war legacy of nuclear waste and permanently isolating it from people and the environment.

My objective is that the Department administer its programs in the most efficient and economic manner possible. To accomplish this, we rely on our system of management controls. We believe these controls are working effectively. However, we have identified ten areas, such as security and project management, where improvements can and should be made. This report describes these areas as Departmental challenges and explains the actions we are taking to remedy them.

I am pleased to report that our Fiscal Year 1999 financial statements received an unqualified opinion from the auditors. Last year, in their audit of the Department's Fiscal Year 1998 statements, the Office of Inspector General identified needed improvements in our processes for estimating the liability associated with the cleanup of the nuclear weapons complex. Our efforts in 1999 to ensure the accuracy and completeness of the environmental remediation liability estimate in this year's statements were successful.

Meeting the needs of the American people is foremost for all of us at the Department of Energy. We have set ambitious goals and are prepared to meet the challenges of today and the future.

Bill Richardson

Bill Richardson

Overview

DOE at a Glance

The Department of Energy provides innovative science and technology solutions to some of the foremost energy, national security, environmental, and scientific challenges facing our Nation.

Our History

The Department of Energy was created as a cabinet-level agency in 1977; yet, its history can be traced back to the days of the Manhattan Project in 1942, when the Manhattan Engineering District was established to manage the development of the first atomic bombs. After World War II, Congress created the Atomic Energy Commission to direct the development of nuclear weapons as well as to initiate the commercialization of nuclear power and regulate that growing industry.

The first atom bombs were developed by the Manhattan Engineering District. Development of nuclear weapons is now the responsibility of DOE.

In 1975, Congress replaced the Atomic Energy Commission with two separate agencies: the Nuclear Regulatory Commission, which was assigned the regulatory functions, and the Energy Research and Development Administration, created to manage the nuclear activities and energy programs. During this period, the United States faced an energy crisis that emphasized the need for one cabinet-level department to coordinate all Federal energy policy and programs. Congress created the Department of Energy in October 1977, bringing together many important functions under one agency.

Today, we utilize technical and scientific knowledge to ensure the Nation's energy security, maintain the safety and reliability of our nuclear weapons stockpile, safely clean up the environment from the legacy of the cold war, and develop breakthroughs in science and technology.

DOE Today

Today, the Department manages a vast array of energy programs and a nationwide complex of headquarters and field organizations, national laboratories, power marketing administrations, and special-purpose offices. Through our leadership in science and technology, we are working to advance the Nation's energy, environmental, economic, and national security. We are accomplishing this within our framework of four business lines, which, in turn, are supported by our corporate management function:

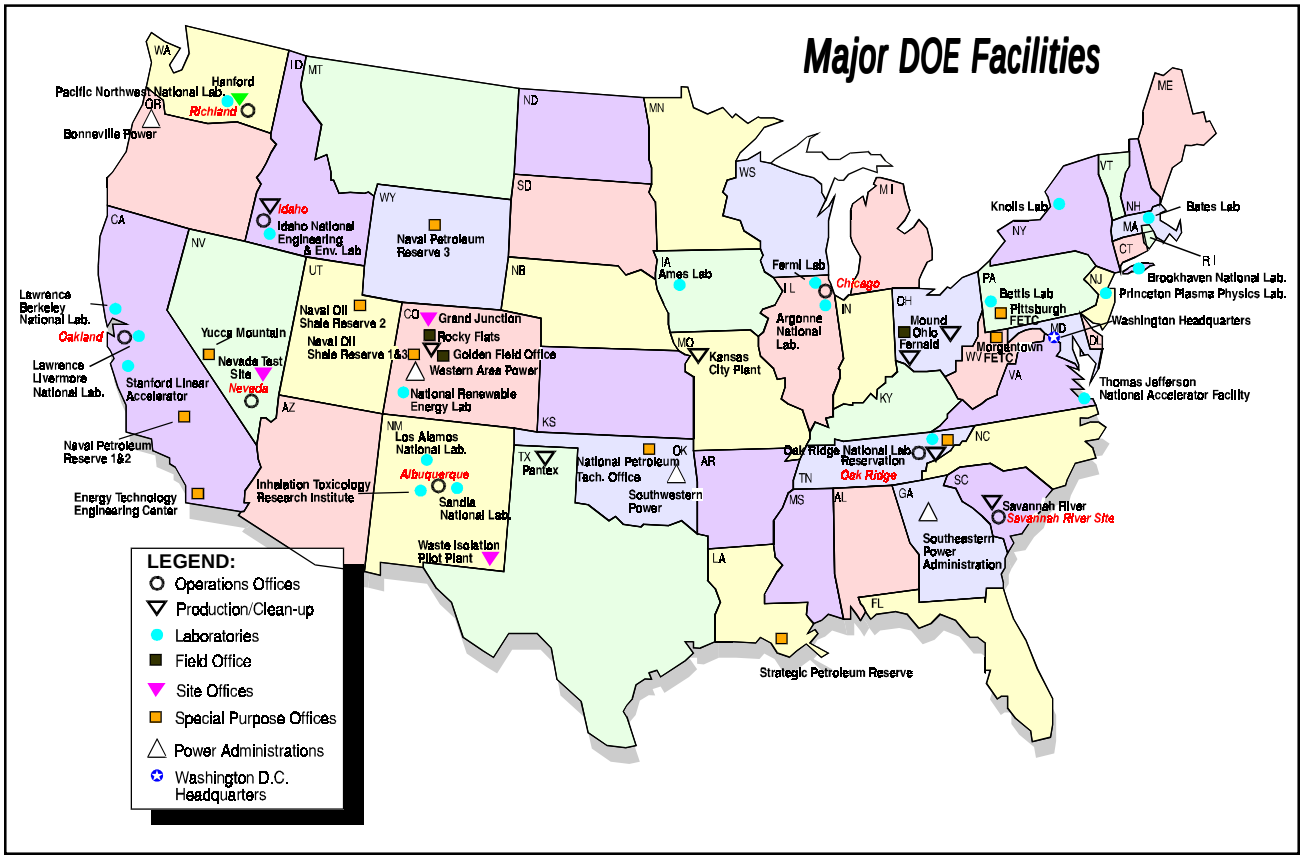
- Energy Resources Business Line—We are working to ensure that the United States has a flexible, clean, efficient, and equitable system of energy supply with minimal vulnerability to disruption.

- National Security Business Line—We are working to reduce global nuclear danger through our national security, nuclear safety, and nonproliferation activities.

- Environmental Quality Business Line—We are a world leader in environmental restoration, nuclear materials stabilization, waste management, and pollution prevention.

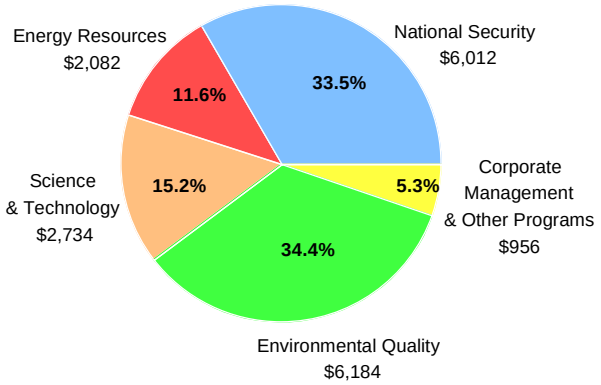
- Science and Technology Business Line—We are a major partner in world-class science and technology through our national laboratories, research centers, university research, and educational and information dissemination programs.

- Corporate Management Function—Our four business lines are supported by functions that are critical to all of them: safety and health, good business practices, and communication and trust.

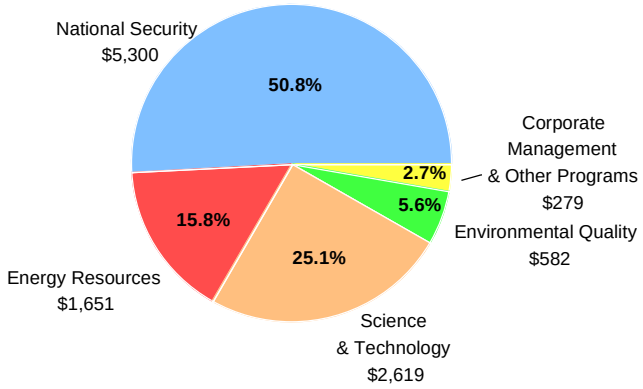


Our FY 1999 Resources

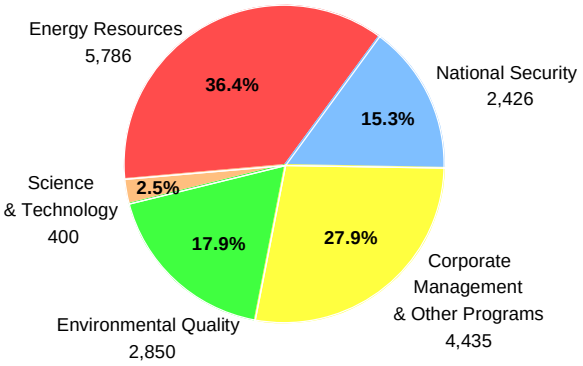
Net Budget Authority by Business Line
(Dollars in Millions)
Total $17,968



Operational Net Costs by Business Line
(Dollars in Millions)
Total Business Line Net Costs $10,431



Number of Federal Employees
(Full-time equivalents—FTEs)
Total Federal Employees 15,897



Note: The costs shown in this report differ from budgeted amounts due to items such as: environmental cleanup costs that are not included in current year because they were accrued in prior years; expenditures for large acquisitions that are recorded as assets, not costs; depreciation and other costs that do not require funds; and the allocation of overhead to business lines.

Report Background

In the past few years, the President and the Congress have enacted laws and set policies to reform management throughout the Government. Paramount among these is the Government Performance and Results Act of 1993, which, among other things, requires agencies to establish measurable annual performance goals and then report results. The Secretary's 1999 Performance Agreement with the President established performance objectives for the Department, as well as measures with which to gauge whether the Department's 1999 actions were successful. Summary information on those objectives and measures is included in the Overview section of this report. Complete, more detailed data is contained in the supplemental information at the back of the report.

Although this is technically the first annual report on performance results required by the Government Performance and Results Act, the Department has been reporting in accordance with the law since 1996. Other laws, such as the Chief Financial Officers Act of 1990, the Government Management Reform Act of 1994, and the Clinger-Cohen Act of 1996, call for additional management activities and reports. This document meets these reporting requirements as well as the previous reporting requirements of the Department of Energy Organization Act of 1977 and the Federal Managers' Financial Integrity Act of 1982.

Energy Resources

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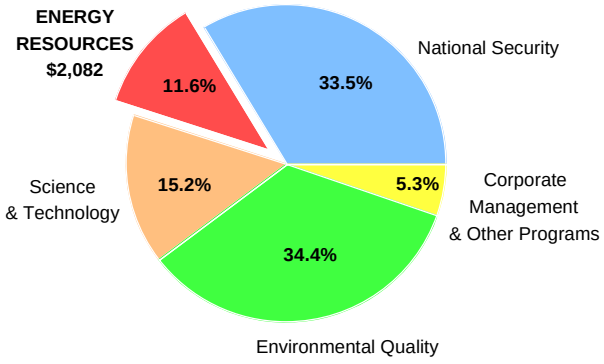
(Dollars in Millions)
Total $17,968



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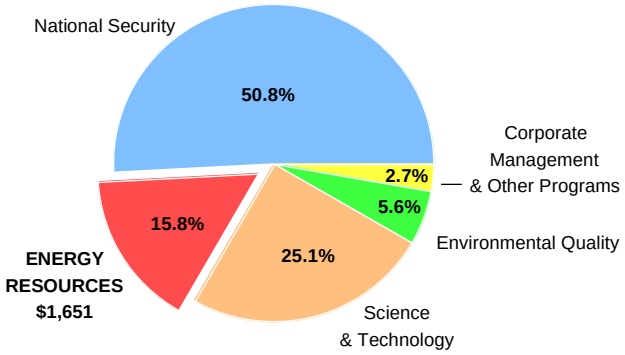

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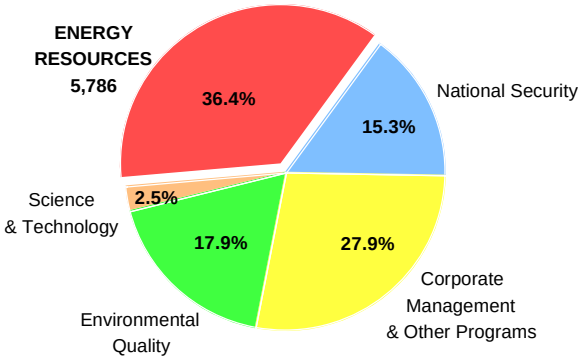


The Department of Energy promotes secure, competitive, and environmentally responsible energy systems that serve the needs of the public

Our Nation's economic prosperity depends on the abundance of energy resources, and a clean environment is dependent upon energy efficiency and clean production technologies. The Department's role is to facilitate the efficient transition to a long-term pattern of energy supply and use that is consistent with the Nation's goals of national security, environmental responsibility, and economic prosperity.

In our Energy Resources business line, we are working to:

- Reduce the vulnerability of the U.S. economy to disruptions in energy supplies.
- Ensure that a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.
- Increase the efficiency and productivity of energy use, while limiting environmental impacts.
- Support U.S. energy, environmental, and economic interests in global markets.
- Carry out information collection, analysis, and research that will facilitate development of informed positions on long-term energy supply and use alternatives.

Objective 1: Reduce the vulnerability of the U.S. economy to disruptions in energy supplies.

The primary thrust in the Department's actions to reduce U.S. vulnerability to energy supply disruptions is to improve the utilization of our domestic resources and minimize our reliance on foreign supplies.

One action we are taking is to boost the Nation's production of domestic oil, which has been on the decline. Our goal is to end the decline before 2005. Working toward this long-term goal, in FY 1999 the Department demonstrated four advanced production enhancement technologies to boost the productivity of mature oil reservoirs. These new technologies added 46 million barrels to the Nation's domestic oil reserves in FY 1999, exceeding our goal of 30 million barrels. Our ultimate goal is to add 190 million barrels to the U.S. domestic oil reserves.

Photo of a Strategic Petroleum Reserve facility. The Reserve contains 565 million barrels of oil as a contingency to disruptions in international energy supplies.

Another action we are taking is to upgrade the Strategic Petroleum Reserve that the Department maintains to deter and respond to international oil supply disruptions. In FY 1999, we continued our long-range efforts to extend the life of the Reserve. On schedule, we have now completed 96 percent of the planned work. When complete, this life extension project will increase our sustained oil drawdown capability to 4.1 million barrels per day, compared with 3.7 million in 1997. Completion of the life extension upgrades will enable the Strategic Petroleum Reserve to maintain high reliability and availability of critical systems to the year 2025.

Another thrust of the actions we are taking to reduce our vulnerability to disruptions in foreign energy supplies is to develop alternative transportation fuels and more efficient vehicles that can reduce our reliance on oil imports. Toward this end, in FY 1999 we began work with an industrial partner to demonstrate a first-of-a-kind technology for producing ethanol from agricultural crop waste. However, due to a delay in financing, we did not meet our FY 1999 goal to complete site preparation and begin construction of a facility. Also in FY 1999, we built a single-cylinder proof-of-concept diesel engine that delivers up to 53 percent efficiency, slightly below our goal of 55 percent efficiency.

In addition, we are taking steps to avoid domestic energy disruptions and ensure that our own sources of energy are reliable. In FY 1999, our objective was for each of the Department's four Power Marketing Administrations to receive a monthly "Pass" rating against the North American Electric Reliability Council performance standard. This FY 1999 objective was met.

Another thrust of our efforts to minimize disruptions in our energy supply is to diversify the international supply of oil and gas. To this end, we are working with foreign governments to establish energy initiatives that will encourage development of a broad portfolio of fuel supplies. During FY 1999, we met our goal to foster energy development activities by working with Russia, the Ukraine, and Saudi Arabia.

We believe the Department is making strides toward mitigating the potential impacts of disruptions in our energy supplies. While we are encountering some areas of unanticipated difficulties, overall we successfully accomplished our FY 1999 goals.

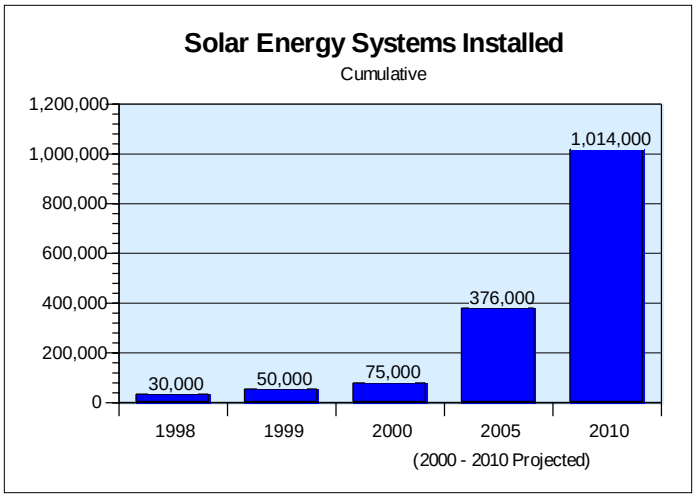
The Department's Power Marketing Administrations market electricity generated by hydroelectric power plants operated by the U.S. Army Corps of Engineers.

Objective 2: Ensure a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.

The Department is working to ensure that there are increased choices for consumers in the Nation's electricity generation industry. At the same time, we are working to reduce the environmental impacts of the industry.

One action we are taking is to establish a more open, competitive, and reliable electric system. During FY 1999, we furthered this cause by issuing, as planned, a revised Administration proposal on electric utility restructuring. The proposal and supporting economic analysis are a catalyst for reaching consensus and taking future actions to make this a more competitive industry.

Another of the Department's strategies is to develop renewable technologies capable of doubling non-hydroelectric generating capacity by 2010. In this vein, we continued to support the President's Million Solar Roofs Initiative and in FY 1999 installed 20,000 solar energy systems. This exceeds our goal of 15,000 and brings the total number of systems installed to 50,000.



In addition, we completed the design of a power plant modification that will utilize agricultural crop waste in conjunction with coal. Meeting our FY 1999 goal, the construction of two facilities has been completed for long-term demonstration testing.

We are also aggressively pursuing methods of reducing emissions from existing fossil fuel power plants and developing clean, high-efficiency fossil fueled power plants for the 21st century. In FY 1999, we met our goal and completed testing of the first commercial-sized fuel cell suitable for advanced high-efficiency electrical generation. We also partially completed the full-scale component testing of two advanced utility-scale turbines with more than 60

percent efficiency (new plants are currently about 55 percent efficient) and with ultra-low emissions. We had planned to fully complete the testing in FY 1999, but encountered unexpected delays.

Finally, in FY 1999, the Department initiated a peer-reviewed R&D program aimed at finding innovative ideas and applications for nuclear science and technology. Nuclear power currently provides 20 percent of our Nation's electricity without any harmful greenhouse gas emissions, but many of these plants face retirement over the next 25 years. The Department's new nuclear energy research initiative may provide the technologies required to enable current plants to operate more efficiently and last longer, and may lead to the next generation of clean and environmentally friendly domestic nuclear power plants.

We believe the Department is successfully on track toward meeting its long-term objective.

Objective 3: Increase the efficiency and productivity of energy use, while limiting environmental impacts.

Our activities to increase the efficiency and productivity of energy use, with minimal impact to the environment, span a wide range of energy consumption, including transportation, buildings, and manufacturing.

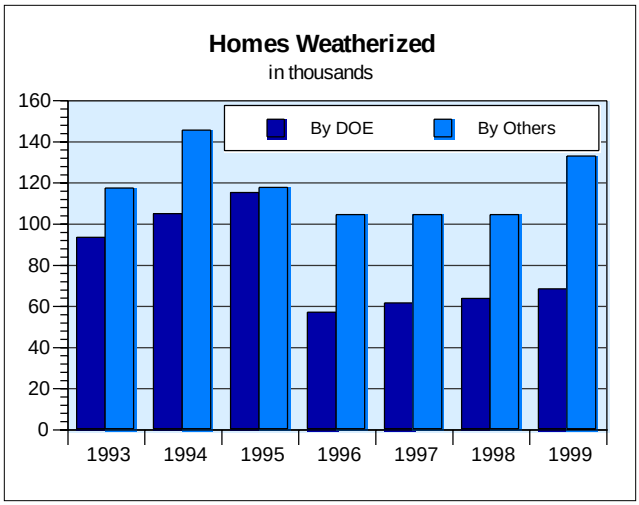
The "vehicles of the future" program is developing and deploying vehicles, fuels, and systems to improve energy efficiency. During FY 1999, the Department worked with industry and other Federal agencies as planned to develop technical "roadmaps" to integrate fuels and lubricants research and development with development of engine and emissions treatment technologies.

The Department is contributing to the Administration's Partnership for a New Generation of Vehicles goal to develop, by 2004, prototype mid-sized cars capable of achieving 80 miles per gallon of gasoline. These cars will reduce emissions by two-thirds compared to today's new car average without compromising safety, comfort or cost.

In the buildings sector, our goal is to improve the energy efficiency of the existing U.S. building stock and increase the efficiency of new homes. In FY 1999, DOE with its industrial partners completed construction of more than 400 energy-efficient homes, bringing the total to 1,000 and exceeding the current-year goal we had established. These homes were designed to save 50 percent of energy use for heating, cooling, and hot water at no incremental costs. In addition, we provided grants to States for the purpose of weatherizing existing homes. In FY 1999, we exceeded our goal by weatherizing approximately 68,000 homes, bringing the total to 4.7 million.

Based on the Department's focused approach and the public's awareness of the need for energy efficiency, the Nation is becoming an efficient energy user. We believe our FY 1999 actions were successful.

Objective 4: Support U.S. energy, environmental, and economic interests in global markets.



The Department's efforts to support U.S. interests globally range from climate control to developing international markets.

We continue to work for global climate change and energy-related greenhouse gas reductions. In FY 1999, we supported Administration efforts to further develop a global agreement to reduce greenhouse gas emissions and to develop domestic policies that would minimize the economic impacts of such efforts on the U.S. economy and energy sector. Our goal to develop proposed guidelines for implementing the flexible, market-based mechanisms for reducing emissions envisioned at the Kyoto Conference of the Parties to the U.N. Framework Convention on Climate Change were not quite met during the year. Work in this area will continue and accelerate in FY 2000. However, we did engage in other activities to lead the U.S. technology and climate change strategy development and implementation, meeting our FY 1999 goal in that area.

In the international arena, the Department took actions to cooperate with foreign governments to develop open energy markets. In FY 1999, we successfully accomplished our immediate goal by establishing initiatives with the APEC countries, China, Sub-Sahara Africa, and Russia.

We believe our efforts to support energy, environmental, and economic interests abroad were successful in FY 1999.

Objective 5: Carry out information collection, analysis, and research that will facilitate development of informed positions on long-term energy supply and use alternatives.

The Department's expertise in energy systems and access to energy-related information are shared with our stakeholders to assist in making decisions. As planned, in FY 1999 the Department published its *Annual Energy Outlook* forecasting energy supply and consumption through the year 2020.

In addition to forecasting future energy supply and consumption, the Department is also carrying out research and analysis to develop innovative options for the 21st century energy markets. In FY 1999, we accomplished our goal to initiate a Department-wide program to develop lower-cost, environmentally acceptable approaches to achieve carbon sequestration. One outcome of this program is the selection of six concepts for further development that propose different ways to capture and store carbon dioxide.

We believe that the actions we have taken successfully met our goals for FY 1999.

Carbon Sequestration

What is Carbon Sequestration?
Carbon sequestration is the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere as carbon dioxide.

Why Are We Studying Carbon Sequestration?
Predictions of global energy use in the next century suggest a continued increase in carbon emissions. Although the effects of increased carbon dioxide levels on global climate are uncertain, there is scientific consensus that a high level of atmospheric concentrations could have a variety of serious environmental consequences.

National Security

The Department of Energy supports national security, promotes international nuclear safety, and reduces the global danger from weapons of mass destruction

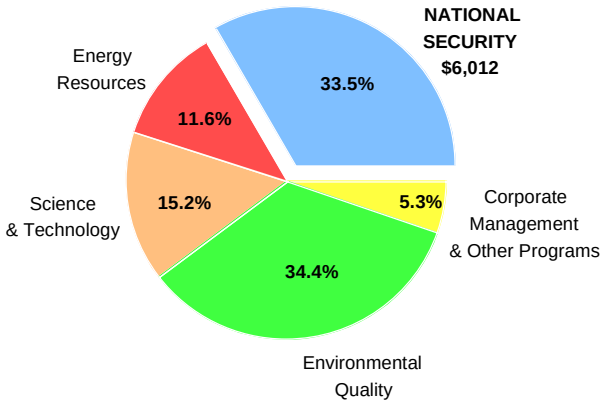
The Department of Energy and its predecessor agencies have long played a critical role in our Nation's national security mission. DOE's activities in coordination with the Department of Defense (DOD) and other agencies with a national security mission help to ensure that we live in a safe and secure world.

In our National Security business line, we are working to:

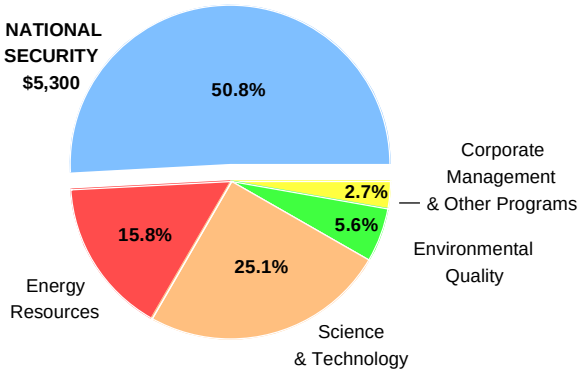
- Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.
- Replace nuclear testing with a Stockpile Stewardship Program.
- Ensure the vitality of DOE's national security enterprise.
- Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.
- Continue leadership in policy support and technology development for international arms control and nonproliferation efforts.
- Meet national security requirements for naval nuclear propulsion and for other advanced nuclear power systems.
- Improve international nuclear safety.

We have witnessed profound changes in U.S. national security policies in the post-Cold War era, but our commitment to a secure national defense remains as strong as ever. The nuclear deterrent remains a cornerstone of our national security policy. However, the nuclear deterrent is represented by a smaller, aging weapons stockpile maintained without underground testing. Our stockpile stewardship programs are utilizing

FY 1999 Net Budget Authority by Business Line
(Dollars in Millions)
Total $17,968



FY 1999 Operational Net Costs by Business Line
(Dollars in Millions)
Total Business Line Net Costs $10,431



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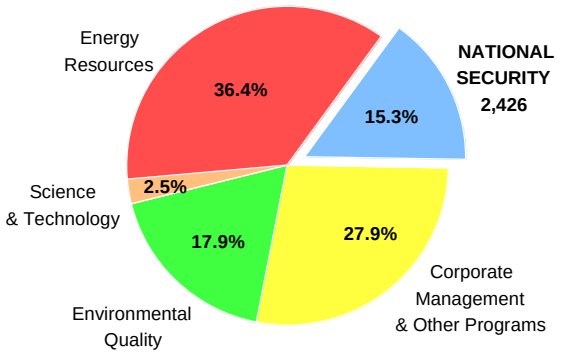


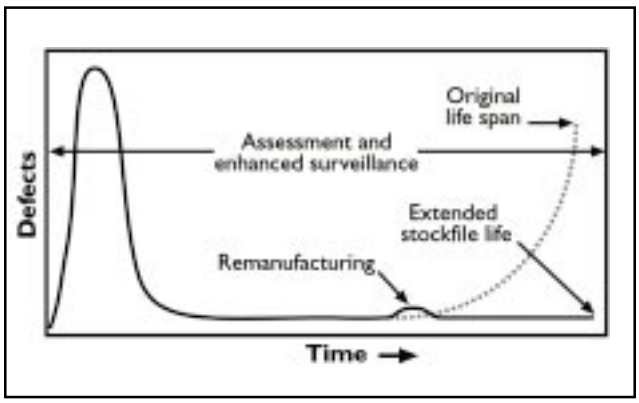
advances in science and technology to ensure the safety and reliability of the stockpile. International cooperative efforts improve the safety and minimize the risks of aging nuclear power plants in the nations of the former Soviet Union.

Objective 1: Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

In pursuit of the Comprehensive Test Ban Treaty, President Clinton directed the establishment of an annual review and certification process of the safety, reliability, and performance of the nuclear weapons stockpile. The annual review and certification process is essential to measuring the Department's success in fulfilling its commitment to maintaining the enduring stockpile. In FY 1999, the Department met its goal by initiating the fourth annual certification process. Active and inactive weapons systems were reviewed by the Department's national weapons laboratories and joint Project Officers Groups led by the Department of Defense. Annual Certification Technical Reports on each system were completed and final reports provided to the Secretaries of Energy and Defense in July 1999.

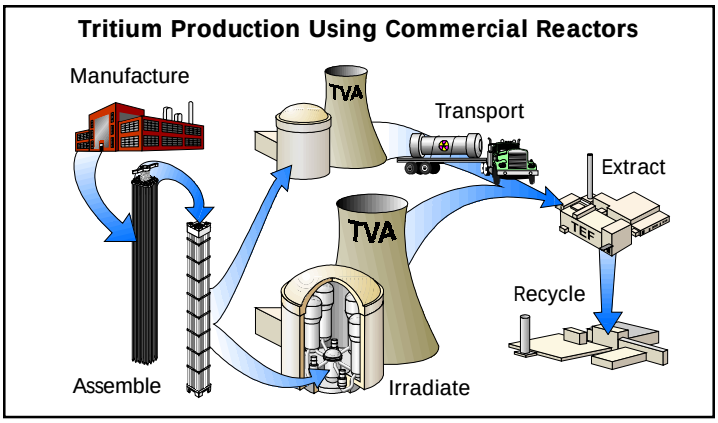
DOE's maintenance of the nuclear stockpile includes the surveillance, alteration, and modification of stockpile weapons. Surveillance is essential to assess the safety and reliability of the Nation's stockpile. Alterations and modifications are critical to upgrade the stockpile to meet higher safety standards, replace faulty components, meet changed military requirements, or extend the life of the weapon. In FY 1999, there were no requirements for modification, but DOE conducted alterations of 11 weapons systems. DOE met the annual schedule for 9 of the 11 weapon alterations, nearly accomplishing its FY 1999 goal to meet all alteration and modification schedules developed jointly with DOD. For the remaining two alterations, recovery schedules have been developed with DOD, and DOE is meeting the new revised schedule.

In order to maintain confidence in the nuclear weapons stockpile, the Department has to provide a reliable source of tritium, a radioactive isotope of hydrogen necessary for the proper function of all U.S. nuclear weapons. Because tritium decays at about 5 percent per year, it must be replaced in weapons to ensure their continued reliability. The United States has not produced new tritium for military use for the past 11 years and has used recycled tritium from dismantled weapons to meet stockpile requirements. The current source of tritium is dwindling and will be sufficient to meet requirements only until 2005, after which the planned 5-year tritium reserve will be impacted.



The typical life cycle of complex manufactured systems follows a path through initial defects, useful life, and eventual wearout. The Stockpile Stewardship Program will extend the useful life of U.S. stockpile warheads through enhanced surveillance, assessment, and remanufacturing.

Thus, it is necessary that a new domestic source be established. DOE employed a dual-track strategy to meet new tritium production requirements. This strategy included contracting for irradiation services from existing commercial reactors to produce tritium and the development of an accelerator as a "backup" technology. DOE has completed a number of significant milestone activities on both tracks of the strategy and has met the FY 1999 performance



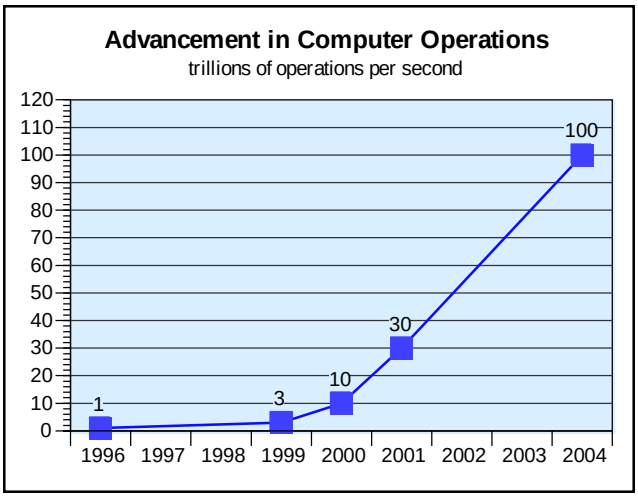
Cycle of tritium production utilizing commercial service with DOE extraction and recycling facilities and capabilities

goals it established. In December 1998, the Department announced the preference for the commercial light-water reactor as the primary technology for production of tritium, with development and preliminary design of the accelerator as backup technology. In May 1999, the Department announced that tritium will be produced in the Watts Bar and Sequoyah light-water reactors operated by the Tennessee Valley Authority (TVA). DOE also announced that it will construct a new Tritium Extraction Facility at the Savannah River Site. At the end of FY 1999, DOE and TVA reached an agreement in principle for irradiation services, but TVA delayed its formal signing of the agreement until it could convene a full board of directors meeting after two new directors were confirmed by the Senate. The full TVA board of directors confirmed the agreement in November 1999. This delayed the initiation of the process to amend the operating licenses of TVA's reactors to permit tritium production. However, the delay is not expected to impact the start of tritium production in FY 2003.

Overall, we nearly met the FY 1999 goals we established to meet our long-term objective. Although we have been successful in our certification and planning for future tritium production, we have experienced difficulties related to weapons alterations.

Objective 2: Replace nuclear testing with a Stockpile Stewardship Program.

Since the United States stopped nuclear testing in 1992, the Department of Energy has been working on replacing underground testing with a science-based program of stockpile stewardship.



The Accelerated Strategic Computing Initiative is a program being developed to help maintain our existing aging stockpile through advanced simulation and modeling. In FY 1997, a major milestone was achieved with the installation of a 1 trillion operations per second computer system. Further advancements were made in FY 1998 with the development of a 3 trillion operations per second computer system that ran weapons simulations that were larger and more complex than ever before. In FY 1999, the Department exceeded its goal of demonstrating a 3 trillion operations per second computer system. At the end of FY 1999, the Accelerated Strategic Computing Initiative's Blue-Pacific system was operating at 3.89 trillion operations per second, approximately 30 percent faster than the Department's FY 1999 performance goal.

Another thrust of our efforts in the Stockpile Stewardship Program is to develop new experimental capabilities for understanding weapons science. The

National Ignition Facility, an experimental physics facility meeting this purpose, is now under construction at the Lawrence Livermore National Laboratory in California.

The Department's FY 1999 goal was to continue construction of the facility according to its Project Execution Plan schedules. Performance in meeting this goal during FY 1999 was below expectations. Delays in completing the design and support equipment, coupled with additional costs for assembly of the laser infrastructure, had direct impacts on the project cost and schedule. A new baseline will be approved by the Secretary of Energy by June 2000. In October 1999, the Secretary of Energy issued a six-point plan to get the project back on track at the least cost and schedule impact.

Another focus of our stockpile stewardship efforts is to conduct experiments to advance our understanding of the fundamental characteristics of weapons behavior. We met our goal in FY 1999 and conducted three subcritical experiments that provided valuable scientific information about the behavior of nuclear materials during the implosion of a nuclear weapon.

Although we had considerable success during the year in our Accelerated Strategic Computing Initiative and weapons experiments, we were not fully successful in achieving our FY 1999 goals due to the delay being encountered in the National Ignition Facility project.

Objective 3: Ensure the vitality of DOE's national security enterprise.

Maintaining the Department's national security enterprise is a multifaceted endeavor. It involves modernizing our facilities; retaining the capability to resume underground nuclear testing; providing a radiological emergency response capability; and protecting our nuclear materials, information, and technologies.

Meeting national security requirements in this post-Cold War era required the Department to reevaluate its nuclear weapons complex. Downsizing and modernization activities at several DOE sites will ensure that the U.S. maintains an appropriately sized, cost-effective, safe, secure, and environmentally sound national security enterprise. The Department strives to ensure that all facilities required for successful achievement of the Stockpile Stewardship Plan remain operational. Two key activities related to providing operational production facilities were underway in FY 1999: resumption of enriched uranium operations at the Y-12 Plant in Oak Ridge and the establishment of a Pit Production Program at the Los Alamos National Laboratory. The first phase of the resumption of the enriched uranium operations at the Y-12 Plant was completed in December 1998. The second and final phase of the resumption restores enriched uranium metal production capabilities and chemical recovery processing. Scheduled activities in the final phase are significantly behind the FY 1999 completion schedule due to inadequate design and project controls. The schedules to complete the remaining tasks are currently under review.

In an effort to reestablish the pit production capabilities at the Los Alamos National Laboratory, the Chemistry and Metallurgy Research Upgrades project was re-baselined, focusing resources on those upgrades necessary to ensure operation of the facility for the next 10 years. In addition, the Depart-

ment began pre-conceptual planning of the Transition Manufacturing and Safety Equipment project to later replace the capabilities provided by the Chemical and Metallurgy Research facility. The new facility will provide urgent and near-term process, equipment, and infrastructure necessary for fabrication and certification of a War Reserve quality pit. Construction of the project is scheduled to begin in FY 2002.

As part of the Department's activities to downsize and modernize its nuclear weapons complex, it committed to completing the shipment of plutonium pits from the Rocky Flats Environmental Technology Site to our Pantex Plant in FY 1999. The Department successfully completed shipments of all surplus plutonium pits to Pantex in April 1999.

In FY 1999, the Department met its goal to maintain the capability to resume underground nuclear testing, consistent with Presidential direction. Maintaining the capability to resume underground testing requires DOE to maintain test facilities and equipment at the Nevada Test Site, nuclear testing skills of personnel at both the test site and the nuclear weapons laboratories, and access to experienced personnel through knowledge capture and archiving. High-explosive and subcritical experiments conducted at the Nevada Test Site and specially designed test readiness exercises maintained test readiness skills. During FY 1999, 19 high-explosive experiments and three sub-critical

Departmental Challenge: Security

The Department is reforming its security and counterintelligence programs in response to Presidential mandates, espionage allegations, and numerous internal and external reviews. It is clear that over the past several decades, security and counterintelligence have not been given the necessary priority and attention within the Department and its laboratories. The weaknesses include not only counterintelligence but also cybersecurity, physical security, personnel security, and information security programs. In response to these weaknesses, the Secretary of Energy issued a ten-point security reform package in May of 1999. This plan gives the Department the tools and authority necessary to detect security infractions, correct institutional problems, and protect America's nuclear secrets. Prior to that, in February 1999, the Secretary approved a Counterintelligence Implementation Plan to put into effect reforms required by Presidential Directive 61. The plan includes measures to develop effective monitoring of foreign visitors to DOE facilities, the staffing of field counterintelligence programs by experienced professionals, the development of a counterintelligence polygraph program, enhanced awareness training, and a robust analytic and investigative capability to assess the foreign intelligence threat to DOE and effectively detect and deter hostile intelligence activities. The security and counterintelligence plans establish senior management attention and accountability for DOE's security and counterintelligence programs.

In addition, the National Defense Authorization Act for FY 2000 established a National Nuclear Security Administration within the Department. This agency takes effect on March 1, 2000, and includes security functions transferred from nuclear weapons production facilities and national security laboratories. The Department is committed to resolving the funding, staffing, and organizational issues associated with implementing the new National Nuclear Security Administration in FY 2000.

experiments were conducted at the Nevada Test Site. In addition, a Nuclear Explosive Safety Study exercise was performed at Los Alamos National Laboratory in FY 1999. The Department's archiving program captured on videotape such things as the knowledge and testing experience of personnel, photos, drawings, procedures, nuclear safety studies, containment evaluation plans, and lessons learned. During FY 1999, the Department completed seven videotape modules, and more than 41,000 pages related to underground tests were scanned into the Document Management and Archived Records System.

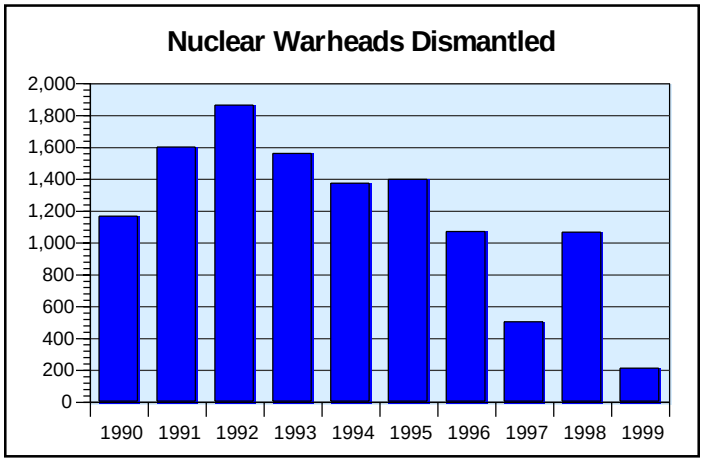
The Department's Emergency Response Program provides a national capability to respond to any radiological emergency or nuclear accident within the United States and abroad. The Department's Emergency Response Program met its FY 1999 goal by participating in 26 U.S. and overseas exercises and 24 real-world events. Radiation accident management training was provided to 177 health professionals, and there was response to 59 calls for medical assistance.

Despite some successes in meeting our goals to ensure the vitality of DOE's national security enterprise, overall our FY 1999 performance was below expectations.

Objective 4: Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

The Department takes an active role in reducing the global danger from weapons of mass destruction by reducing inventories of surplus weapons-usable fissile materials worldwide. Such efforts entail reducing our own weapons stockpile as well as international cooperation to dispose of surplus fissile materials, placing excess materials under safeguards of the International Atomic Energy Agency, and reducing the demand for highly enriched uranium in civilian programs.

Since 1993, the U.S. has dismantled a total of 7,149 nuclear warheads that had been removed from the U.S. nuclear weapons stockpile. During FY 1999, 207 nuclear warheads were dismantled, which was below our performance goal of 275. Dismantlement of the W69 Short-Range Attack Missile warhead was completed; however, dismantlement of the W79 Artillery-Fired Atomic Projectile warhead was at a rate lower than expected due to technical difficulties. Facility modifications and dismantling of the W56 Minuteman II warhead were also delayed by technical difficulties. The Department anticipates that the backlog of retired warheads to be dismantled will be completed in FY 2005, not FY 2003 as previously planned.



The Department is taking aggressive action to reduce our nuclear weapons stockpile and the nonproliferation threat. Overall, we believe our FY 1999 actions were successful in achieving our goals.

Departmental Challenge: Surplus Fissile Materials

The United States and Russia have extensive inventories of fissile nuclear materials that are no longer needed for defense purposes due to the end of the Cold War. A danger exists in the potential global proliferation of nuclear weapons and in the potential for environmental, safety, and health consequences if surplus fissile nuclear materials are not properly managed. The Department could save storage, security, maintenance, and handling costs associated with these assets.

We have implemented various phases of the Department's plan to dispose of surplus fissile materials to reduce the proliferation threat and handling costs. As planned, in FY 1999 the Department made available the second installment (7MT) of surplus highly enriched uranium to the United States Enrichment Corporation (USEC). A total of 50 metric tons will be made available to USEC for down blending and subsequent sale over the next 6 years. We also negotiated an agreement with the Tennessee Valley Authority for the disposition of off-specification highly enriched uranium.

Regarding surplus plutonium, we are continuing to pursue a hybrid strategy that calls for immobilization of some plutonium in ceramic form and burning of some as mixed oxide fuel in existing, domestic commercial reactors. During FY 1999 and early 2000, we completed the final environmental impact statement and issued a Record of Decision on siting plutonium disposition facilities and initiated design of two disposition facilities: the Pit Disassembly and Conversion Facility and the Mixed Oxide Fuel Fabrication Facility.

Formal negotiations with Russia on a bilateral agreement for the disposition of surplus plutonium commenced during the year with seven negotiation sessions being held, exceeding our goal. An agreement is expected in FY 2000. However, even though we are proceeding with the design phase of the plutonium disposition facilities, the Department still holds firm its decision not to construct any new facilities for the disposition of surplus plutonium until an accord is attained.

With the implementation of various phases of DOE's plan for disposing of surplus fissile materials, we are attaining our goal to reduce the nuclear danger and threat of

Objective 5: Continue leadership in policy support and technology development for international arms control and nonproliferation efforts.

Ensuring our national security requires much more than maintaining a strong nuclear deterrent. It also requires that we work on an international scope to minimize the threat of nuclear weapon technology and materials falling into the wrong hands. Our objective is to strengthen the nuclear nonproliferation regime and advance arms control through support of treaties and international agreements. Since the end of the Cold War, an important component of our programs has been our work with states of the former Soviet Union to minimize the risks of proliferation. We have completed many security upgrades at Russian reactor sites and in the Russian infrastructure that supports the manufacture, transportation, and storage of weapons-usable nuclear materials. For example, in FY 1999, DOE and the U.S. Customs Service exceeded expectations by successfully installing nuclear detection equipment at Sheremetyevo International Airport Phase I and Astrakan Seaport. Also in FY 1999, the Department began a site prioritization and selection study as

planned which includes near-term surveying of six Caspian and Black Sea ports for nuclear detection equipment deployment.

In FY 1999, the Department successfully completed development and delivery of two new counter-nuclear-smuggling detection technologies: a portable detector for use in monitoring uranium enrichment levels at blend-down facilities and an algorithm to aid in tracking moving radiation sources.

We believe we have been successful in achieving our FY 1999 goals in this area.

Objective 6: Meet national security requirements for naval nuclear propulsion and for other advanced nuclear power systems.

Due to its nuclear expertise and state-of-the-art nuclear facilities, the Department of Energy is charged with providing the U.S. Navy with safe, militarily effective nuclear propulsion plants and ensuring their continued safe and reliable operation in Navy warships. In FY 1999, development of the next generation reactor for the Navy's New Attack Submarine progressed ahead of schedule. Development and qualification testing is proceeding on components and systems, such as the control drive mechanism units and new concept steam generator to demonstrate design acceptability. The Navy is also developing a new nuclear powered aircraft carrier, including a new propulsion plant.

The Department develops nuclear propulsion plants for the U.S. Navy and ensures that warships, such as this nuclear-powered guided missile cruiser, are operationally safe and reliable.

The goals supporting this strategic objective were met successfully in FY 1999.

Objective 7: Improve international nuclear safety.

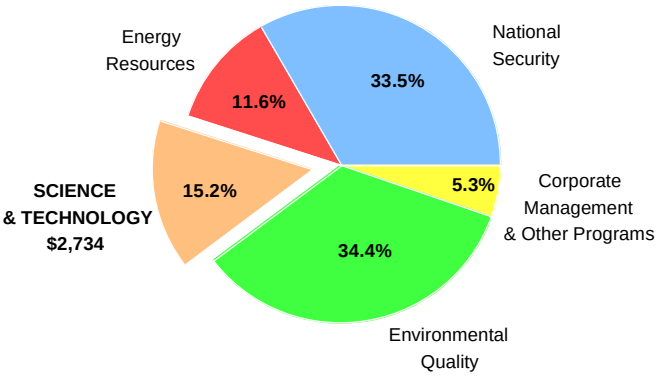
In our endeavor to advance nonproliferation cooperation worldwide, the Department assisted countries of the former Soviet Union in reducing the safety risks from Soviet-designed nuclear power plants and implementing safety programs to meet international safety practices in the nuclear industry. In FY 1999, a new safety system, providing plant operators a tool to safely control the plant in the event of an abnormal situation, was installed at the Novovoronezh plant in Russia as planned and has passed the site acceptance process. Installation of the Leningrad safety system has been delayed due to U.S. sanctions.

The Department and the U.S. Agency for International Development have been working over the past several years on a multinational effort to shut down the Chornobyl nuclear power plant in Ukraine to reduce further safety and environmental risks. In FY 1999, a comprehensive decommissioning engineering survey of Unit 1 was completed as planned.

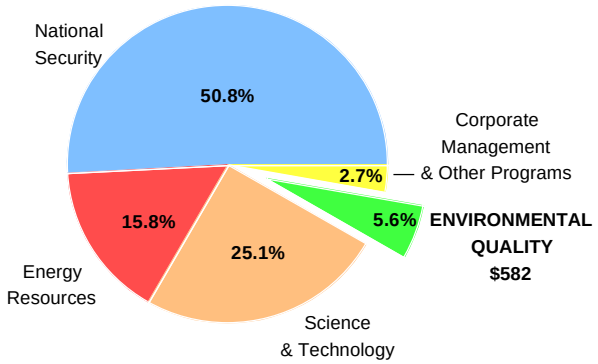
Overall, we believe we were successful in achieving our FY 1999 goals for this objective.

Environmental Quality

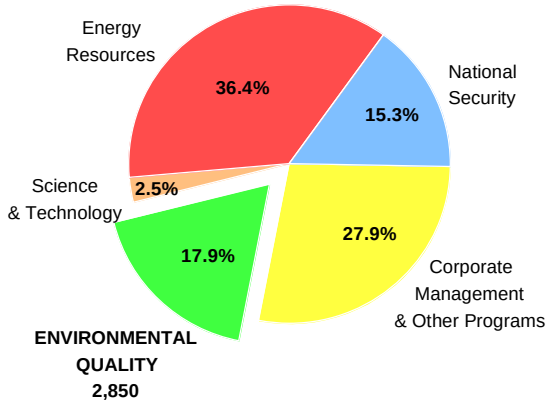
FY 1999 Net Budget Authority by Business Line
(Dollars in Millions)
Total $17,968



FY 1999 Operational Net Costs by Business Line
(Dollars in Millions)
Total Business Line Net Costs $10,431



FY 1999 Number of Federal Employees
(Full-time equivalents—FTEs)
Total Federal Employees 15,897



The Department of Energy is aggressively cleaning up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, minimizing future waste generation, safely managing nuclear materials, and permanently disposing of the Nation's radioactive wastes

Perhaps the greatest challenge that has faced the Department in the 1990's is the monumental task of cleaning up contaminated sites and disposing of radioactive waste.

In our environmental quality business line, we are working to:

- Reduce the most serious risks from the environmental legacy of the U.S. nuclear weapons complex first.
- Clean up as many as possible of the Department's 53 remaining contaminated geographic sites by 2006.
- Safely and expeditiously dispose of waste generated by nuclear weapons and civilian nuclear research and development programs and make defense high-level radioactive wastes disposal-ready.
- Prevent future pollution.
- Dispose of high-level radioactive waste and spent nuclear fuel in accordance with the Nuclear Waste Policy Act as amended.
- Reduce the life-cycle costs of environmental cleanup.
- Maximize the beneficial reuse of land and effectively control risks from residual contamination.

Objective 1: Reduce the most serious risks from the environmental legacy of the U.S. nuclear weapons complex first.

We have prioritized our cleanup actions to identify and complete the projects representing the most serious risks to workers, the public, and the environment first. Preventing further increases in risk to the environment at all sites is also a top priority.

Among our cleanup efforts, stabilizing and safely storing spent nuclear fuel was identified as a serious risk. The Department's target for the amount of heavy metal spent nuclear fuel to be stabilized and placed in interim storage was approximately 6 metric tons for FY 1999. However, we were only able to stabilize 0.34 metric tons, a significant reduction from our planned goal. This was due to operational difficulties encountered during the stabilization of the Three Mile Island spent nuclear fuel, which comprised the bulk of the planned FY 1999 stabilization activities. We have instituted plans for continuing stabilization activities with the Three Mile Island spent fuel and intend to restart those operations by February 2000.

Our project to stabilize and store plutonium waste is designed to eliminate the serious risk posed by U.S. inventories of this radioactive material. The plutonium waste we are dealing with is in a variety of forms: residue, solution, and metal/oxide. Our goal for FY 1999 was to stabilize 33,000 kilograms of residue, 40 liters of solution and 332 containers of metals and oxides. We were successful in stabilizing 31,000 kilograms of residue, 16 liters of solution and 275 containers of metal/oxides. These results are somewhat below our expectations and, for the most part, are due to technical issues we are working to resolve.

Cleaning our sites and protecting the environment is one of the Department's highest priorities. However, we did not meet the FY 1999 goals we established for our long-term objective to reduce the most serious risks first. These issues must be addressed more effectively in the future if we are to meet environmental compliance requirements.

Departmental Challenge: Environmental Compliance

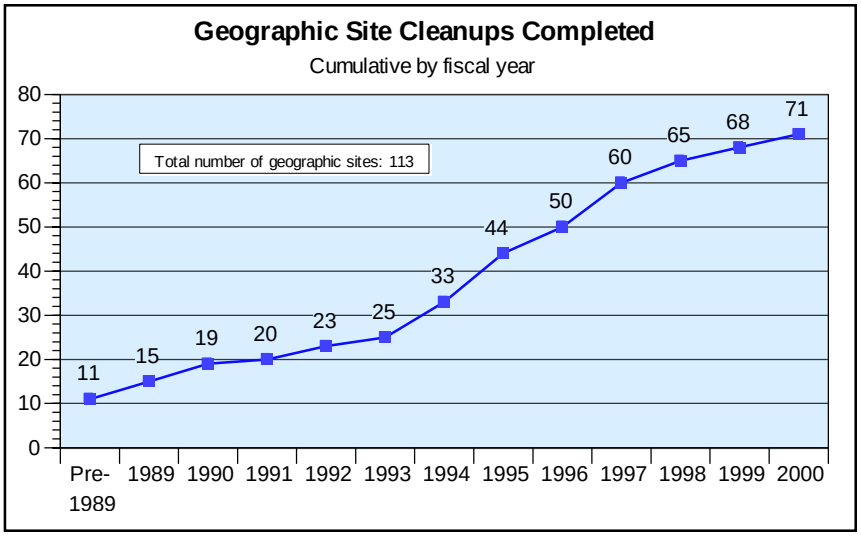
The Department faces significant long-term environmental compliance and waste management problems at its facilities due to past operations that left a legacy of waste which was not stored or disposed of in accordance with current laws or standards. These circumstances dictate that continued high priority be given to evaluating and correcting the impacts of past practices and characterizing and minimizing the possible adverse impacts of present and future activities. The Department is implementing an aggressive plan to accelerate the cleanup of its contaminated sites. The focus of the plan is to reduce the most serious risks and clean up as many sites as possible by 2006.

Objective 2: Clean up as many as possible of the Department's 53 remaining contaminated geographic sites by 2006.

When the Department began its clean up effort, 113 sites were identified as needing remediation. At of the end of FY 1997, when the accelerated cleanup plan was implemented, there were 53 remaining contaminated sites requiring cleanup. The Department met its goal by completing

remediation of three sites in FY 1999. These sites and the five sites completed in FY 1998 bring the total number of completed geographic sites to 68, with 45 remaining to be cleaned up.

Progress is also demonstrated by cleaning up portions of the geographic sites referred to as "release sites" and "facilities." Cleaning up these areas ultimately leads to the completion of the entire geographic site cleanup. We completed 92 facility decommissionings, exceeding our goal of 80 and bringing the number of completed facility decommissioning to 540 out of a total inventory of 3,350 facilities. In addition, we nearly met our FY 1999 goal of 165 release site cleanups by completing 161 release site cleanups, bringing the total number of completed sites to 4,290 out of a total of 7,700 release sites.



We believe that our FY 1999 accomplishments support our objective of cleaning up as many sites as possible by 2006.

Objective 3: Safely and expeditiously dispose of waste generated by nuclear weapons and civilian nuclear research and development programs and make defense high-level radioactive wastes disposal-ready.

During 1999, waste disposal operations were initiated at the Waste Isolation Pilot Plant (WIPP), the Nation's first research and development facility to demonstrate the safe geological disposal of transuranic waste. The opening of the WIPP facility represents a significant achievement by the Department in its efforts to clean up the Nation's nuclear waste.

Truck delivering first waste to the Waste Isolation Pilot Plant.

Prior to FY 1999, the Department was not able to permanently dispose of the transuranic radioactive waste generated by its weapons complex. The schedule for opening the WIPP had experienced delays due to litigation. However, in 1998 the Environmental Protection Agency certified that WIPP complied with its radioactive disposal regulations and the Department informed Congress of its intent to begin disposal operations. On March 26, 1999, WIPP initiated waste disposal operations for transuranic waste. Thirty-two waste shipments from Los Alamos National Laboratory, Idaho National Engineering and Environmental Laboratory, and the Rocky Flats Environmental Technology Site were shipped to WIPP for disposal in FY 1999, exceeding our expectations.

Departmental Challenge: Permitting Issues at WIPP

In October 1999, the State of New Mexico issued the final permit for disposal of hazardous mixed transuranic waste. This permit places new restrictions on the Department's disposal of hazardous mixed transuranic waste and became effective in November 1999. The Department temporarily halted shipments to WIPP in order to implement the provisions of the permit.

While the Department is legally challenging some of the provisions of the permit, we are currently restructuring the program in response to these new restrictions and expect waste shipments to resume in FY 2000.

Removing outer lid at the Waste Isolation Pilot Plant

In addition to opening WIPP, the Department made progress in other areas related to its commitment of safely and expeditiously making waste disposal-ready and disposing of waste generated during past and current DOE activities. In FY 1999, 248 canisters of existing high-level waste were made ready for disposal, exceeding our goal of 215 canisters. The Department also disposed of 49,400 cubic meters of low-level waste, which was significantly below our goal of 73,000 cubic meters. We did not meet our goal due to a lack of agreement on cleanup standards with the State of Nevada that is slowing our clean up efforts there. However, we nearly met our FY 1999 goal to dispose of 15,000 cubic meters of mixed low-level waste, by disposing of 14,300 cubic meters.

Our success in opening WIPP was a very significant accomplishment towards our long-term goal for waste disposal. While we are encountering difficulties in other areas, we believe our FY 1999 efforts were generally successful.

Objective 4: Prevent future pollution.

The Department of Energy's commitment to prevent future pollution is intended to ensure that we do not compound our future cleanup work from ongoing agency activities. In fact, pollution prevention, including waste minimization, recycling, and reuse of materials, was incorporated into all DOE activities. Our efforts to prevent pollution in FY 1999 resulted in the reduction of waste generation of over 32,000 cubic meters, exceeding our goals in this area.

We recognize that pollution prevention, recycling, and waste minimization are the key to meeting our future national objectives while preserving our natural resources. Our FY 1999 efforts were successful in this area.

Removal of tunnel boring machine at Yucca Mountain

Departmental Challenge: Nuclear Waste Disposal

In accordance with the Nuclear Waste Policy Act (NWPA), as amended, the Department has been conducting scientific studies of Yucca Mountain, Nevada, to determine its suitability for the development of a repository for the disposal of the Nation's spent nuclear fuel and high-level radioactive waste. Litigation, funding shortfalls, and the need for scientific studies well beyond the levels envisioned when the NWPA was initially passed in 1982, have necessitated several schedule changes, including the delay in the commencement of repository operations to 2010, as announced in 1989. Until a repository opens, high-level radioactive waste and spent nuclear fuel are being stored temporarily at numerous Departmental facilities and individual utilities sites around the country.

In 1998, a U.S. Court of Appeals ruled that the Department had an unconditional obligation to initiate waste acceptance by January 31, 1998. Because a Federal receipt facility constructed under the NWPA is not yet available, the Department is unable to initiate waste acceptance. As a result, several utilities and State regulatory agencies have brought suit against the Department. Damages may be awarded, depending upon the outcome of litigation; however, the source of funds for the claims is as yet undetermined

Objective 5: Dispose of high-level radioactive waste and spent nuclear fuel in accordance with the Nuclear Waste Policy Act as amended.

The Department has continued to make progress in its efforts to determine the suitability of the Yucca Mountain site for disposal of spent nuclear fuel and high-level radioactive waste. In July 1999, we completed and made available for public comment the draft Environmental Impact Statement for a repository at Yucca Mountain. Future milestones include: issuance of a final Environmental Impact Statement in 2001 and, if the site is determined to be suitable, submittal of a Site Recommendation Report to the President in 2001; if the site is approved by both the President and the Congress, submittal of a License Application to the Nuclear Regulatory Commission in 2002; and commencement of operations in 2010.

We have met our FY 1999 goals for this objective.

Objective 6: Reduce the life-cycle costs of environmental cleanup.

Because the scope of the Department's cleanup effort is so large, we have taken steps to ensure that the costs are minimized through enhanced performance and increased efficiency. We have used many methods to control our costs, including the use of fixed-price competitive contracting, optimized project sequencing, privatization, systems engineering, and benchmarking.

During FY 1999 we continued the development and implementation of our strategy for privatizing some of our cleanup efforts. Our FY 1999 goal was to complete the design and begin construction on one project and award contracts for two others. We met our goal for the first project, but the schedule for awarding contracts on the other two projects slipped by a few months.

Innovative environmental cleanup, nuclear waste, and spent fuel technologies have contributed significantly to reducing our costs. In FY 1999, 125 innovative technologies were deployed across

the DOE complex, exceeding our goal. We also conducted 27 full scale demonstrations of alternative technology systems and made 40 available for implementation, meeting our goals in this area.

Another focus of our efforts to reduce costs is the deactivation of our surplus facilities and the placing of them in a safe and environmentally sound condition that requires minimal maintenance. During FY 1999 we completed 64 of the 65 surplus facility deactivations we had planned to accomplish.

We believe our efforts are on track to reducing the overall life-cycle cost of the Department's environmental cleanup and our FY 1999 results support our long-term objective.

Objective 7: Maximize the beneficial reuse of land and effectively control risks from residual contamination.

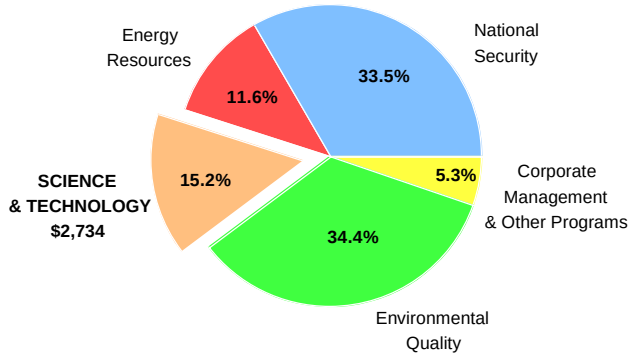
The Department is working very closely with stakeholders to ensure that remedies implemented remain protective of human health and the environment after cleanup projects are complete at DOE sites or portions of DOE sites. These post-cleanup activities, collectively referred to as long-term stewardship, will be required because the cleanup projects, while greatly reducing risks and annual costs, will impart a legacy of radiological, chemical, and physical hazards at DOE sites.

Meeting our FY 1999 goals, we published a background report on long-term stewardship that served as a companion piece to the *Accelerating Cleanup: Paths to Closure* document and began two major studies. The companion piece to the *Paths to Closure* document is serving as background information for a national study to examine long-term stewardship issues the Department is facing. Extensive public participation is planned for this study, and the Department will release a draft by June 2000. The second study will examine the residual hazards that will remain at sites or portions of sites that will complete cleanup by 2006. It will also examine the nature of activities that will be required to ensure continued protection of human health and the environment, and will provide an estimate of costs where possible. The Department has developed guidance, and data collection is underway.

The FY 1999 goals for this objective were met.

Science and Technology

FY 1999 Net Budget Authority by Business Line
(Dollars in Millions)
Total $17,968



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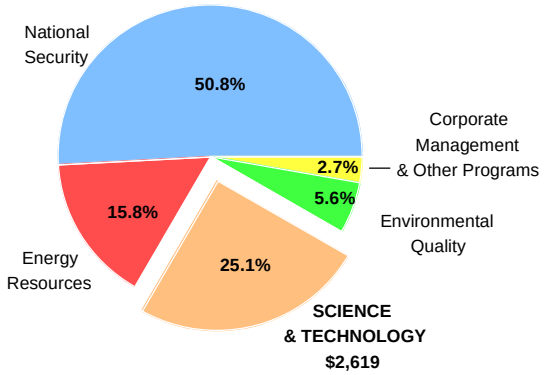

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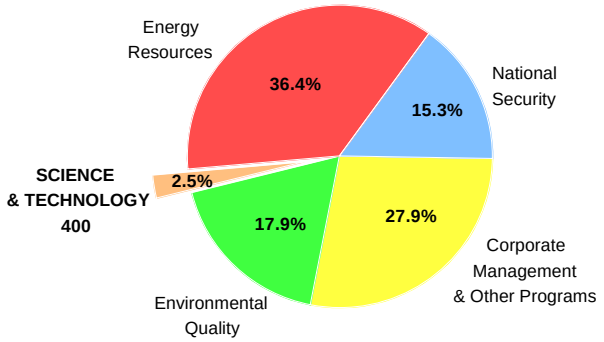


The Department of Energy is delivering the scientific understanding and technological innovations that are critical to the success of our mission and the Nation's science base

In our Science and Technology business line, we are working to:

- Develop the science that underlies DOE's long-term mission.
- Deliver leading-edge technologies that are critical to the DOE mission and the Nation.
- Improve the management of DOE's research enterprise to enhance the delivery of leading-edge science and technology at reduced costs.
- Assist in the Government-wide effort to advance the Nation's science education and literacy.

The 20th century has brought many scientific advancements that have resulted in dramatic changes in the products of commerce and communications technologies, and in the diagnosis and treatment of disease. We are learning to control matter at the atomic level, develop cleaner energy sources, and look deeply into the cosmos to the origins of matter and energy. Business can now be conducted worldwide with a few strokes of a keyboard as a direct result of communications protocols developed by the computing sciences and high energy physics communities, research in which the Department of Energy has played a key role.

Much of this country's economic growth, quality of life, and security derives from national investments and leadership in science and technology. The Nation's standard of living and prosperous technology-based economy are linked to our ability to invest public resources to secure benefits not attainable by the normal workings of the marketplace.

By developing the technologies needed to map and sequence the genetic script for an "average" human being, the benefits to be reaped stretch the imagination. In the offing would be a new era of molecular medicine characterized not by treating symptoms, but rather by looking to the deepest causes of disease. Even more promising, insights into genetic susceptibilities to disease and environmental insults could thwart some diseases altogether. It is estimated that defective genes directly account for 4,000 hereditary human diseases, maladies such as Huntington disease and cystic fibrosis, and it could become possible, in some cases, to actually "fix" genetic errors.

Objective 1: Develop the science that underlies the Department's long-term mission.

Conducting relevant, high-quality research is critical to developing the science that responds to the Department's mission. One of our efforts is to participate in a coordinated international effort to determine the complete human DNA sequence. The ultimate goal is to discover all of the more than 80,000 human genes and render them accessible for further biological study. During the first months of FY 1999, the DNA sequencing goals of this international effort underwent significant discussion and change. As a result, the international community agreed to complete a high-quality draft of the human genome in the spring of 2000 and to determine the complete sequence of the human genome by 2003, both goals several years ahead of the original schedule.

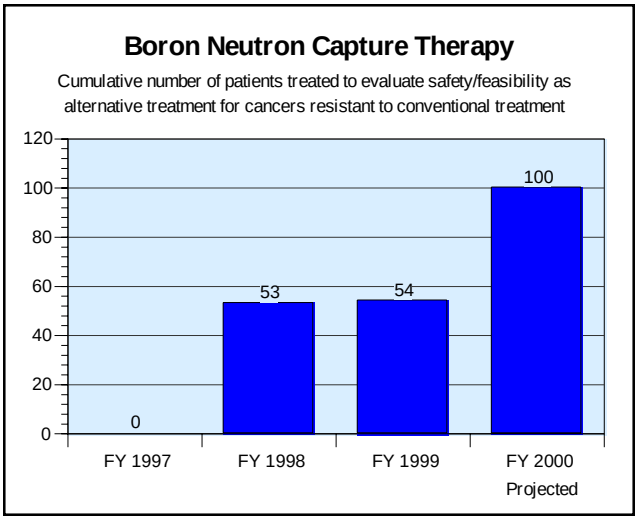
During FY 1999, DOE produced 15.2 million subunits of human DNA sequenced to accepted international quality standards, less than our original goal of 30 million subunits. However, in accordance with the new goals of the international project, the DOE produced 55 million subunits of high-quality draft and 70 million of Phase I draft sequences, greatly exceeding our second FY 1999 goal of 30 million additional subunits of draft human DNA sequence. The level of DNA sequence produced by DOE between October 1, 1998, and September 30, 1999, actually reflects an increase in sequencing output over DOE's original goals for FY 1999 and is consistent with the current goals of the international human genome project.

We are also working to develop the science that supports DOE's participation in energy policy and other national policy formulations. To this end, we are

actively pursuing the identification of microbes with potential use in waste cleanup or energy production. Our goal in FY 1999 was to determine 70 percent of the DNA sequence of 10 microbes that met that criteria. We exceeded that goal by completing 100 percent of the DNA sequences of five microbes, determining more than 95 percent of the DNA sequences of seven additional microbes, and more than 70 percent of the DNA sequence of one additional microbe with potential use in waste cleanup or energy production. Among these organisms is a remarkable radiation resistant microbe, which is a potential workhorse for helping cleanup DOE waste sites, and an organism that can consume toxic organic pollutants and convert toxic metals and radionuclides to less toxic forms.

As part of our efforts to develop science underlying our long-term mission, we are providing new insights into the fundamental nature of energy and matter. In FY 1999, a newly constructed research facility at the Stanford Linear Accelerator Center began operations as planned. This facility is being used to collide ultra-high-intensity beams of electrons and positrons. The results of the collisions will be studied to help us understand why the universe now consists only of matter, when initially matter and antimatter existed in equal proportions. In addition, the Main Injector at Fermilab, which will increase the intensity of the Tevatron, the world's highest energy proton-antiproton collider, was completed and commissioned as planned. The resulting five- to tenfold increase in intensity will be a great help in our efforts to understand the origin of the masses of elementary particles. Meeting another FY 1999 goal, the Relativistic Heavy Ion Collider, which will collide gold atoms with each other at very high energies, was completed and commissioned at Brookhaven National Laboratory. It will search for the quark-gluon plasma, a state of matter which has not existed in the universe since the first few microseconds of the Big Bang.

The Stanford Linear Accelerator Center is a national basic research laboratory, probing elementary particle physics and developing new technology in high energy accelerators and elementary particle detectors. Photo depicts a cross-section of the large detector where electrons and positrons collide.



By supporting new emerging sciences that are important to the future of DOE and the Nation, we are proactively addressing some of the Nation's most pressing problems. Boron Neutron Capture Therapy represents an experimental approach to cancer treatment which is based on a dual-step technique. First a boron-containing compound is intravenously injected into the patient. This boron accumulates at higher concentrations in the tumor than in nearby normal tissues. Next a beam of low-energy neutrons is directed at the boron-containing tumor. The charged particles release sufficient energy locally to kill any tumor cells containing high concentrations of boron without appreciably harming cells that contain low concentrations of boron. In 1999, we treated 20 patients, which is lower than our goal of 25 to 30 patients. Of these, one patient was new, bringing the cumulative number of patients treated to 54.

Another emerging science we are pursuing is the discovery of new biological structures. As planned, during FY 1999 more than 60 percent of the new high-resolution, three-dimensional structures published in peer reviewed journals were determined at DOE facilities. Among the many protein structures determined was the ribosome, the protein-synthesizing machinery in cells. It is the largest protein structure determined to date.

Our successes in FY 1999 demonstrate our long-term commitment to the development of science that contributes to the Department's mission. We are pleased with the results.

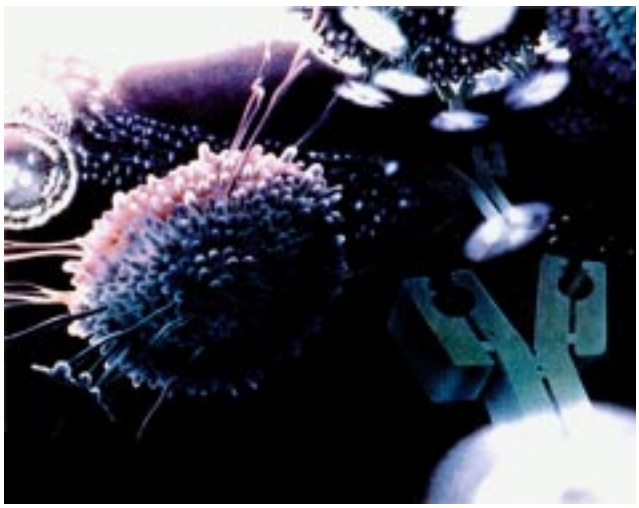
Objective 2: Deliver leading-edge technologies that are critical to the Department's mission and the Nation.

Through developing technologies, DOE is striving to provide leadership and the means to promote achievement in the areas of national security, environment, and energy.

The Department supplies quality stable and radioactive isotopes for industrial, research, and medical applications. During FY 1999, our isotope programs supplied nearly 1,126 shipments to domestic and overseas customers. This was accomplished with an on-time delivery record of more than 95 percent, exceeding our goal of 95 percent. In addition, we initiated construction activities at the Isotope Production Facility during the year as scheduled. This project, which was subjected to an independent design review that identified only minor issues and cited several noteworthy good practices, will improve isotope quality with greater efficiency.

We are also seeking to accelerate the transition of leading-edge technologies to end users. In support of this, during FY 1999 we provided fundamental research that will underpin the cleanup of contaminated sites. As planned, sampling of both groundwater and sediment was conducted at two of the Department's remediation sites. The results of these samples will be to determine whether biotransformation of uranium and other contaminants is

One of every three people treated at a hospital is estimated to benefit from the use of at least one radioisotope during diagnostic procedures (shown here), therapy, or laboratory testing.



An ultra-pure form of medical isotope yttrium-90 is being extracted from nuclear weapon production waste and being used to treat a variety of cancers. Radioisotope-tagged monoclonal antibodies act as"Smart Bullets" by targeting malignant cancer cells for diagnosis and treatment.

occurring under field conditions. We have also established a collaborative research program within DOE to develop promising cleanup technologies. However, though progress is being made, this program is behind schedule due to a lack of funding.

Overall, we believe our FY 1999 accomplishments have successfully achieved the intended results.

Objective 3: Improve the management of DOE's research enterprise to enhance the delivery of leading-edge science and technology at reduced costs.

The Department is committed to managing its national laboratories, science-user facilities, and other research facilities in a more integrated, responsive, and cost-effective way. To this end, we are interested in ensuring new research facilities are constructed on time and within budget. Our activities during FY 1999 to design and initiate construction of the Spallation Neutron Source are on schedule. When complete, the Spallation Neutron Source will be an accelerator-based neutron source designed to meet needs within the scientific and industrial communities in the U.S. well into the next century. Early neutron sources built in the U.S. and abroad rapidly demonstrated the utility of neutrons for research in understanding and developing new materials. The Spallation Neutron Source will provide next-generation capabilities in this area.

The Department has also been devising new ways to use, disseminate, and share scientific and technical information to a growing community. In FY 1999, all major DOE laboratories, contractor sites, and field locations (more than 40 unique sites) have been connected to an on-line means of electronically capturing DOE-sponsored scientific and technical information. Ahead of schedule, the DOE Energy Link system was developed and implemented to provide a more effective complex-wide means of announcing and making full-text information electronically accessible. Similarly, researchers and the public can access Departmental scientific and technical information through a newly implemented electronic infrastructure. The information on the system was accessed more than 1.5 million times during FY 1999, far exceeding our expectations.

Another action we are taking toward improving the management of our research enterprise is to improve our peer and program review processes. Our goal during FY 1999 was to receive an assessment from the National Academy

Spallation Neutron Source

What is Spallation?
Spallation is an action that occurs when individual protons collide with a heavy atom nucleus. As a result of this collision, some neutrons are "boiled off" in a nuclear reaction process called spallation. These neutrons are then guided into an area where they are used for various experimental research and development projects.

Why are we building the Spallation Neutron Source?
Just as it is possible to see much finer detail under a bright light, so finer detail can be "seen" inside experimental materials using a more intense neutron source. The Spallation Neutron Source will produce the highest intensity pulsed neutron beams in the world.

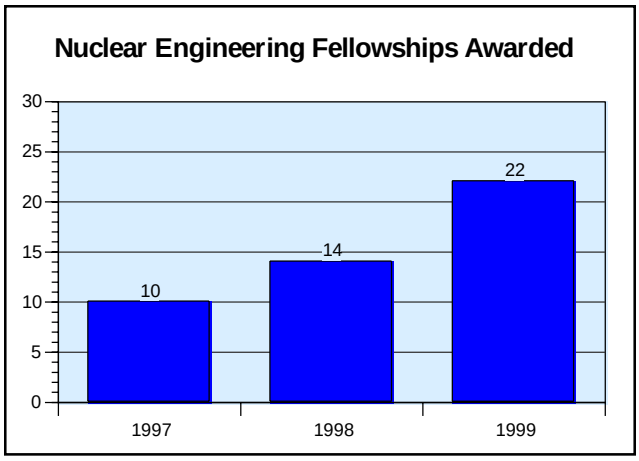
of Sciences on the quality of the science produced by the Department's Fusion Energy Sciences program. Although an interim report with initial comments has been issued, the final report with a more comprehensive assessment will not be issued until FY 2000.

Although our efforts to improve our peer review process are somewhat behind schedule, we were very successful in our other FY 1999 efforts to improve management of our research enterprise. Overall, we are pleased with the results of our FY 1999 efforts.

Objective 4: Assist in the Government-wide effort to advance the Nation's scientific literacy.

Continued success nationally depends on developing and promoting programs that deliver information and contribute to learning in science, math, engineering, and technology.

The Department conducts the University Reactor Fuel Assistance and Support program that provides funding for U.S. university nuclear engineering programs and university research reactors. In an effort to attract outstanding U.S. students, we offer fellowships in the field of nuclear engineering. As planned during FY 1999, the number of fellowships available increased by 8 to 22 and the number of Nuclear Engineering Education Grants available more than doubled to 39. This endeavor will help maintain our nuclear engineering manpower infrastructure into the next century. We also contributed to improved nuclear energy research and educational opportunities by assisting U.S. universities with their research reactors. As planned, during FY 1999 all U.S. universities that requested fresh nuclear fuel received it to continue to operate their reactors. In addition, 21 universities received funding to upgrade the performance of their reactors.



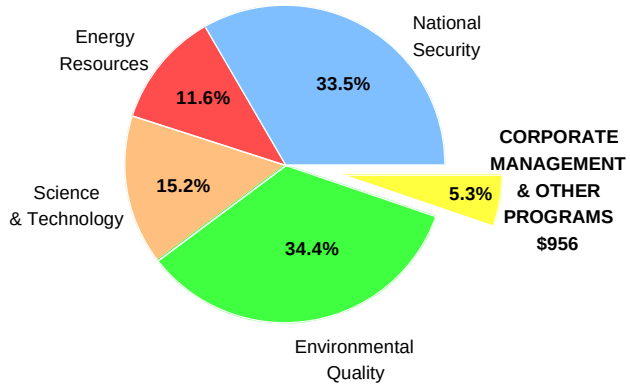
Further, in FY 1999 we initiated two new programs as planned: the Summer Undergraduate Research Experience program with 16 awards and the Graduate Research Environmental Fellowships program with 10 awards. Students spent the summer on assignment at various DOE laboratory facilities and presented research results from their efforts.

We are pleased with our successes in advancing the Nation's science and literacy during FY 1999.

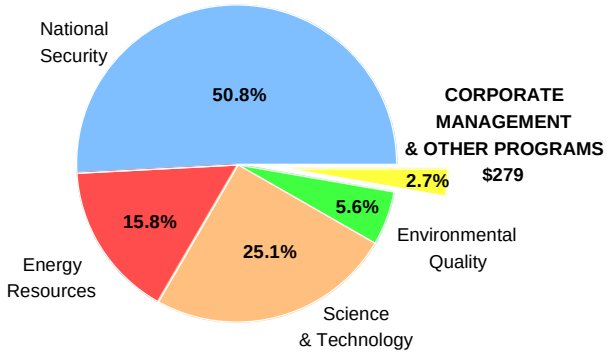
College students take advantage of research opportunities as part of the Department's Energy Research Undergraduate Laboratory Fellowship Program sponsored by the Department's Office of Science.

Corporate Management

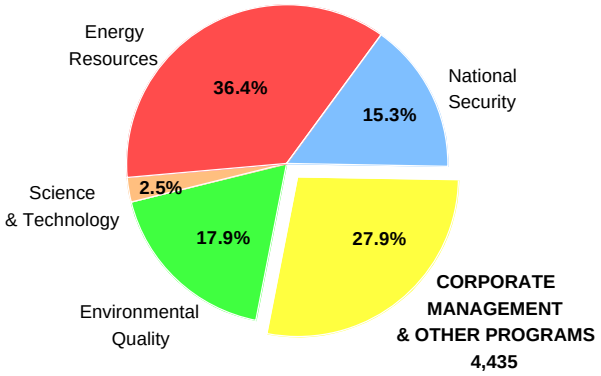
FY 1999 Net Budget Authority by Business Line
(Dollars in Millions)
Total $17,968



FY 1999 Operational Net Costs by Business Line
(Dollars in Millions)
Total Business Line Net Costs $10,431



FY 1999 Number of Federal Employees
(Full-time equivalents—FTEs)
Total Federal Employees 15,897



The Department of Energy strives to demonstrate organizational excellence in its environment, safety, and health practices; in its communication and trust efforts; and in its corporate management systems and approaches

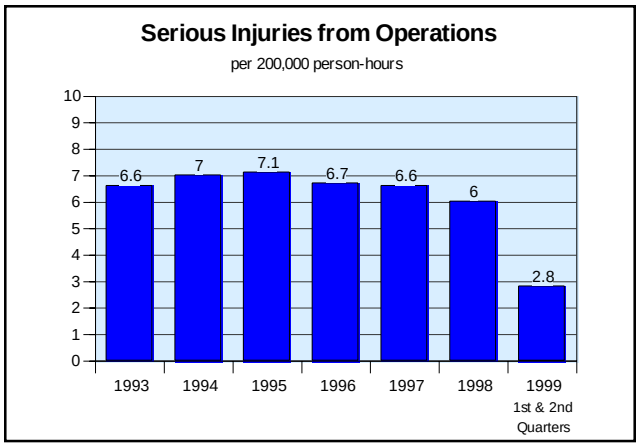
The Department's success within its diverse portfolio of programs is largely dependent upon a strong and sound corporate management function. This function includes not only the typical administrative, staff, and operational functions associated with an organization, but also encompasses essential crosscutting activities related to the environment and the safety and health of our workers and the public; effective communication and trust with our stakeholders; and highly efficient managerial practices.

In our corporate management function, we are working to:

- Ensure the safety and health of the DOE workforce and members of the public and the protection of the environment in all Departmental activities.
- As a good neighbor and public partner, continually work with customers and stakeholders in an open, frank, and constructive manner.
- Use efficient and effective corporate management systems and approaches to guide decisionmaking, streamline and improve operations, align resources, and reduce costs.
- Improve the delivery of products and services through contract reform and the use of business-like practices.
- Implement information systems so employees can perform their jobs efficiently and effectively.
- Improve performance through evaluations, reviews, audits, and inspections.

Objective 1: Ensure the safety and health of the DOE workforce and members of the public and the protection of the environment in all Departmental activities.

The Department's top priority is to prevent fatalities, serious accidents, and environmental releases at its sites. During FY 1999, our goals were exceeded, as the Department had no work-related fatalities, and worker safety and health have continued to improve as serious accidents and environmental releases have been on a downward trend over the past 3 years.



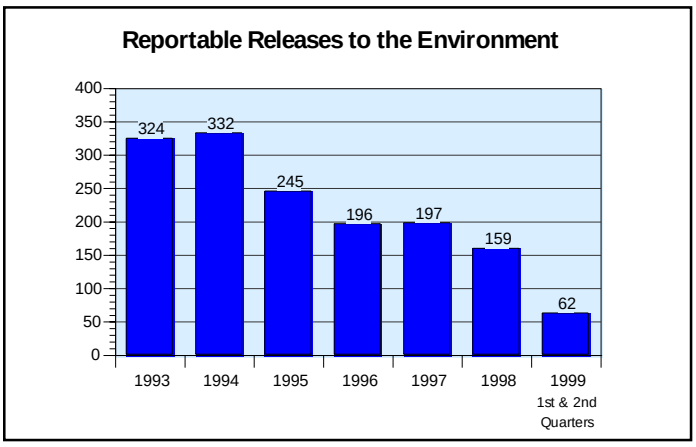
Departmental Challenge: Safety and Health

Despite our success in preventing fatalities and serious accidents, there are ongoing safety issues at many of our facilities.

The Department of Energy is tasked with simultaneously addressing the consequences of past activities, managing current operations, and preventing future human and environmental problems. We are attempting to meet these challenges through implementing a variety of initiatives, including Integrated Safety Management. The Department has demonstrated its commitment to the principles of Integrated Safety Management and has evidenced this commitment by establishing safety and health programs that protect its workers, the public, and the environment. The challenge remains that improvements in worker safety are being offset by adverse trends in safety records related to construction and industrial service. Also, while the principles of work planning and hazard analysis have been established at some sites, at many others these principles are limited in their implementation, especially where subcontractor personnel are involved. A need to improve accountability for safety management performance is apparent in the Department's self-assessment and corrective action processes and in the under-utilization of "lessons learned" information. Recent events at our facility located at Paducah, Kentucky, and the Y-12 plant in Oak Ridge, Tennessee, highlight the continued importance of implementing a comprehensive safety and health strategy across the complex.

Through 1999, the Department has added requirements for developing and reviewing Integrated Safety Management system descriptions into all major management and operating contracts; established a Safety Council which will help monitor the implementation of Integrated Safety Management; and continued positive trends in ensuring worker safety and health and limiting environmental releases. Additionally, we completed 13 safety management evaluations in FY 1999 which support our ability to monitor the implementation of current safety standards and provide feedback critical in completing the nuclear safety standards upgrade project. Further, through 1999, 65 of the 106 vulnerabilities identified with our storage of spent nuclear fuel had been corrected.

The Department's plan to correct these problems includes the publication of remaining Nuclear Safety Management Rules; inserting a clause into contracts that puts the contractor's entire performance-based fee at risk for unacceptable safety performance, and completing actions to correct deficiencies.



Meeting the challenge of maintaining adequate worker and public protection in an environment with aging facilities, resource constraints, and uncertain future requirements is a great challenge. Despite these hurdles, the Department remains committed to protecting the interests of its workers and the public through stronger safety and health oversight and by identifying and responding quickly to safety and health issues that arise. Although we were successful in achieving our specific FY 1999 goals, we have much left to achieve in our long-term objective.

Objective 2: As a good neighbor and public partner, continually work with customers and stakeholders in an open, frank, and constructive manner.

Since the end of the Cold War, the Department has undergone a transformation from a secretive, weapons-producing agency to a results-driven, customer-focused leader in science, technology, and environmental management. This has been accomplished by emphasizing openness, enhancing communications, and fostering trust among stakeholders. During FY 1999, the Department met its goals by conducting approximately 150 stakeholder meetings to increase public involvement in crosscutting environmental quality issues. These stakeholder meetings consisted of participants from advisory boards from across the DOE complex, State and local governments, Native American tribes, and interested individuals. To further foster strong partnerships with neighboring communities, the Department also met its 1999 commitment to conduct “Communicating with the Public” training sessions for DOE managers by holding seven training sessions at various DOE sites across the country.

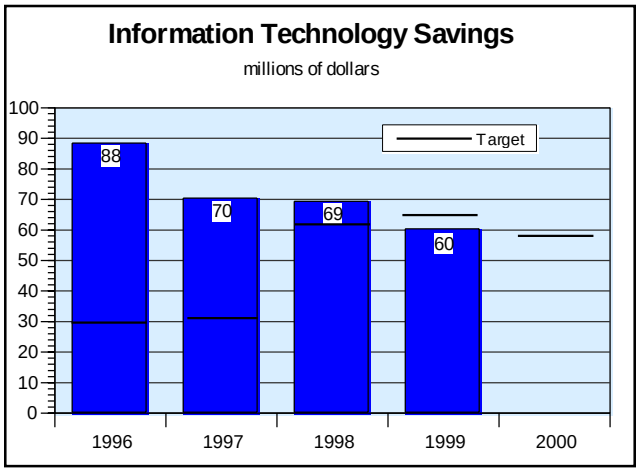
We are also working to increase openness by declassifying information about the Department’s activities while maintaining a balance with the Nation’s security. During FY 1999, we declassified more than 2 million pages of documents, meeting our goal of releasing information that no longer needs to be withheld for security reasons.

Another thrust of the actions we are taking to be a good neighbor and public partner is to develop a public health agenda for DOE sites. The primary challenge to the Department in the area of worker and public health has been the lack of a consistent, complex-wide approach to performing health studies. To address this, we are working closely with the Department of Health and Human Services to prepare a consolidated and coherent strategy for worker and public health effects studies and activities. Stakeholder input is key to this initiative. During FY 1999, we issued a draft public health agenda and received public comments. However, the receipt and incorporation of public comments has taken longer than expected. As a result, we did not meet our goal of issuing a final public health agenda for each site during the year. We expect this to be complete in FY 2000.

While we have been successful in some areas, not all of the FY 1999 goals we established to be a good neighbor and public partner were met.

Objective 3: Use efficient and effective corporate management systems and approaches to guide decisionmaking, streamline and improve operations, align resources, and reduce costs.

As the Department's missions and business environment have changed, so has our need for business systems. Recognizing this, the Department has embarked on a project to develop a new Business Management Information System, with a special emphasis on financial management. During FY 1999, we worked on identifying functional and technical system requirements for the financial management component of the system. Though we nearly accomplished our goal of completing those requirements, they will not be done until FY 2000. However, this will not impact major milestones for the project.



Another thrust of our efforts is to streamline and improve our operations. In FY 1999, the Department met its goal and continued to accumulate savings from such actions. Staffing is being reduced. The end-of-year staffing, excluding the power marketing administrations, was 10,275, below our targeted goal of 10,613. Savings from information technology were $60 million in FY 1999, short of our $65 million goal; but our FY 2000 goal of $245 million in cumulative savings has already been exceeded. Support services contracts obligations were significantly reduced to $428 million, exceeding our goal of $610 million.

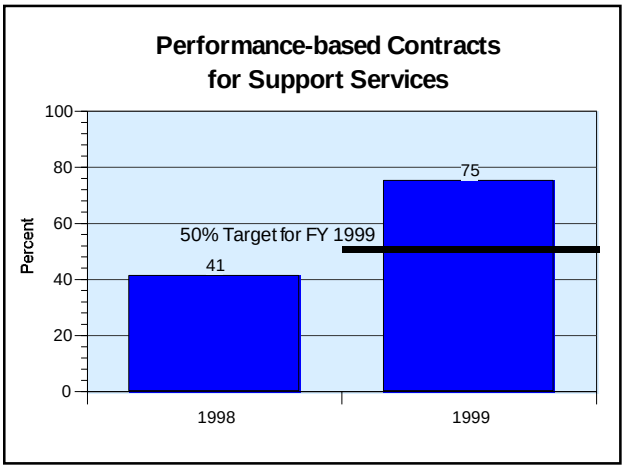
Departmental Challenge: Mission Critical Staffing

Although FY 1999 appeared to be a turning point, allowing for more hiring and flexibility in training and retaining our existing work force, FY 2000 budgets are again requiring the Department to restructure and reshape to meet new and/or changing missions and to operate within available funding. The Office of Nonproliferation and National Security cannot perform critical functions within the current staffing allocations. Critical functions affected include support for the federal oversight of programs within the former Soviet Union; the U.S. Nuclear Detonation Detection System; projects relating to security of weapons-usable fissile material; the Nuclear Nonproliferation Treaty; and responsibilities in the Atomic Energy Act, Nuclear Nonproliferation Act, and Export Administration Act. Office of Security and Emergency Operations requests for mission critical staffing have not been funded, adversely affecting our ability to detect or respond to terrorist use of chemical or biological weapons, maintain technical viability of the Nuclear Materials Management and Safeguards System, and monitor visits by foreign nationals to Department facilities. Current Office of Chief Financial Officer staffing does not fully support mission functions such as oversight of the financial operations at the Department's major contractors, financial analysis, and accounting operations. This challenge in our financial area will be intensified by additional workload resulting from new Federal accounting standards, creation of the National Nuclear Security Agency, and implementation of several new Departmental financial systems.

Improving our human resource utilization is another focus of our efforts in this area. In FY 1999, we were successful in completing our planned actions to improve workforce skills, reduce training costs, and implement an employee accessible automated personnel system. However, aligning our resources to meet the Department's needs remains an issue we are working to address.

We believe the Department is making strides towards operating efficient and effective corporate management systems that maximize Departmental resources and results. While we were successful in achieving some of our FY 1999 goals, we were not successful in achieving others.

Objective 4: Improve the delivery of products and services through contract reform and the use of business-like management practices.



The use of prudent contracting and business management approaches is critical to the success of our operations. Recognizing this, the Department has implemented a new contracting approach that emphasizes contractor performance and accountability. Our new contracting approach is evidenced by our FY 1999 actions. All management and operating contracts awarded during the year were performance based, as planned. Seventy-five percent of the support service contracts awarded during the year were performance-based. We also awarded 60 percent of all management and operating contracts as competitive contracts, exceeding our goal of 50 percent. Additionally, as planned, a new DOE contractor fee policy was developed and published.

Departmental Challenge: Contract Management

The Department has reformed its contracting practices, which were largely unchanged for more than 50 years. The weaknesses in our contracting practices were substantial and required major improvements to increase competition, incentivize contractor performance, and hold contractors more accountable for their performance. To correct these problems, we instituted an extensive, multi-year contract reform initiative. This effort includes aggressively recompeting contracts, tying performance metrics to contractor fees to incentivize improved performance, and shifting risk to contractors in exchange for the opportunity to earn higher fee amounts. While this reform effort is applicable to all our contracts, it is especially pertinent to the large contracts we have with companies managing and operating our major facilities, to which we fund more than $13 billion per year. Although the Department has recompeted and incentivized many contracts, we are due to recompete seven major contracts this year. We are continually evaluating our contract reform efforts to achieve the proper risk-reward balance and to improve the use of performance incentives in our contracts.

To emphasize results and accountability in our business management approaches, the Department produced its first Accountability Report, for FY 1998, merging legislatively required reports on performance and management controls, audited financial statements, and other information. DOE successfully delivered the Accountability Report to OMB on March 1, 1999; however, we did not meet our goal of obtaining an unqualified audit opinion due to issues surrounding the estimate of DOE's future environmental liabilities. We aggressively pursued the correction of that problem during the rest of FY 1999.

Another focus of our efforts is the application of business-like practices to the management of our large projects. Although we are making progress in this area and have established a strong corporate capability for providing oversight and supporting the Department's project managers, this is an area we continue to need to address.

Although we believe we are making progress in our contract reform activities, overall we have not been successful in achieving our goals related to our use of businesslike management practices.

Departmental Challenge: Project Management

The use of business-like practices extends to the management of DOE's projects and assets. However, credibility in the Department's ability to build new facilities or upgrade existing systems has been adversely affected by reports of cost overruns, schedule slippages, and other project management problems. These issues have led to Congressional concerns about the Department's construction project management structure and practices.

To correct this problem, Departmentwide policy and procedures have been assessed by an expert panel formed under the National Research Council of the National Academy of Sciences, which concluded that the Department's prior efforts to address project management issues were not successful and that further improvements are needed. In accordance with Congressional direction, services were procured during FY 1999 for independent evaluation of the Department's construction planning and management practices. Both external and internal on-site reviews were also conducted to evaluate the effectiveness of project management system improvements. Late in FY 1999, responsibility for corporate oversight of the Department's project management functions was assigned to the Office of the Chief Financial Officer and a new organizational structure was initiated. Recommendations from the National Research Council, as well as those gleaned from internal reviews, are being addressed and implemented through a comprehensive plan. The Department is also strengthening line management accountability for project management by establishing and monitoring the Chief Operating Officer's "Project Management Watch List," which subjects specific projects to stringent monthly reviews and reporting requirements. As a result of continued problems, the final correction of these issues has been extended until FY 2002 to include additional project reviews and benchmarking efforts to further identify needed improvements to our project management practices.

Objective 5: Implement information systems so employees can perform their jobs efficiently and effectively.

To be effective, our information systems must meet the needs of our workforce. To this end, we are working to improve our information infrastructure to allow staff the capability of accessing and sharing information easily and seamlessly across the DOE complex. As a result, during FY 1999 we improved the reliability of our network infrastructure through implementation of redundant and enhanced communication links as planned. In addition, we improved our electronic mail infrastructure to help sustain continuous information delivery.

The Department's information systems must not only meet workforce needs, but must also be based on cost-effective technology. To ensure this, we have been working to continuously evolve the Department-wide information architecture to foster $100 million of cost avoidances by FY 2003. Actions taken during FY 1999 are a part of this longer-range effort and are creating cost avoidances through work process improvements and the elimination of satellite or duplicative systems. The results of our FY 1999 efforts exceeded our expectations and assure we are well on our way to meeting our overall target of $100 million in FY 2003.

We believe our FY 1999 actions were successful in meeting our objective to have systems that allow employees to perform their jobs efficiently and effectively.

Objective 6: Improve performance through evaluations, reviews, audits, and inspections.

DOE's Office of the Inspector General plays an important part in the Department by promoting effective, efficient, and economical operations through audits, investigations, inspections, and other reviews.

Departmental Challenge: Inadequate Audit Coverage

There are deficiencies in the audit coverage of our major contractors, who perform many of the functions integral to the Department's mission. As a result, the Department lacks full assurance that its contractors are being reimbursed only for costs that are reasonable and allowable. The Cooperative Audit Strategy, which was intended to maximize audit coverage by utilizing both Office of Inspector General and contractor internal audit staff, has been hindered by rapidly increasing statutory audit requirements and contractor internal audit staffing levels that have decreased over the past several years. So while the Office of Inspector General has developed a long-range plan to audit every significant function of each contractor's operation on a cyclical basis, audit staffing and resource limitations have made this plan unachievable.

With the Office of Inspector General using an audit strategy based on an assessment of the greatest risks and benefits to key Department programs, this risk-based approach can only mitigate, not eliminate, the effect of inadequate staffing. The Office of Inspector General is working to resolve staffing issues in order to accomplish an acceptable level of audits of our major contractors.

In FY 1999, the Office of the Inspector General met its goal to conduct reviews based on assessment of risk and/or benefit to key DOE programs. In conducting these reviews, the Inspector General considers at least 23 locations, which account for $13 billion in annual obligations, to be high risk. In addition, the Inspector General goals to focus investigations on allegations of serious violations of Federal law and to render an opinion of the

Department's financial statements was met. Also, the Office of the Inspector General met its FY 1999 goal and successfully completed 66 percent of the audits planned for the year and replaced those not started with more significant audits that identified time-sensitive issues needing review.

Status of Year 2000 Actions

The Department's efforts to ready our computer systems for Year 2000 were successful. Out of our universe of more than 200,000 systems, only 36 incidents were reported. Sixteen of these incidents involved minor problems to mission-critical systems. The impact of these incidents was mitigated using contingency plans, and all systems were corrected as of January 11, 2000. No operational impacts occurred as a result of these incidents.

Our successful transition can be attributed to the thoroughness of our risk assessment and the resultant contingency plans put in place to deal with any problems that arose during the transition to Year 2000.

Our risk assessment indicated that site systems supporting critical functions have several backup systems or alternate means of accomplishing the required functions. The systems in the operating facilities have normal, abnormal, or alarm response and emergency implementing procedures in place that were tested through the facility operating and drill programs. This is an in-depth methodology that addresses step-by-step actions required to deal with any failure, to include safe shutdown if required. Many systems also have disaster recovery plans in place as a normal course of business. The business continuity plan and contingency plans in place added further depth to this already existing, detailed, procedural emergency operations plan. Our analysis of worst-case scenarios, which addressed all risks associated with the Department's nuclear facilities and waste storage facilities, were thoroughly analyzed, and contingency plans were put in place to mitigate associated risks of a Year 2000 related system failure. Extensive on-site analysis of the Year 2000 century date change revealed no foreseeable negative impacts to mission-critical systems.

During the actual transition, the Chief Information Officer coordinated coverage within the Headquarters Emergency Operations Center. The Lead Program Secretarial Offices, the Office of Policy, Public Affairs, Intelligence, and the Energy Information Administration participated. In addition, key staff from the electricity, natural gas and oil industries worked with us in the Emergency Operations Center. Activities included monitoring incoming reports from all Departmental sites, analyzing the data, and preparing and forwarding reports to the White House Information Coordination Center. A status was provided every two hours throughout this period.

The Secretary of Energy was present through the rollover. Constant communication was maintained with the Russian Ministry of Atomic Energy.

To ensure continued success of our transition, the Department will continue to monitor our systems for potential Year 2000 problems through the leap year date of February 29.

Year 2000 Remediation Costs and Future Estimates (millions of dollars)

1996	1997	1998	1999	2000	Total
$1.0	$19.9	$83.9	$110.0	$19.9	$236

Management's Response to Inspector General Audit Reports

The Department responds to audit reports by evaluating the recommendations they contain, formally responding to the Inspector General (IG), and implementing agreed upon corrective actions. In some instances, we are able to take corrective actions immediately and in others, action plans with long-term milestones are implemented. This audit resolution and follow-up process is an integral part of our efforts to deliver our priorities more effectively and at the least cost. Actions taken on audit recommendations increase both the efficiency and effectiveness of our operations and strengthen our standards of accountability. The Inspector General Act, as amended, requires that we report on the status of our progress in implementing these corrective actions semiannually. We are fulfilling that requirement by providing information for the entire fiscal year in this section.

At the end of FY 1999, the Department had 41 IG reports with agreed upon actions that were open after one year and had taken final action on 41 IG operational, financial, and preaward audit reports. At the end of the period, 95 reports awaited final action. Some of these reports contain recommendations to make changes to our operations in order to save funds that could be reapplied elsewhere in the future. The table below provides more detail on the audit reports with open actions and the dollar value of recommendations that funds "be put to better use" that were agreed to by management.

Status of Final Action on IG Audit Reports for FY 1999

Audit Reports	Number of Reports	Agreed-Upon Funds Put to Better Use
Pending final action at the beginning of the period	72	$129,605,294
With actions agreed upon during the period	64	$5,907,250
Total pending final action	136	$135,512,544
Achieving final action during the period	41	$13,117,733
Requiring final action at the end of the period	95	$122,394,811

Also during this period, management made decisions on four Inspector General contract audit reports, disallowing $1,524,891 in questioned costs. Final action was taken on three reports, netting $656,439 in recoveries. At the end of the fiscal year, there were three contract audit reports pending final action.

General Accounting Office Audit Reports

The U.S. General Accounting Office (GAO) audits are a major component of the Department's audit follow-up program. During FY 1999, we received 59 audit start notifications and were issued 40 draft and 46 final GAO audit reports. Of the 46 final reports, 31 required tracking of corrective actions and 15 did not because the reports did not include actions to be taken by the Department. In addition, we completed agreed upon corrective actions on 13 audit reports. At the end of FY 1999, there were six GAO reports with agreed upon actions open after one year.

Summary of Departmental Challenges

Departmental challenges are identified in this report in accordance with the Federal Managers' Financial Integrity Act (FMFIA). The objective of the FMFIA is to identify areas of vulnerability in the operations of the Government and ensure that appropriate attention is given to mitigating problems that may affect the judicious expenditure of the taxpayers' money. As required by the FMFIA, the Department has evaluated its management controls to provide reasonable assurance that they were working effectively, that program and administrative functions were performed in an economical and efficient manner consistent with applicable laws, and that assets were safeguarded against the potential for waste, fraud, abuse, or mismanagement. The results of the evaluations indicate our system of management controls provides reasonable assurance that those objectives were achieved except for the problems identified as Departmental challenges in this report.

Current Departmental Challenges	Scheduled Correction
Surplus Fissile Materials	2005
Environmental Compliance	2006
Nuclear Waste Disposal	2010
Safety and Health	2005
Project Management	2002
Security	2001
Mission Critical Staffing	2001
Permitting Issues at Waste Isolation Pilot Plant	2000
Contract Management	2000
Inadequate Audit Coverage	TBD

Issues Emerging as Potential Problems

None new in FY 1999

Status of FY 1998 Emerging Issues

Declining Oil Import Protection	Closed
Counterintelligence	Merged with Security*
Workforce Planning	Closed

Statistical Status of Departmental Challenges

Beginning of FY 1999	10
New	2
Closed	0
Merged	(1)
Reported as Financial System Nonconformance	(1)
End of FY 1999*	10

*In FY 1999, one previous Departmental challenge (Unclassified Computer Security) and an emerging issue (Counterintelligence) were incorporated into a new Departmental Challenge (Security). Financial Management System Improvements, previously reported as a Departmental challenge, is now reported as an accounting system nonconformance in the Financial Overview.

Message From the Chief Financial Officer

I am pleased to present the Department of Energy's consolidated financial statements for FY 1999. These statements were prepared in accordance with standards developed by the Federal Accounting Standards Advisory Board, requirements of the Office of Management and Budget, the Chief Financial Officers Act of 1990, and the Government Management Reform Act of 1994. These statements have been audited by the Inspector General, and I am pleased to report that the Department received an unqualified opinion attesting to their accuracy.

The Department also has conducted an evaluation of its financial management system using guidance issued by the Office of Management and Budget. This evaluation indicated that the Department's financial management system is in general conformance with governmental financial system requirements. However, two areas need further improvement. First, the Department's financial management system needs to be upgraded to produce financial information faster and in an easily accessible manner to meet the changing needs of our program managers. To address this need, we have strengthened our planning and support for current and future financial system requirements. During FY 1999, the Department implemented enhancements to our Executive Information System, the Financial Data Warehouse, and the Functional Cost Reporting System which will improve accessibility to financial data and reports.

To meet future system needs, we launched a project to design, develop, and implement a new Business Management Information System – Financial Management (BMIS–FM). In conjunction with these efforts, the Department is working to formulate more quantifiable performance measures for relating managerial cost accounting information to program outputs. We now anticipate implementation of our future financial management system in 2003 based on current requirements and projected funding. Our second area requiring improvement is the Western Area Power Administration's newly implemented accounting system. This system was implemented in early FY 1999 and has operational problems. An overall corrective action plan has been developed and a project manager has been charged with implementing the necessary actions to make this system compliant during FY 2000.

In FY 2000, the Office of Chief Financial Officer acquired a new important responsibility to oversee the project management activities of the Department. We have established the Office of Engineering and Construction Management which will help ensure that the Department's many construction and environmental remediation projects are run in a more disciplined and efficient manner.

The Department continues to make financial management improvements in response to new requirements which challenge us to become more efficient, effective, and accountable. These changes demand increasing diligence, dedication, and the productive use of all our resources to ensure that the Department effectively supports its program goals, while also maintaining its financial responsibility to the American taxpayer, the Congress, and the President. Our current financial initiatives are critical to achieving our Departmental missions and goals in an effective and efficient manner. We appreciate the support of the President and the Congress in these efforts.

Michael L. Telson

Financial Overview

The financial overview section is intended to provide a concise description of the Department of Energy's financial position and the results of financial performance measures.

Balance Sheet

The Department prepares consolidated financial statements that include a Balance Sheet, a Statement of Net Cost, a Statement of Changes in Net Position, a Statement of Budgetary Resources, a Statement of Financing, and a Statement of Custodial Activity. Overall, these statements summarize the financial activity and financial position of the Department. The following table highly summarizes these statements and provides a quick overview of significant balances:

	(Dollars in Billions)	
Assets	9/30/99	9/30/98
Fund Balances with Treasury Primarily appropriated funds to pay current liabilities and finance authorized purchase commitments.	$11.5	$11.2
Investments Primarily monies managed for the Nuclear Waste Fund and the Uranium Enrichment Decontamination and Decommissioning Fund. Fees paid by owners and generators of spent nuclear fuel and high-level radioactive waste, and fees collected from domestic utilities are deposited in the respective funds to pay current program costs, with any excess funds invested in Treasury securities.	10.7	10.5
Accounts Receivable *Intragovernmental*—Primarily for reimbursable work performed for other Federal agencies. *Governmental*—Primarily for Nuclear Waste Fund and Uranium Enrichment Decontamination and Decommissioning Fund fees.	5.0	5.0
Inventory Materials Crude oil at the Strategic Petroleum Reserve, Nuclear Materials, and Other Inventory	37.7	37.3
General Property, Plant and Equipment Includes over 126 million square feet of buildings located on over 2.6 million acres of land.	18.5	19.8
Regulatory Assets Associated with the Department's power generation and management responsibilities. These assets represent the Bonneville Power Administration's (BPA) right to future revenues generated from non-Federal power generator projects in return for BPA's payment of debt issued to complete these projects.	12.9	13.3
Other Assets	1.5	0.8
Total Assets	**$ 97.8**	**$ 97.9**

Liabilities	(Dollars in Billions) 9/30/99	9/30/98
Environmental Liabilities Represents the Department's obligation to correct the environmental damage incurred throughout the DOE complex while researching, producing, and testing nuclear weapons.	$ 230.6	$ 185.9
Debt and Appropriated Capital Owed to Treasury Represents amounts which the Department has obligations to pay for borrowing from Treasury, refinanced appropriations, and non-federal projects.	17.6	17.9
Accounts Payable *Intragovernmental*—Includes liability for accrued expenses and interest. *Governmental*—Includes contract holdbacks and accrued expenses.	3.1	3.3
Pensions and Other Actuarial Liabilities Represents amounts which the Department has obligations to pay for specified benefits to contractor employees having approved defined benefit pension plans and post-retirement benefits other than pensions.	6.7	6.5
Other Liabilities, Including Deferred Revenues Primarily, represents the amount of Nuclear Waste Fund revenues that exceed the Nuclear Waste Fund expenses and DOE's unfunded environment, safety, and health liability. Nuclear Waste Fund revenues are accrued based on fees assessed against owners and generators of high-level radioactive waste and spent nuclear fuel and are recognized as costs are incurred for Nuclear Waste Fund activities. The environment, safety and health liability represents those activities necessary to bring facilities and operations into compliance with existing laws and regulations.	17.9	16.6
Total Liabilities	$ 275.9	$ 230.2
Beginning Net Position	**($ 132.3)**	**($125.0)**
Net Costs of Programs	(32.1)	(21.0)
	1999	1998
Energy Resources (Includes $2.8 net gain on sale of NPR-1)	1.6	($ 1.1)
National Security	5.3	5.7
Environmental Quality	0.6	0.2
Science and Technology	2.6	2.5
Corporate Management and Other Programs	0.3	0.3
Total Business Line Costs	10.4	7.6
Costs Not Assigned to Programs (Includes $10.1 environmental liability adjustment)	21.7	13.4
Financing Sources Represents appropriations used, taxes, imputed financing, and transfers.	17.5	13.4
Other Adjustments/Changes to Results of Operations Represents prior period adjustments, change in Nuclear Waste Fund deferred revenues, and decreases in unexpended appropriations.	(31.2)	0.3
ENDING NET POSITION	**($178.1)**	**($132.3)**
TOTAL LIABILITIES AND NET POSITION	**$97.8**	**$97.9**

More detailed explanations of these and other balances on the statements are included in the Notes to the Financial Statements.

Financial Performance Measures

Payment Performance

Prompt Payment. The Department is committed to meeting goals established by the Office of Management and Budget for on-time payments made by Federal agencies. Chart 1 displays the Federal Government's prompt payment goal and the Department's performance for FY 1995-FY 1999. The Department's FY 1999 on-time payment performance was 87 percent, indicating a decrease from the FY 1998 performance. This decrease resulted primarily from problems with the new accounting system at the Western Area Power Administration. The Department is taking actions to meet the Government-wide goal in future years.

Electronic Funds Transfer. The Debt Collection Improvement Act of 1996 requires the use of Electronic Funds Transfer (EFT) for all Federal payments made after January 1, 1999, with limited exceptions. The results portrayed in Chart 2 demonstrate the Department's continued efforts to implement the Government-wide mandate to utilize EFT for payments. The Department's percentage of commercial payments made by EFT as of September 30, 1999, is 73 percent, which exceeds the Government-wide goal of 69 percent for all Federal payments. The Department is continuing its efforts to improve performance in this area and hopes to remain a Government leader in utilizing EFT.

Chart 1. Prompt Payment Percentage

Percentage of commercial payments made on time

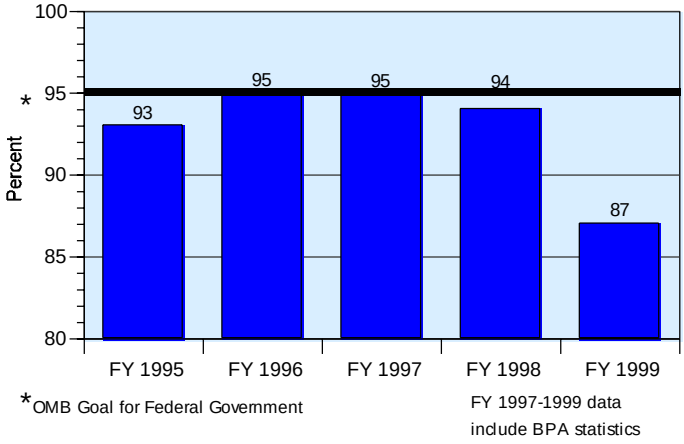
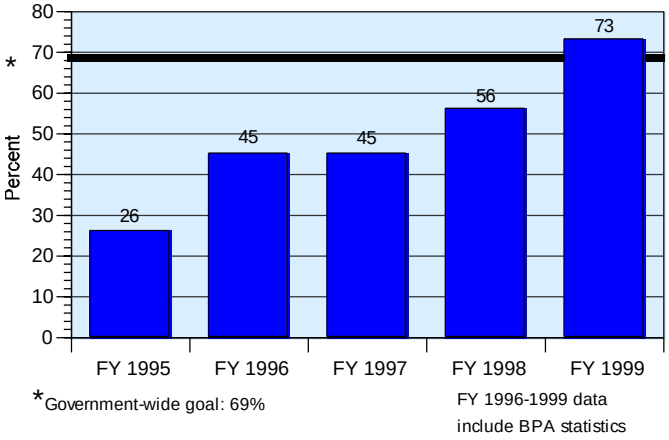


Chart 2. Electronic Funds Transfer (EFT)

Percentage of commercial payments made via EFT at end of year

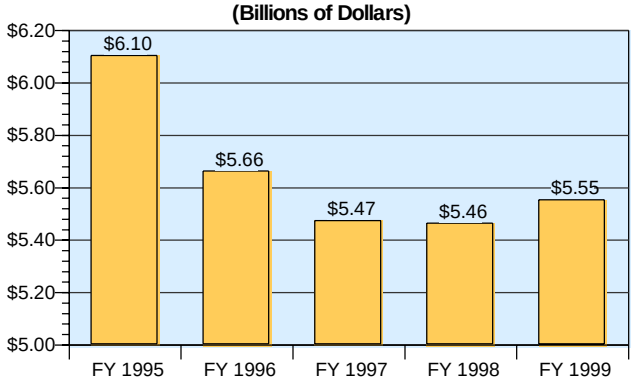


Reducing Functional Support Costs

Over the past several years the Department has made significant progress in controlling functional support costs across the complex. Functional support activities are required to be performed, but are not directly tied to mission activities and do not include the costs of capital equipment and construction. Examples of functional support activities include: maintenance, procurement, information/outreach services, safeguards and security, financial services, and safety and health. The Department implemented a reporting system in FY 1997 to compile, analyze, and monitor functional support costs provided by the Department's major contractors. Since last year, three separate contractor submissions (Hanford, Bechtel Hanford, and Pacific Northwest National Laboratory) have been consolidated into one reporting site (Hanford) for purposes of this report. Also, two additional sites (Ames Laboratory and Fermi National Accelerator Laboratory) have submitted functional support cost data for the FY 1995 through FY 1999 timeframe and are included in the FY 1999 report.

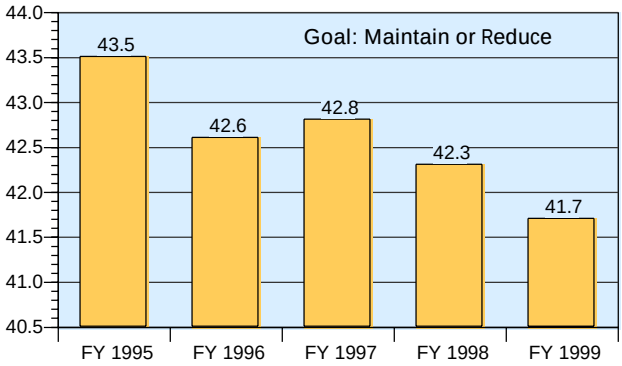
This reporting system accumulates data on functional support costs for FY 1995 through FY 1999. In FY 1999, improvements were made in the system, resulting in more accurate identification of cost. In order to maintain consistency, the data reported previously were adjusted consistent with the FY 1999 improvements. Charts 3 and 4 display the trend as the Department focuses to control and monitor its functional support costs.

Chart 3. Functional Support Costs of 23 Major Contractor Sites
(Billions of Dollars)



Costs have been estimated based on subsequent years actual costs for FY 1995 at Argonne National Lab site.

Chart 4. Functional Support Costs as a Percentage of Total Costs for 23 Major Contractor Sites



Balances of Uncosted Obligations and Unobligated Appropriations

Significant balances of uncosted obligations occur when a Federal agency contracts out much of its appropriated funds, as does the Department. These uncosted balances represent the portion of contract obligations related to goods and services which have not yet been received. While balances of uncosted obligations are natural and acceptable, it is incumbent upon Federal agencies to evaluate these balances to ensure that the levels maintained are appropriate and consistent with good financial management.

As reflected in Charts 5 and 6, the Department has taken aggressive actions to understand what drives uncosted obligation balances, control and reduce these balances, and more actively consider these resources when determining budget estimates. Most notably, in FY 1996, the Department developed and has continued to refine a comprehensive methodology for analyzing uncosted balances. This methodology established dollar level thresholds which are consistent with sound financial management for specific types of financial/contractual arrangements allowing the Department to evaluate its overall performance based on the variance between the calculated thresholds and actual balances. Additionally, the Department has charted progress in reducing unobligated appropriations balances to ensure that excess uncosted balances are being eliminated rather than recategorized. The results of these internal evaluations indicate that since FY 1997, the Department has been operating at or near optimum uncosted levels. This follows a steady decline in balances which started in FY 1993 coupled with a similar trend in unobligated balances during that same time frame. (NOTE: Charts 5 and 6 exclude data for the Bonneville Power Administration, which is treated as a Government Corporation.)

Chart 5. Uncosted Obligations by Fiscal Year
(Excludes Bonneville Power Administration)

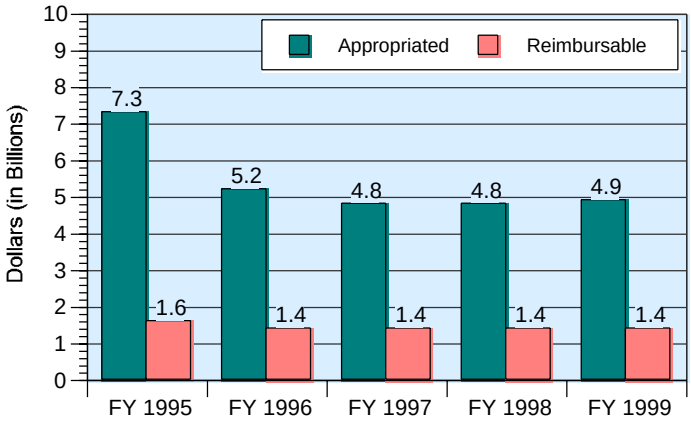
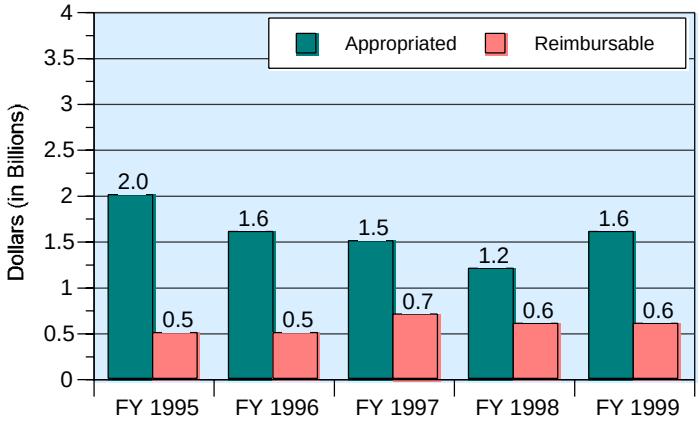


Chart 6. Unobligated Appropriations by Fiscal Year
(Excludes Bonneville Power Administration)



Results of System Evaluation

The Department conducted an evaluation of its accounting system in accordance with Office of Management and Budget guidance. The evaluation disclosed two nonconformances with Federal financial management systems standards as discussed below.

Financial Management Systems

The Department's missions, and its business environment, have changed dramatically over the last several years. As a result, the Department's financial systems no longer provide the financial information necessary to assist program officials in their financial decision making. In addition, Congress and regulatory Agencies have enacted significant new financial requirements which will lead to a more accountable Government. Besides the changing environment and new requirements, the Department's main financial systems are about 20 years old. Upgrades are becoming almost impossible and compatibility with other software and hardware is increasingly becoming a problem. To address these issues, the Office of Chief Financial Officer has strengthened and increased its commitment to meet the needs of management and new requirements for a more accountable Government.

Major efforts were initiated in FY 1999, and will continue in FY 2000, to expand and improve data accessibility and reporting through the Financial Data Warehouse and Executive Information System, which the Department deployed in FY 1998. In addition, the Department is in the second phase of obtaining a complete, new financial information system. The effort to design, develop and implement a new business management information system was initiated and the first major OMB requirement, which is to develop a business case, is completed. The result of this first phase was the report *Business Management Information System – Financial Management (BMIS-FM) Business Case*, which was approved and published in FY 1999. During FY 1999 and continuing into FY 2000 the Department will identify functional and technical system requirements, select a commercial off-the-shelf software package for the core financial system, and award a contract for sufficient software licenses to begin a pilot. Full implementation of BMIS-FM is planned for Fiscal Year 2003.

Western Area Power Administration Financial System

Early in FY 1999, Western Area Power Administration implemented a new financial management system. Due to resource constraints, the new system was not run parallel with the old one to ensure that it met existing requirements. After implementation, Western identified several areas where the new system does not conform to Government-wide requirements. Areas of concern include management reporting, funds control, documentation, internal controls, and user training.

During FY 1999, Western acquired outside consulting services to review their system implementation efforts and to recommend actions to resolve the areas of non-conformance. Based on the results of this review, Western developed a detailed action plan, designated a project manager, and established a comprehensive team of both Federal and non-Federal system experts to execute the plan. Western intends to be in conformance in FY 2000.

Appendices

DOE/IG-FS-00-01

AUDIT REPORT

THE U.S. DEPARTMENT OF ENERGY'S CONSOLIDATED FINANCIAL STATEMENTS FOR FISCAL YEARS 1999 AND 1998

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

FEBRUARY 2000

Department of Energy
Washington, DC 20585

February 17, 2000

MEMORANDUM FOR THE SECRETARY

FROM: Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Report on "Audit of the Department of Energy's Consolidated Financial Statements for Fiscal Years 1999 and 1998"

The Office of Inspector General audited the Department of Energy's (Department) consolidated financial statements as of and for the years ended September 30, 1999 and 1998. Since the issuance of last year's report, which contained a qualification related to the environmental liabilities and other affected accounts, the offices of Environmental Management and Chief Financial Officer expended significant effort and resources to improve controls over the Department's estimating process for environmental liabilities. Management satisfactorily addressed the internal control weakness reported in the prior year by developing a documented, complete, and updated environmental liabilities estimate. These efforts, for which the Department deserves much credit, resulted in our opinion not containing a qualification on the environmental liabilities line item as of September 30, 1999. The importance of these improvements is best understood in context—the Department's environmental liability represents one of the largest planned expenditures of Federal funds.

As stated in the opinion, except for the environmental liabilities line item and related effects on the accompanying statements in Fiscal Year 1998, the financial statements present fairly, in all material respects, the financial position of the Department as of September 30, 1999 and 1998, and its consolidated net cost, changes in net position, budgetary resources, financing activities, and custodial activities for the fiscal years then ended in conformity with generally accepted accounting principles. Also, the *Matters of Emphasis* section of the opinion discusses a number of uncertainties affecting the financial information contained in the statements. The most significant of these relates to the environmental liability estimate.

In accordance with *Government Auditing Standards*, the Office of Inspector General also issued a separate report on the Department's internal controls. This report discusses needed improvements to the financial management system at Western Area Power Administration (Western). Specifically, the new financial management system implemented by Western was not in compliance with Federal Financial Management Improvement Act requirements. This problem was considered to be a material weakness, but it did not have a material effect on the financial statements because of adjustments and corrective actions taken by the Department. In addition, we reported three reportable conditions that did not materially affect the Department's financial statements for Fiscal Years 1999 and 1998. Specifically, we found that data used for the active facilities component of the environmental liability estimate was not reliable, that significant

weaknesses rendered computer networks vulnerable to malicious attacks, and controls over performance measure information presented in the Overview to the financial statements needed to be strengthened. The Department generally concurred with our findings and recommendations and agreed to take corrective actions.

We have also issued a report on the Department's compliance with applicable laws and regulations. With the exception of Western's noncompliance with the Federal Financial Management Improvement Act, the results of our tests in this area disclosed no compliance matters reportable under applicable audit standards.

A number of other issues were disclosed during the course of the audit relating to the Department's internal controls that did not materially affect the Department's financial statements. These matters will be communicated to the Chief Financial Officer and to the heads of field elements in separate reports. The recommendations made in these reports are designed to strengthen internal controls or improve operating efficiencies.

Attachment

cc: Deputy Secretary
Under Secretary
Chief Financial Officer

U.S. Department of Energy
Office of Inspector General
Office of Audit Services

REPORT OF THE OFFICE OF INSPECTOR GENERAL

The Secretary
U.S. Department of Energy

We have audited the accompanying consolidated balance sheets of the U.S. Department of Energy (Department) as of September 30, 1999 and 1998, and the related consolidated statements of net cost, changes in net position, budgetary resources, financing, and custodial activities for the years then ended. These financial statements are the responsibility of the Department's management. Our responsibility is to express an opinion on these financial statements based on our audits.

Except as explained in the following paragraph, we conducted our audits in accordance with generally accepted auditing standards; *Government Auditing Standards* issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Bulletin No. 98-08, *Audit Requirements for Federal Financial Statements*, as amended. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, the evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

In our report dated January 5, 1999, we were unable to satisfy ourselves as to the recorded balance for the Department's environmental liabilities on the balance sheet as of September 30, 1998, and related effects on the accompanying statements for the year then ended based on the Department's records. Nor were we able to satisfy ourselves as to the balances by other auditing procedures. The uncertainty over the September 30, 1998, balances resulted from a material weakness in the Department's internal controls over estimating environmental liabilities. During Fiscal Year 1999, the Office of Environmental Management completed corrective actions to address this weakness. These actions included strengthening internal controls over developing the estimate; assessing individual cost estimates that make up the environmental liability in terms of scope, cost, and schedule; and quantifying the uncertainty of the estimates caused by technical problems and funding shortfalls.

In our opinion, except for the qualification related to Fiscal Year 1998 discussed in the preceding paragraph, the consolidated financial statements present fairly, in all material respects, the financial position of the U.S. Department of Energy as of September 30, 1999 and 1998, and its consolidated net cost, changes in net position, budgetary resources, financing activities, and

custodial activities for the fiscal years then ended in conformity with generally accepted accounting principles.

Our audit was made for the purpose of forming an opinion on the Department's consolidated financial statements. The information presented in management's Overview, the Supplemental Financial Information, and the Performance Measure Information are not required parts of the principal statements, but are supplementary information required by OMB Bulletin No. 97-01, *Form and Content of Agency Financial Statements*, as amended. We have considered whether this information is materially inconsistent with the consolidated financial statements. Such information has been subjected to limited procedures. However, we did not audit the information, and accordingly, we do not express an opinion on it. The performance information included in management's Overview is addressed in our audit report on the Department's internal controls.

Management has chosen for purposes of additional analysis to incorporate information on the Department's compliance with the Federal Managers' Financial Integrity Act of 1982 (FMFIA) and the Inspector General Act within the Overview to the consolidated financial statements. This information is not a required part of the consolidated financial statements. While the FMFIA information has been reviewed separately by the Office of Inspector General, neither it nor the Inspector General Act information relating to audit follow-up has been subjected to auditing procedures applied in the audit of the consolidated financial statements, and accordingly, we do not express an opinion on it.

MATTERS OF EMPHASIS

As described in Note 14 of the financial statements, the Department's environmental remediation liability of $231 billion reported for Fiscal Year 1999 is based on assumptions regarding actions that are to take place in the future. Therefore, the amount reported for this liability is highly uncertain. In addition to the uncertainty inherent in any long-term estimate, the following factors affect the overall uncertainty of the estimate:

- Congressional appropriations may not be received at the levels anticipated.
- The Department's estimates exceeded anticipated funding by over $7 billion in order to meet compliance commitments.
- The baseline for treatment of high-level waste is not fully defined.
- Opening of the planned repository for storage of high-level waste and spent nuclear fuel may be delayed and projected waste volumes may exceed planned capacity.
- Changes to planned facility end-state or land-use assumptions are possible.
- Planned approach and scope of work for many remediation projects are subject to regulatory approval.
- Cost increases caused by future inflation may occur.

- Complete information as to the extent of contamination is not available for facilities that have not been completely characterized.
- Remediation costs for contaminated facilities not yet assigned to the Department's environmental management program are based on computer modeling rather than life-cycle cost estimates.

In addition, the Department is a party to various administrative proceedings, legal actions, and tort claims that may ultimately result in settlements or decisions adverse to the Government, as discussed in Note 16 of the financial statements. The Office of General Counsel, in responding to our inquiries about these matters, was generally not able to form a conclusion as to the likely outcome or potential loss resulting from many of the claims and assessments against the Department. Readers of the Department's consolidated financial statements should, therefore, be aware that the financial statements may be affected by uncertainties concerning the outcome of claims described in Note 16, which are not currently susceptible to reasonable estimation.

REFERENCE TO OTHER REPORTS

In accordance with *Government Auditing Standards*, we have also issued a report on our consideration of the Department's internal controls and a separate report on its compliance with laws and regulations. Both reports are dated January 31, 2000.

Office of Inspector General
January 31, 2000

U.S. Department of Energy
Office of Inspector General
Office of Audit Services

REPORT OF THE OFFICE OF INSPECTOR GENERAL ON THE DEPARTMENT'S INTERNAL CONTROLS

The Secretary
U.S. Department of Energy

We have audited the accompanying consolidated balance sheets of the U.S. Department of Energy (Department) as of September 30, 1999 and 1998, and the related consolidated statements of net cost, changes in net position, financing, budgetary resources, and custodial activities for the years then ended and have issued our report thereon dated January 31, 2000. We conducted our audits in accordance with generally accepted auditing standards, the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 98-08, *Audit Requirements for Federal Financial Statements*, as amended.

In planning and performing the audit, we considered the Department's internal controls over financial reporting by obtaining an understanding of the significant internal control policies and procedures, determining whether they had been placed in operation, assessing control risk, and performing tests of controls in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements. Our procedures were not designed to provide assurance on the internal controls over financial reporting. Consequently, we do not provide an opinion on internal controls.

Our consideration of the internal controls over financial reporting would not necessarily disclose all matters that might be reportable conditions. Under standards issued by the American Institute of Certified Public Accountants, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal controls that, in our judgment, could adversely affect the Department's ability to record, process, summarize, and report financial data consistent with the assertions by management in the financial statements. Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements in amounts that would be material in relation to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions.

We noted certain matters, discussed in Exhibits I and II to this report, involving the system of internal controls and its operation that we consider to be reportable conditions. We considered the condition reported in Exhibit I to be a material weakness.

In addition, we considered the Department's internal controls over Required Supplementary Stewardship Information (RSSI). Our consideration included determining whether the internal controls over RSSI had been placed in operation, assessing control risk, and performing tests of controls as required by OMB Bulletin No. 98-08, as amended. Our procedures were not designed to provide assurance on the internal controls over RSSI. Accordingly, we do not provide assurance on such controls.

Finally, with respect to internal controls related to performance measures reported in the Overview to the Fiscal Year 1999 consolidated financial statements, we obtained an understanding of the design of significant internal controls relating to the existence and completeness assertions as required by OMB Bulletin No. 98-08, as amended. Our procedures were not designed to provide assurance on internal controls over reported performance measures, and accordingly, we do not provide an opinion on such controls. However, we noted certain significant deficiencies in the presentation of reported performance measures, which are discussed in Exhibit II. In our judgment, these deficiencies could adversely affect the meaningfulness of the programmatic performance measures presented in the Fiscal Year 1999 consolidated financial statements.

The audit also disclosed a number of other conditions relating to the Department's internal controls that we did not consider to be reportable conditions and that did not materially affect the Department's financial statements. These matters will be communicated to the Office of Chief Financial Officer and to the heads of field elements in separate reports. The recommendations made in these reports are designed to strengthen internal controls or improve operating efficiencies.

In evaluating internal controls, we considered matters reported by the Department in compliance with the Federal Managers' Financial Integrity Act of 1982, our prior and current audit reports, and other independent audit reports on financial matters and internal accounting control policies and procedures. The Appendix to this report lists performance audit reports published by the Office of Inspector General during Fiscal Year 1999 that were considered in our evaluation of internal controls.

This report is intended for the information of the management of the U.S. Department of Energy, OMB, and the Congress. However, this report is a matter of public record and its distribution is not limited.

Office of Inspector General

January 31, 2000

Western Area Power Administration

Background: A component of the Department, the Western Area Power Administration (Western), markets and transmits electric power and provides related services. Western implemented a new financial management system on November 2, 1998. In January 1999, Western identified operational deficiencies with the system including problems with system functionality and performance, data accuracy, security, and reporting.

Finding 1: Western's New Financial Management System

The Federal Financial Management Improvement Act (FFMIA) requires each agency to implement and maintain financial management systems that comply with Federal Financial Management System Requirements (FFMSR), applicable Federal accounting standards, and the United States Government Standard General Ledger at the transaction level. Further, OMB Circular No. A-127, which is a component of FFMSR, requires systems to support management's fiduciary role; support the legal, regulatory, and other special management requirements of the agency; support budget decision making; and comply with internal and external reporting requirements.

While the Department's systems as a whole substantially comply with FFMIA, the new financial management system implemented by Western was not in compliance with the FFMIA requirements as of September 30, 1999. Specifically, Western's new financial system did not meet OMB Circular No. A-127 requirements. For example, the system did not generate timely, useful reports on financial information. Thus, Western was unable to adequately track and report on budget execution and meet external reporting requirements, including preparation of financial statements. The components of the new financial system did not have common data elements; consistent controls over data entry, transaction processing, and reporting; or efficient transaction entry to preclude unnecessary duplication. Further, the system lacked adequate internal controls to ensure that resources were used in accordance with laws, regulations, and Departmental policies. Finally, Western did not adequately document the system to meet user needs. There were several reasons why problems with Western's new financial system occurred. During implementation, Western did not run the old financial system in parallel. Also, Western did not adequately test and document the system or train its personnel on using the system. Additionally, Western made significant changes to the system without a disciplined change control process in place.

As a result of these weaknesses, there was increased risk that errors, fraud, or noncompliance in amounts that could be material in relation to the consolidated financial statements may have occurred and not been detected within a timely period by employees in the normal course of performing their assigned functions. To compensate for this increased risk, an extensive effort above and beyond normal operating practices was

undertaken by Western to improve the quality and reliability of financial information on Western account balances that were material to the Department as a whole.

Western acknowledged that its financial management system did not comply with FFMIA requirements in its Assurance Memorandum to the Secretary of Energy for Fiscal Year 1999. Western developed corrective actions and planned completion dates to address the system deficiencies. Western plans to be completed with its corrective action by September 2000.

Recommendations:

Because Western has already developed a corrective action plan that will be tracked under the Federal Managers Financial Integrity Act process, we are not making any additional recommendations to Western at this time. However, to elevate the visibility of the concerns at Western and to prevent this type of situation from happening again, we recommend that the Chief Financial Officer:

1. Monitor the implementation of Western's corrective actions, and

2. Approve the implementation of new financial management systems that could materially affect the Department's financial statements prior to disengaging the systems being replaced.

Management Reaction:

Management generally concurred with the finding and recommendations.

Auditor Response:

Management's planned actions are responsive to our recommendations.

Environmental Remediation Liabilities

Background: The Department relied on a parametric model to estimate the majority of its $25 billion environmental liability for contaminated active and surplus facilities. The input data for the model was provided by 31 field sites that had active and surplus facilities requiring environmental remediation. The data submitted by the field included a building identifier, the facility model type, and the square footage. Headquarters transmitted this information to the field via a web-based system known as the Active Facilities Data Collection System (Data Collection System). The field was responsible for reviewing, updating, and verifying that this information was correct. The parametric model, using information from the Data Collection System, was run by Headquarters to estimate the remediation costs for the surplus and active facilities. The model estimated costs for stabilization and deactivation, facility decommissioning, waste management, and support. The resulting cost estimates were transmitted to the sites via the Data Collection System where they were recorded as environmental liabilities.

Finding 2: Input Data for Active and Surplus Facilities Parametric Model

In order for the Department to accurately estimate its environmental liability for contaminated active and surplus facilities, the input data used in the parametric model must be reliable. However, we found the input data to be unreliable. There were errors in the input data for 14 of the 85 facilities selected for review, a 16-percent error rate. These errors included incorrect facility model types, inclusion of facilities that were not contaminated, exclusion of facilities that were contaminated, and significant errors in the square footage of the facilities. These errors occurred because facility managers responsible for maintaining facilities at some of the 31 sites were not directly involved in the verification of the input data. While the net effect of these errors resulted in an immaterial understatement of the environmental liability, the high error rate increases the risk of misstatement.

Recommendation:

We recommend that the Chief Financial Officer implement procedures that require facility managers or others with direct oversight of buildings and structures at each site to verify that information shown in the Data Collection System is correct.

Management Reaction:

Management generally concurred with the finding and recommendation.

Auditor Comments:

Management's planned actions are responsive to our recommendation.

Unclassified Computer Security

Background: The Department maintains a series of interconnected unclassified networks and information technology systems. Security over unclassified information systems is an important issue facing government organizations. This issue has taken on greater significance as Federal agencies have migrated from a closed architecture, limited-access, mainframe environment to web-based, client/server systems. In addition, the U.S. General Accounting Office has designated information system security as a high-risk area.

Finding 3: Network Vulnerabilities

Federal and Departmental directives require the establishment and maintenance of security over unclassified information systems, including financial management systems. However, significant weaknesses existed on selected systems and devices attached to the computer networks at the six Departmental sites we reviewed. The sites had network vulnerabilities involving poor password management, unnecessary access to certain powerful computer services, weak configuration management, outdated software with known security problems, and firewall configuration problems. Despite the awareness of network security problems, the Department was slow to act. As a result, there was an increased risk of malicious destruction or alteration of data and the processing of unauthorized operations. Although these weaknesses and vulnerabilities could impact all unclassified systems, compensating controls were identified over the monitoring of network activity, system access, data comparison, and backup and recovery procedures that mitigate the potential effect on the integrity of the Department's financial systems.

Recommendation:

A recommendation to address the issue discussed above will be included in a separate report to the Chief Information Officer.

Performance Measurement Reporting

Background: In accordance with OMB Bulletin No. 97-01, *Form and Content of Agency Financial Statements*, as amended, each annual financial statement should include a narrative Overview of the reporting entity. This Overview should provide a clear and concise description of the reporting entity, its mission, activities, accomplishments, and overall financial results and condition. It should also include information on whether and how the mission of the reporting entity is being accomplished.

The Department's Fiscal Year 1999 consolidated financial statements presented performance measure data for each of the Department's business lines in the Overview section. The performance data presented in Fiscal Year 1999 was based primarily on commitments drawn from the Department's Strategic Plan and the Secretary's Performance Agreement with the President, which are prepared under the requirements of the Government Performance and Results Act of 1993. The Overview presented the Department's commitments, planned goals necessary to accomplish the commitments, and results achieved during the fiscal year.

In audits of the Department's Fiscal Years 1997 and 1998 consolidated financial statements, we identified that in many cases the usefulness of the programmatic performance measures presented in the Overview to the financial statements was limited. (See Office of Inspector General Report Nos. IG-FS-98-01 and IG-FS-99-01.) Management generally concurred with the recommendations and agreed to take corrective action to improve the presentation of the Overview and performance measures. Despite efforts to improve the Overview, problems with its presentation continued.

Finding 4: Performance Measure Reporting

To be useful, OMB requires that performance measures be output and outcome oriented; meaningful and relevant; objective and quantifiable; and consistent with the measures developed in the strategic planning process. However, we found that in many cases the meaningfulness of the programmatic performance measures presented in the Overview was limited. Certain issues that were reported by the Office of Inspector General in Fiscal Years 1997 and 1998 were not resolved, and a few additional areas for improvement were identified. Specifically, we found that:

- Performance measures did not include cost-effectiveness attributes, as costs were not tied to specific outputs.
- The quality of certain measures was questionable. Goals were not output or outcome oriented; some were not meaningful or relevant; and some were not stated in clear, objective, or quantifiable terms.
- Information regarding the Federal Energy Regulatory Commission was not included.

- In the Detailed Performance Results section provided as Supplemental Information, 10 of 210 goals were reported as either met or exceeded when the description of performance indicated that they were not.

These problems occurred because the Department's method of summarizing data from the Secretary's Performance Agreement with the President focused on selective accomplishments rather than the measurement of performance against goals and in many cases eliminated essential detailed goal information. The effect is that the Department's presentation method for the Overview limits financial statement readers' ability to assess the Department's performance during Fiscal Years 1998 and 1999.

Recommendation:

We recommend that the Chief Financial Officer, while preparing the Overview, fully identify key aspects of Departmental performance relative to goals in accordance with applicable OMB guidance and Federal accounting standards.

Management Reaction:

Management generally concurred with the finding and recommendation.

Auditor Comments:

Management's planned actions are responsive to our recommendation.

Office of Inspector General
Fiscal Year 1999 Audit Reports

Report Number	Report Title	Date Report Issued
IG-0428	Audit of the U.S. Department of Energy's Efforts to Preserve the Knowledge Base Needed to Operate a Downsized Nuclear Weapons Complex	October 2, 1998
IG-0429	Audit of the U.S. Department of Energy's X-Change 1997: The Global D&D Marketplace Conference	October 16, 1998
IG-0430	Audit Report on Project Hanford Management Contract Costs and Performance	November 5, 1998
IG-0432	Audit Report on the U.S. Department of Energy's Efforts to Increase the Financial Responsibility of its Major For-Profit Operating Contractors	November 20, 1998
IG-0434	Audit of Waste Inventory Data at Oak Ridge and Savannah River	December 18, 1998
IG-0435	Audit of the Department of Energy's Aircraft Activities	January 7, 1999
IG-0436	Audit Report on the U.S. Department of Energy's Procurement and Assistance Data System	January 19, 1999
IG-0437	Audit Report on Aircraft and Air Service Management Programs	January 25, 1999
IG-0439	Audit Report on the U.S. Department of Energy's Implementation of the Government Performance and Results Act	February 4, 1999
IG-0440	Audit Report on Waste Treatment Plans at the Idaho National Engineering and Environmental Laboratory	February 4, 1999
IG-0441	Audit Report on Cost Sharing at Basic Energy Sciences User Facilities	March 16, 1999

Office of Inspector General
Fiscal Year 1999 Audit Reports

Report Number	Report Title	Date Report Issued
IG-0443	The U.S. Department of Energy's Funds Distribution and Control System at the Federal Energy Technology Center	April 5, 1999
IG-0444	The U.S. Department of Energy's Large-Scale Demonstration and Deployment Projects	May 20, 1999
IG-0446	Hanford Site Cleanup Objectives Inconsistent With Projected Land Uses	June 18, 1999
IG-0447	The U.S. Department of Energy's Audit Follow-Up Process	July 7, 1999
IG-0448	Review of the Status of the U.S. Department of Energy's Counterintelligence Implementation Plan	July 13, 1999
IG-0449	The Office of Defense Programs Robotics and Intelligent Machines Project	July 19, 1999
IG-0450	The U.S. Department of Energy's Non-Nuclear Materials Inventory at the Kansas City Plant	July 26, 1999
IG-0451	Waste Incineration at the Oak Ridge Reservation	August 13, 1999
IG-0452	Nuclear Material Protection, Control, and Accounting Program	September 16, 1999
CR-B-99-01	Audit of the U.S. Department of Energy's Working Capital Fund	October 1, 1998
CR-B-99-02	Management of Unneeded Materials and Chemicals	September 30, 1999
ER-B-99-01	Audit of Decontamination and Decommissioning at the East Tennessee Technology Park	December 21, 1998
ER-B-99-02	Audit of Small Disadvantaged Business Program at the Chicago Operations Office	January 25, 1999
ER-B-99-03	Audit of Westinghouse Savannah River Company's Health Benefit Plan	January 25, 1999

Office of Inspector General
Fiscal Year 1999 Audit Reports

Report Number	Report Title	Date Report Issued
ER-B-99-04	Audit of Credit Card Usage at the Ohio Field Office and the Fernald and Miamisburg Environmental Management Projects	March 15, 1999
ER-B-99-05	Westinghouse Savannah River Company's Withdrawal of Fees	April 8, 1999
ER-B-99-06	Bechtel Jacobs Payroll Creation	April 14, 1999
ER-B-99-07	Maintenance Activities at the Y-12 Plant	May 4, 1999
ER-B-99-08	Health Physics Technician Subcontracts at Brookhaven National Laboratory	May 12, 1999
WR-B-99-01	Audit Report on Transportation Safeguards Division Courier Work Schedules and Escort Vehicle Replacements	December 4, 1998
WR-B-99-02	Audit Report on Vehicle Fleet Management at the Idaho National Engineering and Environmental Laboratory	March 8, 1999
WR-B-99-03	Audit Report on Hanford Site Contractors' Use of Site Services	March 11, 1999
WR-B-99-04	Approval of Title X Remediation Claims	June 25, 1999
WR-B-99-05	Management of Laboratory Directed Research and Development at the National Renewable Energy Laboratory	July 12, 1999
WR-B-99-06	Planned Waste Shipments to the Waste Isolation Pilot Plant	August 31, 1999

U. S. Department of Energy
Office of Inspector General
Office of Audit Services

REPORT OF THE OFFICE OF INSPECTOR GENERAL ON COMPLIANCE WITH LAWS AND REGULATIONS

The Secretary
U.S. Department of Energy

We have audited the accompanying consolidated balance sheets of the U.S. Department of Energy (Department) as of September 30, 1999 and 1998, and the related consolidated statements of net cost, changes in net position, financing, budgetary resources, and custodial activities for the years then ended and have issued our report thereon dated January 31, 2000.

We conducted our audit in accordance with generally accepted auditing standards; the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States; and Office of Management and Budget (OMB) Bulletin No. 98-08, *Audit Requirements for Federal Financial Statements*, as amended. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. Providing an opinion on compliance with certain provisions of laws and regulations was not an objective of our audit, and accordingly, we do not express such an opinion.

The management of the Department is responsible for complying with applicable laws and regulations. As part of obtaining reasonable assurance about whether the financial statements were free of material misstatements, we performed tests of compliance with certain provisions of laws and regulations, noncompliance with which could have a direct and material effect on the determination of financial statement amounts, and certain other laws and regulations specified in OMB Bulletin No. 98-08, as amended, including the requirements referred to in the Federal Financial Management Improvement Act of 1996 (FFMIA).

The results of our tests of compliance with the laws and regulations described in the preceding paragraph, exclusive of FFMIA, disclosed no instances of noncompliance required to be reported under *Government Auditing Standards* and OMB Bulletin No. 98-08, as amended.

Under FFMIA, we are required to report whether the Department's financial management systems substantially comply with Federal Financial Management Systems Requirements, applicable accounting standards, and the United States Government Standard General Ledger at the transaction level. To meet this requirement, we performed tests of compliance using the implementation guidance for FFMIA included in Appendix D of OMB Bulletin No. 98-08, as amended. The results of our tests disclosed no instances where the Department's financial management systems did not substantially comply with these requirements. However, the

Western Area Power Administration's financial management system was not in compliance with FFMIA requirements. A material weakness on this nonconformance is detailed in our report on internal controls.

This report is intended for the information of the U.S. Department of Energy, OMB, and the Congress. However, this report is a matter of public record, and its distribution is not limited.

Office of Inspector General

January 31, 2000

Principal Financial Statements

DOE's financial statements have been prepared to report the financial position and results of operations of the Department of Energy, pursuant to the requirements of the Chief Financial Officers Act of 1990 and the Government Management Reform Act of 1994.

While the statements have been prepared from the books and records of DOE in accordance with the formats prescribed by the Office of Management and Budget, the statements are different from the financial reports used to monitor and control budgetary resources which are prepared from the same books and records.

The statements should be read with the understanding that DOE is a component of the United States Federal Government, that liabilities not covered by budgetary resources cannot be liquidated without the enactment of an appropriation by Congress, and that payment of all liabilities other than for contracts can be abrogated by the Federal Government.

Consolidated Balance Sheets
As of September 30, 1999 and 1998

	(in millions)	
	1999	1998
ASSETS		
Intra-governmental		
Fund balance with Treasury (Note 2)	$11,530	$11,169
Investments (Note 3)	10,460	10,200
Accounts Receivable, Net (Note 4)	505	482
Regulatory Assets (Note 5)	5,228	5,228
Other Assets	6	5
Investments (Note 3)	263	263
Accounts Receivable, Net (Note 4)	4,517	4,567
Inventory, Net (Note 6)		
Strategic Petroleum Reserve	15,143	15,087
Nuclear Materials	21,911	21,728
Other Inventory	508	503
General Property, Plant, and Equipment, Net (Note 7)	18,501	19,840
Regulatory Assets (Note 5)	7,706	8,031
Other Assets (Note 8)	1,491	827
Total Assets	$97,769	$97,930
LIABILITIES		
Intra-governmental Liabilities		
Accounts Payable (Note 9)	$68	$79
Debt (Note 10)	8,789	8,906
Appropriated Capital Owed to Treasury (Note 11)	2,057	1,986
Deferred Revenues (Note 12)	329	292
Other Liabilities (Note 13)	233	280
Accounts Payable (Note 9)	3,081	3,263
Debt (Note 10)	6,778	7,056
Deferred Revenues (Note 12)	13,096	11,508
Environmental Liabilities (Note 14)	230,640	185,890
Pension and Other Actuarial Liabilities (Note 15)	6,714	6,521
Other Liabilities (Note 13)	3,718	3,971
Contingencies (Note 16)	502	506
Total Liabilities	$276,005	$230,258
NET POSITION		
Unexpended Appropriations (Note 17)	6,169	5,749
Cumulative Results of Operations	(184,405)	(138,077)
Total Net Position	($178,236)	($132,328)
Total Liabilities and Net Position	$97,769	$97,930

The accompanying notes are an integral part of these statements.

Consolidated Statements of Net Cost
For the Years Ended September 30, 1999 and 1998

	(in millions)	
	1999	1998
Costs		
Energy Resources (Note 18)		
Program Costs	$4,889	$4,868
Net Gain on Sale of Naval Petroleum Reserves		(2,848)
Earned Revenues	(3,238)	(3,126)
Net Cost of Energy Resources Programs	$1,651	($1,106)
National Security (Note 19)		
Program Costs	$5,306	$5,720
Earned Revenues	(6)	(3)
Net Cost of National Security Programs	$5,300	$5,717
Environmental Quality (Note 20)		
Program Costs	$884	$545
Earned Revenues	(302)	(314)
Net Cost of Environmental Quality Programs	$582	$231
Science & Technology (Note 21)		
Program Costs	$2,628	$2,518
Earned Revenues	(9)	(13)
Net Cost of Science & Technology Programs	$2,619	$2,505
Other Programs (Note 22)		
Program Costs	$2,451	$2,440
Earned Revenues	(2,172)	(2,184)
Net Cost of Other Programs	$279	$256
Costs Not Assigned to Programs (Note 23)	21,768	13,409
Net Cost of Operations	$32,199	$21,012

The accompanying notes are an integral part of these statements.

Consolidated Statements of Changes in Net Position
For the Years Ended September 30, 1999 and 1998

	(in millions)	
	1999	1998
Net Cost of Operations	($32,199)	($21,012)
Financing Sources (Other Than Exchange Revenues)		
Appropriations Used	17,477	16,886
Other Non-Exchange Revenues		2
Imputed Financing	96	79
Transfers-in	102	1
Transfers-out	(215)	(3,592)
Net Results of Operations	($14,739)	($7,636)
Prior Period Adjustments (Note 24)	(30,342)	139
Net Change in Cumulative Results of Operations	($45,081)	($7,497)
Unrealized Holding Gain (Loss) on Investments	(1,247)	774
Increase (Decrease) in Unexpended Appropriations	420	(649)
Change in Net Position	($45,908)	($7,372)
Net Position - Beginning of Period	(132,328)	(124,956)
Net Position - End of Period	($178,236)	($132,328)

Consolidated Statements of Budgetary Resources
For the Years Ended September 30, 1999 and 1998

	(in millions)	
	1999	1998
BUDGETARY RESOURCES (Note 25)		
Budgetary Authority	$18,558	$17,439
Unobligated Balances - Beginning of Period	2,719	2,923
Spending Authority from Offsetting Collections	4,823	4,611
Adjustments	(470)	(420)
Total Budgetary Resources	$25,630	$24,553
STATUS OF BUDGETARY RESOURCES		
Obligations Incurred	22,488	21,921
Unobligated Balances Available	2,077	1,590
Unobligated Balances - Not Available	1,065	1,042
Total, Status of Budgetary Resources	$25,630	$24,553
OUTLAYS		
Obligations Incurred	22,488	21,921
Less Spending Authority from Offsetting Collections and Adjustments	(4,930)	(4,722)
Obligated Balance, Net - Beginning of Period	8,075	7,901
Obligated Balance Transferred, Net	(548)	2
Less Obligated balance, Net - End of Period	(7,901)	(8,075)
Total Outlays	$17,184	$17,027

The accompanying notes are an integral part of these statements.

Consolidated Statements of Financing
For the Years Ended September 30, 1999 and 1998

	(in millions)	
	1999	1998
OBLIGATIONS AND NONBUDGETARY RESOURCES		
Obligations Incurred	$22,488	$21,921
Less Spending Authority from Offsetting Collections and Adjustments		
Earned Reimbursements		
Collected	(4,808)	(4,681)
Receivable from Federal Sources	8	57
Change in Unfilled Orders (Decreases) Increases	(59)	(53)
Recoveries of Prior-Year Obligations	(20)	(28)
Financing Imputed for Cost Subsidies	96	79
Transfers Out (Note 26)	(113)	(3,591)
Exchange Revenues Not In the Budget	(287)	(310)
Other	(166)	(212)
Total Obligations as Adjusted, and Nonbudgetary Resources	$17,139	$13,182
RESOURCES THAT DO NOT FUND NET COST OF OPERATIONS		
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	(26)	76
Costs Capitalized on the Balance Sheet		
General Property, Plant, and Equipment	(1,583)	(1,274)
Purchases of Inventory	(580)	(463)
Financing Sources That Fund Costs of Prior Periods	(5,733)	(6,321)
Other	157	(339)
Total Resources that Do Not Fund Net Cost of Operations	($7,765)	($8,321)
COSTS THAT DO NOT REQUIRE RESOURCES		
Depreciation and Amortization	1,473	1,896
Revaluation of Assets and Liabilities	(141)	(167)
Loss on Disposition of Assets		484
Other	13	672
Total Costs That Do Not Require Resources	$1,345	$2,885
FINANCING SOURCES YET TO BE PROVIDED (Note 27)	21,480	13,266
NET COST OF OPERATIONS	$32,199	$21,012

The accompanying notes are an integral part of these statements.

Consolidated Statements of Custodial Activities
For the Years Ended September 30, 1999 and 1998

	(in millions)	
	1999	1998
SOURCES OF COLLECTIONS (Note 28)		
Cash Collections		
Power Marketing Administrations	$537	$428
Petroleum Pricing Violation Escrow Fund	72	74
Other	3	3
Net Collections	$612	$505
Accrual Adjustment		
Power Marketing Administrations		12
Petroleum Pricing Violation Escrow Fund	(51)	(50)
Total Revenue	$561	$467
DISPOSITION OF REVENUE		
Transferred to Others		
Treasury	(536)	(440)
Other	(35)	(57)
Increase (Decrease) in Amounts to be Transferred	74	53
Collections Used for Refunds and Other Payments		(2)
Retained by DOE	(64)	(21)
Net Custodial Activity	$0	$0

The accompanying notes are an integral part of these statements.

Notes to the Financial Statements

1. Significant Accounting Policies

A. Basis of Presentation

These consolidated financial statements have been prepared to report the financial position and results of operations of the DOE. They have been prepared from the books and records of DOE in accordance with generally accepted accounting principles for the Federal government which consist of the following hierarchy:

- Individual standards agreed to by the Director of the Office of Management and Budget (OMB), the Comptroller General, and the Secretary of the Treasury and published by OMB and the General Accounting Office;
- Interpretations related to the Statements of Federal Financial Accounting Standards issued by OMB;
- Requirements contained in OMB Bulletin No. 97-01, *Form and Content of Agency Financial Statements, as amended;* and
- Accounting principles published by other authoritative standard-setting bodies and other authoritative sources.

B. Description of Reporting Entity

DOE is a cabinet level agency of the Executive Branch of the U.S. Government. DOE's headquarters organizations are located in Washington, D.C. and Germantown, MD and consist of an executive management structure that includes: the Secretary, the Deputy Secretary, and the Under Secretary; Secretarial staff organizations; and program organizations that provide technical direction and support for DOE's principal programmatic missions. DOE also includes the Federal Energy Regulatory Commission, which is an independent regulatory organization responsible for setting rates and charges for the transportation and sale of natural gas and for the transmission and sale of electricity and the licensing of hydroelectric power projects.

DOE has a complex field structure comprised of operations offices, field offices, power marketing administrations, laboratories, and other facilities. The majority of DOE's environmental cleanup, energy research and development, and testing and production activities are carried out by major contractors. These contractors operate, maintain, or support DOE's government-owned facilities on a day-to-day basis and provide other special work under the direction of field organizations.

These contractors have unique contractual relationships with DOE. In most cases, their charts of accounts and accounting systems are integrated with DOE's accounting system through a home office-branch office type of arrangement. Additionally, DOE is ultimately responsible for funding certain defined benefit pension plans, as well as postretirement benefits such as medical care and life insurance, for the employees of these contractors. As a result, these statements reflect not only the costs incurred by these contractors, but also include certain assets (i.e., employee advances and prepaid pension costs) and liabilities (i.e., accounts payable, accrued expenses including payroll and benefits, and pension and other actuarial liabilities) that would not be reflected in the financial statements of other Federal agencies that do not have these unique contractual relationships.

C. Basis of Accounting

Transactions are recorded on an accrual accounting basis and a budgetary basis. Under the accrual method, revenues are recognized when earned and expenses are recognized when liabilities are incurred, without regard to receipt or payment of cash. Budgetary accounting facilitates compliance with legal constraints and controls over the use of Federal funds. All material intra-agency balances and transactions have been eliminated in consolidation.

D. Revenues and Other Financing Sources

DOE receives the majority of the funding needed to perform its mission through Congressional appropriations. These appropriations may be used, within statutory limits, for operating and capital expenditures. Revenues are recognized when earned (i.e., goods have been delivered or services rendered.)

E. Funds with Treasury and Cash

Funds with the Department of the Treasury (Treasury) represent appropriated funds, trust funds, and revolving funds that are available to pay current liabilities and finance authorized purchase commitments. Cash balances held outside Treasury primarily represent trust fund balances held in minority financial institutions. (See Note 2).

F. Investments

Investments in Treasury securities for the Nuclear Waste Fund (NWF) are classified as available for sale and are reported at fair market value in accordance with Statement of Financial Accounting Standards (SFAS) No. 115, *Accounting for Certain Investments in Debt and Equity Securities.* All other DOE investments are reported at cost net of amortized premiums or discounts, as it is DOE's intent to hold the investments to maturity. Premiums or discounts are amortized using the effective interest yield method. (See Note 3).

G. Accounts Receivable, Net of Allowance

The amounts due for governmental (non-Federal) receivables are stated net of an allowance for uncollectible accounts. The estimate of the allowance is based on past experience in the collection of receivables and an analysis of the outstanding balances.
(See Note 4)

H. Property, Plant, and Equipment

Property, plant, and equipment that are purchased, constructed, or fabricated in-house, including major modifications or improvements, are capitalized at cost. DOE's capitalization threshold is $25,000 for all field elements except the power marketing administrations. (See Note 7)

Costs of construction are capitalized as construction work in process. Upon completion or beneficial occupancy, the cost is transferred to the appropriate property account. Property, plant, and equipment related to environmental management facilities storing and processing DOE's environmental legacy wastes are not capitalized. (See Note 24)

Depreciation expense is generally computed using the straight line method throughout DOE. The units of production method may be used only in special cases where applicable, such as depreciating automotive equipment on a mileage basis and construction equipment on an hourly use basis. The ranges of service lives are generally as follows:

Structures	25 - 40 years
ADP Software	5 - 20 years
Equipment	5 - 45 years

I. Liabilities

Liabilities represent amounts of monies or other resources likely to be paid by DOE as a result of a transaction or event that has already occurred. However, no liability can be paid by DOE absent an authorized appropriation. Liabilities for which an appropriation has not been enacted are, therefore, classified as unfunded liabilities, and there is no certainty that the appropriations will be enacted. Also, liabilities of DOE arising from other than contracts can be abrogated by the Government, acting in its sovereign capacity.

J. Accrued Annual, Sick, and Other Leave

Federal employees' annual leave is accrued as it is earned, and the accrual is reduced annually for actual leave taken and increased for leave earned. Each year, the accrued annual leave balance is adjusted to reflect the latest pay rates. To the extent that current or prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources.

Sick leave and other types of nonvested leave are expensed as taken.

K. Retirement Plans

Federal Employees

There are two primary retirement systems for Federal employees. DOE employees hired prior to January 1, 1984 may participate in the Civil Service Retirement System (CSRS) and contribute 7 percent of pay to which DOE makes contributions equal to 8.51 percent of pay. On January 1, 1984, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. Most employees hired after December 31, 1983, are automatically covered by FERS and Social Security. Employees hired prior to January 1, 1984, elected to either join FERS and Social Security or remain in CSRS. A primary feature of FERS is that it offers a savings plan to which DOE automatically contributes 1 percent of pay and matches any employee contribution up to an additional 4 percent of pay. For most employees hired since December 31, 1983, DOE also contributes the employer's matching share for Social Security. DOE does not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities, if any, applicable to its employees. Reporting such amounts is the responsibility of the Office of Personnel Management and the Federal Employees Retirement System. DOE does report, as an imputed financing source and a program expense, the difference between its contributions to Federal employee pension and other retirement benefits and the estimated actuarial costs as computed by the Office of Personnel Management.

Contractor Employees

Most DOE contractors have a defined benefit pension plan under which they promise to pay specified benefits, such as a percentage of the final average pay for each year of service. DOE costs under the contracts include reimbursement of annual employer contributions to the pension plans. Each year an amount is calculated for employers to contribute to the pension plan to ensure the plan assets are sufficient to provide for the full accrued benefits of contractor employees in the event that the plan is terminated. The level of contributions is dependent on actuarial assumptions about the future, such as the interest rate, employee turnover and deaths, age of retirement, and salary progression. (See Note 15)

L. Comparative Data

Certain FY 1998 amounts have been reclassified to conform to the FY 1999 presentation. These reclassifications were primarily the result of:

- corrections to prior year deferred revenue computations pertaining to the Nuclear Waste Fund (NWF) and an associated environmental liability for high-level waste and spent nuclear fuel;
- clarification of Treasury guidance regarding reporting criteria for receivables and unobligated balances which resulted in changes to DOE's Statement of Budgetary Resources;
- correction of an overstatement of the receivable and corresponding liability and transfers out related to the sale of the Naval Petroleum Reserves;
- reclassification of costs by business lines and responsibility segments resulting from changes in DOE's budget structure.
- reclassification of NWF deferred fee revenue to exchange revenue and financing sources yet to be provided to correct inconsistencies between revenues reported on the Statement of Financing and the Statement of Net Cost;
- reclassification of D&D revenue from reimbursements earned collected to exchange revenues not in DOE's budget to be consistent with the Report on Budget Execution; and
- restatement of total budgetary resources to include BPA borrowing authority and United States Enrichment Corporation (USEC) funds transferred to the Department.

M. Program Expenses

Program expenses are summarized in the Consolidated Statements of Net Costs by business line, which represents the four major elements of the Department's mission. The program expenses reported in the Consolidated Statements of Net Costs represent the full cost of the Department's programs in accordance with the Department's implementation of OMB's Statement of Federal Financial Accounting Standards Number 4, *Managerial Cost Accounting Concepts and Standards for the Federal Government*. A detailed breakdown of the expenses for each business line is presented in the Notes.

N. Use of Estimates

DOE has made certain estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities to prepare these consolidated financial statements. Actual results could differ from these estimates.

2. Fund Balance with Treasury *(in millions)*

	FY 1999			FY 1998		
	Agency Funds	Custodial Funds	Total Fund Balance	Agency Funds	Custodial Funds	Total Fund Balance
Trust Funds						
Advances for Co-sponsored Projects		$6	$6		$8	$8
Revolving Funds						
Bonneville Power Administration Fund	$613		613	$526		526
Colorado River Basin Power Marketing Fund	40		40	38		38
U. S. Enrichment Corporation		479	479		484	484
Other	38	1	39	37	1	38
Total Revolving Funds	$691	$480	$1,171	$601	$485	$1,086
Appropriated Funds						
Fossil Energy Research and Development	342		342	318		318
Energy Conservation	570		570	537		537
Naval Petroleum & Oil Shale Reserves	82		82	99		99
Science	1,369		1,369	1,060		1,060
Energy Supply	620		620	782		782
Clean Coal Technology	803		803	860		860
Weapons Activities	1,593		1,593	1,807		1,807
Defense Environmental Restoration & Waste Management	1,501		1,501	2,063		2,063
Other Defense Programs	1,009		1,009	773		773
Other	1,643	6	1,649	946	6	952
Total Appropriated Funds	$9,532	$6	$9,538	$9,245	$6	$9,251
Special Funds						
Elk Hills School Land Funds		262	262		298	298
Construction, Rehabilitation, Operation, & Maintenance, Western Area Power Administration	175		175	166		166
Other	32		32	17		17
Total Special Funds	$207	$262	$469	$183	$298	$481
Deposit Funds						
Naval Petroleum Reserve Fund		323	323		323	323
Other	1	22	23	3	17	20
Total Deposit Funds	$1	$345	$346	$3	$340	$343
Total Fund Balance with Treasury	$10,431	$1,099	$11,530	$10,032	$1,137	$11,169

3. Investments *(in millions)*

	Face	Unamortized Premium (Discount)	Investments Net	Market Value
Fiscal Year 1999				
Intra-governmental Non-Marketable				
Nuclear Waste Fund	$15,195	($6,361)	$8,834	$8,563
Net unrealized holding losses			(353)	
Uranium Enrichment D&D Fund	1,655	61	$1,716	1,716
Petroleum Pricing Violation Escrow Fund	266	(3)	263	263
Subtotal	$17,116	($6,303)	$10,460	$10,542
Governmental Marketable Securities				
Du Pont pension receipts	50		50	50
Petroleum Pricing Violation Escrow Fund	213		213	215
Subtotal	$263		$263	$265
Total FY 1999 Investments	$17,379	($6,303)	$10,723	$10,807
Fiscal Year 1998				
Intra-governmental Non-Marketable				
Nuclear Waste Fund	$11,169	($3,453)	$7,716	$8,610
Net unrealized holding gains			894	
Uranium Enrichment D&D Fund	1,280	10	$1,290	1,314
Great Plains Gasification Plant Trust Fund	13		$13	13
Petroleum Pricing Violation Escrow Fund	290	(3)	287	287
Subtotal	$12,752	($3,446)	$10,200	$10,224
Governmental Marketable Securities				
Du Pont pension receipts	50		50	50
Petroleum Pricing Violation Escrow Fund	213		213	213
Subtotal	$263		$263	$263
Total FY 1998 Investments	$13,015	($3,446)	$10,463	$10,487

Pursuant to statutory authorizations, DOE invests monies in Treasury securities and commercial certificates of deposit which are secured by the Federal Deposit Insurance Corporation. DOE's investments primarily involve the NWF and the Uranium Enrichment Decontamination and Decommissioning Fund. Fees paid by owners and generators of spent nuclear fuel and high-level radioactive waste and fees collected from domestic utilities are deposited into the respective funds. Funds in excess of those needed to pay current program costs are invested in Treasury securities. DOE also has non-Federal securities resulting from an over funded pension plan of a former contractor and the 1988 sale of the Great Plains Coal Gasification Project to a private concern.

The Petroleum Pricing Violation Escrow Fund represents custodial receipts collected as a result of consent agreements reached with individuals or firms that violated petroleum pricing regulations during the 1970s. These receipts are invested in Treasury securities and certificates of deposit at minority financial institutions pending determination by DOE as to how to distribute the fund balance.

Except for the NWF, DOE's investments are valued at the amortized acquisition cost. The NWF investments, which consist of U.S. Treasury securities, are classified as available-for-sale and are reported at market value in accordance with Statement of Financial Accounting Standards (SFAS) No. 115, *Accounting for Certain Investments in Debt and Equity Securities*, with unrealized gains and losses excluded from earnings and reported as a separate component of net position. DOE uses the effective interest rate method in determining book value of NWF investments. As a result, the NWF's investment balance includes net unrealized holding loss of $353 million as of September 30, 1999, and a holding gain of $894 million as of September 30, 1998.

4. Accounts Receivable *(in millions)*

	FY 1999			FY 1998		
	Receivable	Allowance	Net	Receivable	Allowance	Net
Intra-governmental						
Accounts receivable	$392		$392	$374		$374
Interest receivable	113		113	108		108
Subtotal	$505		$505	$482		$482
Governmental						
Nuclear Waste Fund receivables	2,557		2,557	2,440		2,440
Uranium Enrichment D&D Fund receivables	1,389		1,389	1,526		1,526
Power Marketing Administrations' receivables	345		345	343		343
Petroleum Pricing Violation Escrow Fund	2,256	(2,180)	76	2,404	(2,294)	110
Credit program receivables	62	($26)	36	62	($26)	36
Other	182	(68)	114	180	(68)	112
Subtotal	$6,791	($2,274)	$4,517	$6,955	($2,388)	$4,567
Total Accounts Receivable	$7,296	($2,274)	$5,022	$7,437	($2,388)	$5,049

Intra-governmental accounts receivable primarily represent amounts due from other Federal agencies for reimbursable work performed pursuant to the Economy Act, Atomic Energy Act, and other statutory authority. Interest receivable represents earned revenues on investments held in Treasury securities.

Governmental receivables represent amounts due primarily for NWF and Uranium Enrichment Decontamination and Decommissioning (D&D) Fund fees. NWF receivables are supported by contracts and agreements with owners and generators of spent nuclear fuel and high-level radioactive waste that contribute resources to the fund. D&D Fund receivables from public utilities are supported by public law. Other receivables due from the public include reimbursable work billings and other amounts related to trade receivables, overpayments, and other miscellaneous receivables. FY 1998 other receivables were restated to include advances from other agencies previously recorded in other liabilities.

The Petroleum Pricing Violation Escrow Fund represents receivables owed as a result of consent agreements reached with individuals or firms that violated petroleum pricing regulations during the 1970s. The majority of these receivables are with individuals or firms that are in bankruptcy, or collection action is being taken by the Department of Justice. Many cases handled by the Department of Justice will result in complete write-offs or settlement agreements for amounts significantly less than the original consent agreement. Allowance accounts have been established to reflect the realistic potential for recovery of amounts owed. The methodology used to calculate the allowance accounts was derived through an intensive analysis of each case. The receivables were categorized based on the status of the case, the financial condition of the debtor, the collections received to date, and any pertinent information from the Office of General Counsel related to each case. Based on this analysis and categorization, percentages for the probability of collection were determined. Percentages ranging from 7 to 100 were used to calculate the allowance account.

5. Regulatory Assets *(in millions)*

	FY 1999	FY 1998
Intra-governmental		
Appropriation refinancing asset	$5,228	$5,228
Governmental		
Operating regulatory assets	2,784	2,930
Non-operating regulatory assets	4,209	4,319
Conservation and fish & wildlife projects	713	762
Other		20
Total governmental regulatory assets	$7,706	$8,031
Total Regulatory Assets	$12,934	$13,259

DOE's power marketing administrations record certain assets in accordance with SFAS No. 71. The provisions of SFAS No. 71 require that regulated enterprises reflect rate actions of the regulator in their financial statements, when appropriate. These rate actions can provide reasonable assurance of the existence of an asset, reduce or eliminate the value of an asset, or impose a liability on a regulated enterprise.

Appropriation refinancing asset

The Bonneville Power Administration (BPA) Appropriations Refinancing Act of 1994 required that the unpaid balance, as of September 30, 1996, of the Federal Columbia River Power System (FCRPS) capital appropriations, which BPA is obligated to set rates to recover, be reset and assigned prevailing market rates. As a result, BPA assumed the liability to repay the unpaid balance of capital appropriations of the power generating assets of the Corps of Engineers and the Bureau of Reclamation associated with the FCRPS. In accordance with SFAS No. 71, offsetting regulatory assets are recognized which represent the ability of BPA to repay this appropriated capital from the proceeds of power sales generated from the Corps and Bureau of Reclamation assets.

Operating regulatory assets

The BPA has acquired the generating capability of one operating nuclear power plant, as well as several hydroelectric projects. BPA pays the annual operating costs including debt service. These project costs are recovered through BPA's electric rates. Because these projects' current and future costs can be recovered through BPA's electric rates, the Balance Sheet includes a regulatory asset and an offsetting related debt.

Non-Operating Regulatory Assets

BPA has acquired all or part of the generating capability of four terminated nuclear power plants. The government's contracts require BPA to pay all or part of the annual projects' budgets, including debt service of the terminated plants. Because these projects' current and future costs can be recovered through BPA's electric rates, the Balance Sheet includes a regulatory asset and an offsetting related debt.

Conservation and fish and wildlife projects

The conservation and fish and wildlife projects consist of facilities constructed by BPA for the protection of fish and wildlife, and the mitigation of losses attributed to the development and operation of hydroelectric projects on the Columbia River and its tributaries pursuant to Section 4(h) of the Northwest Power Act. BPA pays for the construction of the facilities and recovers the costs in rates but does not retain ownership of the facilities. These facilities are amortized and recovered in rates over a 15 year period.

6. Inventory, Net

Inventory includes stockpile materials, consisting of crude oil held in the Strategic Petroleum Reserve and nuclear materials, and other inventory consisting primarily of operating materials and supplies.

The Strategic Petroleum Reserve consists of crude oil stored in salt domes, terminals, and pipelines. The Reserve contained 565 million barrels of crude oil as of September 30, 1999. The reserve provides a deterrent to the use of oil as a political instrument and provides an effective response mechanism should a disruption occur. Oil from the reserve may be sold only with the approval of Congress and the President of the United States. No oil was sold from the Reserve in FY 1999 or FY 1998.

The FY 1993 Defense Appropriations Act authorized DOE to acquire, transport, store and prepare for ultimate drawdown of crude oil for the Department of Defense (DOD). The crude oil purchased with DOD funding is commingled with DOE stock and is held for DOD's future use. The historical cost of the crude oil held for DOD is $106 million.

Nuclear materials include weapons and related components, including those in the custody of the Department of Defense under Presidential Directive, and materials used for research and development purposes.

Stockpile materials are recorded at historical cost in accordance with Statement of Federal Financial Accounting Standards No. 3, *Accounting for Inventory and Related Property,* except for certain nuclear materials which have been identified as surplus or excess to DOE's needs. These nuclear materials are recorded at their net realizable value. Certain surplus plutonium carried at zero value (see Note 14 for a discussion of disposition plans) may be instrumental to the U.S. Government in current negotiations with Russia concerning the future of 34 metric tons of Russia's weapons grade plutonium.

Highly Enriched Uranium

The Nuclear Weapons Council declared in December 1994, leading to the Secretary of Energy's announcement in February 1996, that 174.3 metric tons of DOE's highly enriched uranium (HEU) were excess to national security needs. Most of this material will be blended for sale as low-enriched uranium (LEU) and used over time as commercial nuclear reactor fuel to recover its value. The remaining portion of the material is already in the form of irradiated fuel or other waste forms, which require no processing prior to disposal. A provision for disposal of irradiated fuel is included in environmental liabilities. Estimated revenues and processing costs for surplus HEU are expected to be updated in March 2000. Net revenues from sales of LEU blended from surplus HEU are expected to exceed the carrying value of the surplus HEU.

7. Property, Plant and Equipment, Net *(in millions)*

	FY 1999			FY 1998		
	Acquisition Costs	Accumulated Depreciation	Net Book Value	Acquisition Costs	Accumulated Depreciation	Net Book Value
Land and land rights	$439	($4)	$435	$460	($4)	$456
Structures and facilities	29,804	(19,694)	10,110	29,245	(18,154)	11,091
ADP software	56	(11)	45	33	(7)	26
Equipment	14,128	(9,503)	4,625	14,065	(9,080)	4,985
Natural resources	98	(8)	90	66	(8)	58
Construction work in process	3,196		3,196	3,224		3,224
Total Property, Plant and Equipment	$47,721	($29,220)	$18,501	$47,093	($27,253)	$19,840

8. Other Governmental Assets *(in millions)*

	FY 1999	FY 1998
Prepaid pension plan costs (see Note 15)	$946	$554
Oil held for others (see Note 13)	252	
Other	293	273
Total Other Governmental Assets	$1,491	$827

9. Accounts Payable *(in millions)*

	FY 1999	FY 1998
Intra-governmental		
Accounts payable	$16	$39
Accrued expenses	52	40
	$68	$79
Governmental		
Accounts payable	$993	$1,141
Contract holdbacks	37	43
Accrued expenses	2,051	2,079
	$3,081	$3,263
Total Accounts Payable	$3,149	$3,342

Certain FY 1998 balances were restated to conform with the FY 1999 presentation.

10. Debt *(in millions)*

	FY 1999	FY 1998
Intra-governmental Debt		
Borrowing from Treasury	$2,515	$2,499
Refinanced appropriations	6,274	6,407
Subtotal	$8,789	$8,906
Governmental Debt		
Non-Federal projects	6,778	7,056
Total Debt	$15,567	$15,962

Borrowing from Treasury

To finance its capital programs, the BPA is authorized to issue to Treasury up to $3,750 million of interest-bearing debt with terms and conditions comparable to debt issued by U.S. government corporations. A portion ($1,250 million) is reserved for conservation and renewable resource loans and grants. The average interest rate of BPA's long-term debt exceeds the rate which could be obtained currently. As a result, the fair value of BPA's long-term debt, based on discounting future cash flows using rates offered by Treasury as of September 30, 1999 and 1998, for similar maturities, exceeds carrying value by approximately $183 million and $559 million, respectively. BPA's policy is to refinance debt that is callable when associated benefits exceed costs of refinancing.

Refinanced appropriations

The BPA Appropriations Refinancing Act of 1994 required that the unpaid balance, as of September 30, 1996, of the Federal Columbia River Power System (FCRPS) capital appropriations, which BPA is obligated to set rates to recover, be reset and assigned prevailing market rates. The majority of the refinanced appropriations represent the unpaid capital appropriations of the Corps of Engineers and the Bureau of Reclamation. (See Note 5)

Non-Federal projects

As discussed in Note 5, the non-Federal projects debt represents BPA's liability to pay all or part of the annual budgets, including debt service, of the generating capability of five nuclear power plants as well as several hydroelectric projects.

11. Appropriated Capital Owed to Treasury

Appropriated capital owed to Treasury represents the balance of appropriations provided to DOE's power marketing administrations for construction and operation of power projects which will be repaid to Treasury. The amount owed also includes accumulated interest on the net unpaid Federal investment in the power projects. The Federal investment in these facilities is to be repaid to Treasury within 50 years from the time the facilities are placed in service or are commercially operational. Replacements to Federal investments are generally to be repaid over their expected useful service lives. There is no requirement for repayment of a specific amount of Federal investment on an annual basis.

Each of the power marketing administrations, except the BPA, receives an annual appropriation to fund operation and maintenance expenses. These appropriations totaled $241 million and $245 million in FY 1999 and FY 1998, respectively. These appropriated funds are repaid to Treasury from the revenues generated from the sale of power and transmission services. To the extent that funds are not available for payment, such unpaid annual net deficits become payable from the subsequent years' revenues prior to any repayment of Federal investment. DOE treats these appropriations as a borrowing from Treasury, and as such, the Statements of Changes in Net Position do not reflect these funds as appropriated capital used.

Except for the appropriation refinancing asset described in Note 5, DOE's financial statements do not reflect the Federal investment in power generating facilities owned by the U.S. Department of Defense, Army Corps of Engineers; the U.S. Department of Interior, Bureau of Reclamation; and the U.S. Department of State, International Boundary and Water Commission. DOE's power marketing administrations are responsible for collecting, and remitting to Treasury, revenues resulting from the sale of hydroelectric power generated by these facilities.

12. Deferred Revenues

(in millions)

	FY 1999	FY 1998
Intra-governmental		
Nuclear Waste Fund	$309	$273
Other	20	19
	$329	$292
Governmental		
Nuclear Waste Fund	11,804	10,243
United States Enrichment Corporation	482	482
Power Marketing Administrations	473	437
Reimbursable work advances	228	230
Other	109	116
	$13,096	$11,508
Total Deferred Revenues	$13,425	$11,800

Certain FY 1998 balances were restated to conform with the FY 1999 presentation.

Nuclear Waste Fund

NWF revenues are accrued based on fees assessed against owners and generators of high-level radioactive waste and spent nuclear fuel, accrued interest from the Department for disposal of DOE-managed nuclear wastes, and interest accrued on investments in Treasury securities. These revenues are recognized as a financing source as costs are incurred for NWF activities. Annual adjustments are made to defer revenues that exceed the NWF expenses. FY 1998 balances were restated to reflect reclassifications between intra-governmental and governmental components of deferred revenues and DOE's environmental liability for high-level waste and spent nuclear fuel.

United States Enrichment Corporation

Upon privatization of the USEC on July 28, 1998, OMB and Treasury designated DOE as successor to USEC for purposes of disposition of balances remaining in the United States Enrichment Fund, including payment of final fills associated with privatization. As of September 30, 1999, a total of approximately $482 million resided in the USEC-Government account. Of this amount, approximately $373 million was retained for the treatment and recycling of depleted uranium hexaflouride generated by USEC between July 1, 1993 and the privatization date.

Power Marketing Administrations

The power marketing administrations' deferred revenues represent primarily amounts paid to BPA from participants under various AC intertie capacity agreements and load diversification fees paid to BPA by various customers. These one-time payments cover the remaining term of the customer's existing contractual agreement.

13. Other Liabilities *(in millions)*

	FY 1999	FY 1998
Intra-governmental		
Oil held for DOD	$106	$106
Other	127	174
Total other intragovernmental liabilities	$233	$280
Governmental		
Environment, safety and health compliance activities	1,322	1,694
Accrued payroll and benefits	682	659
Petroleum Pricing Violation Escrow Fund	498	548
Naval Petroleum Reserve Deposit Fund	323	323
Elk Hills School Land Fund	262	298
Oil Held for Others	252	
Accrued annual leave of Federal employees	89	94
Other	290	355
Total other governmental liabilities	$3,718	$3,971
Total Other Liabilities	$3,951	$4,251
Amount covered by budgetary resources	$2,452	$2,317
Amount not covered by budgetary resources	$1,499	$1,934

Oil Held for DOD (See Note 6)

Environment, Safety and Health Compliance Activities

DOE'S environment, safety and health liability represents those activities necessary to bring facilities and operations into compliance with existing environmental safety and health (ES&H) laws and regulations (e.g., Occupational Safety and Health Act; Clean Air Act; Safe Drinking Water Act). Types of activities included in the estimate relate to the following: upgrading site-wide fire and radiological programs; nuclear safety upgrades; industrial hygiene and industrial safety; safety related maintenance; emergency preparedness programs; life safety code improvements; and transportation of radioactive and hazardous materials. The estimate covers corrective actions expected to be performed in future years for programs outside the purview of DOE's Environmental Management (EM) Program. ES&H activities within the purview of the EM program are included in the environmental liability estimate. The change in the ES&H liability is due to (1) additional corrective actions, activities or programs that are required to improve the facilities' state of compliance and move them toward full compliance, or conformance with all applicable ES&H laws, regulations, agreements, and DOE Orders, (2) revised cost estimates for existing ES&H activities, and (3) costs of work performed in FY 1999.

Accrued Payroll and Benefits

Accrued payroll and benefits represent amounts owed to DOE and contractor employees.

Petroleum Pricing Violation Escrow Fund

Pursuant to the Emergency Petroleum Allocation Act of 1973, DOE is responsible for recovering oil pricing overcharges and making restitution to injured parties. Monies received are invested in Treasury securities and certificates of deposit with minority financial institutions pending disbursement to injured parties or returned to the Treasury's general fund.

Naval Petroleum Reserve Deposit Fund

The balance in this fund represents proceeds from the sale of the Naval Petroleum Reserve at Elk Hills that are being held until final disposition in accordance with the settlement agreement. Approximately $288 million is being held for a contingency payment to Chevron, Inc., pending the outcome of equity finalization. The remaining $35 million is reserved for anticipated adjustments to Occidental's final payment and for possible reimbursement to the investment banker for an advance of their commission. (See Note 18)

Elk Hills School Land Fund

This balance represents the portions of the Naval Petroleum Reserve at Elk Hills sales proceeds being retained for future disbursements to the State of California pending authorization of the Congress. (See Note 18)

Oil Held for Others

DOE entered into an agreement with a commercial entity for the exchange of a quantity of lower grade crude oil in the Strategic Petroleum Reserve for higher grades of crude oil. The 8.5 million exchange barrels of higher grade crude oil were received in FY 1999. The title of the lower grade crude oil was transferred to the commercial entity and the value as of September 30, 1999, is recorded as oil held for others. Delivery of this oil to the commercial entity was completed in December 1999.

Other Liabilities

This balance consists primarily of liabilities associated with other deposit funds, suspense accounts, receipts due to Treasury, and contract advances.

14. Environmental Liabilities

(in millions)

	FY 1999	FY 1998
EM facilities/sites cost estimate	$183,641	$145,108
Active and surplus facilities	25,403	28,249
High-level waste and spent nuclear fuel	14,940	10,154
Other	6,656	2,379
Total environmental liabilities	$230,640	$185,890
Amount funded by current appropriations	(1,584)	(918)
Total unfunded environmental liabilities	$229,056	$184,972
Changes in environmental liabilities		
Total environmental liabilities, beginning balance	$185,890	$180,071
Prior period adjustments	28,485	($106)
Adjusted beginning balance	$214,375	$179,965
Changes to environmental liability estimates		
EM facilities/sites cost estimate	$15,596	$9,746
Active and surplus facilities	(2,758)	(1,862)
High-level waste and spent nuclear fuel	4,977	4,189
Other	4,277	129
Total changes in estimates	$22,092	$12,202
Operating expenditures related to legacy waste activities	(5,491)	(5,908)
Capital expenditures related to legacy waste activities	(336)	(369)
Total Environmental Liabilities	$230,640	$185,890

FY 1998 amounts have been restated to conform with the FY 1999 presentation. Specifically, $523 million of the high-level waste and spent nuclear fuel liability reported in FY 1998 was reclassified to deferred revenues. This amount reflects the cumulative difference between DOE's share of costs incurred related to disposal of high-level waste and spent nuclear fuel and DOE's actual funding of these costs from its appropriations. This amount comprises the principal owed by DOE to the Nuclear Waste Fund and is reflected as a component of the deferred liability on DOE's Balance Sheet.

During World War II and the Cold War, the United States developed a massive industrial complex to research, produce, and test nuclear weapons. The nuclear weapons complex included nuclear reactors, chemical processing buildings, metal machining plants, laboratories, and maintenance facilities that manufactured tens of thousands of nuclear warheads, and conducted more than one thousand nuclear explosion tests.

At all sites where these activities took place, some environmental contamination occurred. In this regard, the treatment and storage of radioactive and chemical waste resulted in contamination of soil, surface water,

and groundwater and an enormous backlog of waste and dangerous materials. The environmental legacy derived from the process of producing nuclear weapons includes thousands of contaminated areas and buildings, and large volumes of waste and special nuclear materials requiring treatment, stabilization, and disposal. Approximately one-half million cubic meters of radioactive high-level, mixed, and low-level waste must be stabilized, safeguarded, and dispositioned, including a quantity of plutonium sufficient to fabricate thousands of nuclear weapons.

Environmental Management Facilities/Sites Cost Estimate

Paths To Closure Baseline Estimates

In FY 1999, the Department's Office of Environmental Management (EM) updated its Paths to Closure life cycle cost estimates which reflect a strategic vision to clean up most of the sites by 2006. This strategy provides for a site by site, project by project projection of the technical scope, costs, and schedule required to complete all 407 projects at EM's remaining cleanup sites, while complying with compliance agreements and other legal obligations. Further, the strategy consists of detailed projections on the scope, schedules, and costs at each site for the cleanup of contaminated soil, groundwater, and facilities; treating, storing, and disposing of waste; and managing nuclear materials. These estimates, which were developed by the cognizant field offices, cover life cycle cost estimates to 2070.

To arrive at the year-end liability for financial statement reporting purposes, the Department subtracted from the baseline estimates: (1) any costs associated with waste generated from current and future operations, (2) duplications of costs reported elsewhere in the financial statements, and (3) prior and current year costs included in the baseline estimates. In addition, the baseline estimates were adjusted for significant events occurring prior to year-end but after submission of field data for the FY 1999 Paths to Closure.

The Paths to Closure cost, scope and schedules were based on meeting compliance agreements consistent with existing Federal, State and/or local statutes and/or regulations. The site estimates include cost and schedule estimates for environmental restoration; nuclear material and facility stabilization; and waste treatment, storage, and disposal activities at each installation. The estimates also include costs for related activities such as landlord responsibilities, program management, and legally prescribed grants for participation and oversight by native American tribes and regulatory agencies, and other stakeholders.

Changes to FY 1998 Estimate

Changes to the FY 1998 environmental liability estimate relate to: (1) inflation adjustments to reflect current year constant dollars; (2) improved/updated estimates for same scope of work; (3) revisions in technical approach or scope; (4) regulatory changes; and (5) cleanup activities performed during FY 1999.

Prior Period Adjustments

During FY 1999, the Department recognized prior period adjustments to correct deficiencies related to the FY 1998 material internal control weaknesses on the environmental liability. Included in these adjustments were corrections to include any omissions in the FY 1998 estimate, such as contingencies, long term surveillance and maintenance, and decontamination and decommissioning costs. Further, corrections were made to exclude duplications and non-legacy costs from the liability. Contingencies represent the dominate costs included in the above amount. In this regard, the environmental liability contained in EM's Paths to Closure baseline estimate does not reflect significant uncertainties associated with the technical cleanup scope of the program. For example, the precise nature and quantity of material being addressed are not always known, and suitable cleanup technologies do not always exist, making it very difficult to estimate costs. EM developed a model to account for such uncertainties. The model predicts that total EM life-cycle cleanup costs could range from $164.4 to $193.9 billion. The mean or statistically most probable value of this range is $179.1 billion or $28.3 billion over the EM baseline estimate. In accordance with generally accepted accounting principles for recognizing a contingent liability, DOE added $28.3 billion to its unfunded environmental liability estimate to cover the uncertainty not accounted for in the baseline estimate.

Funding Sensitivities

The unfunded environmental liability estimate for EM facilities and legacy wastes is dependent on annual funding levels. Higher funding levels would tend to accelerate cleanup work and reduce cleanup costs; lower levels would tend to delay work and increase costs. For the development of Paths to Closure estimates, sites received a total funding guideline of $5,750 million per year. In most cases, sites exceeded this funding guideline in order to meet compliance commitments. Specifically, cost projections exceed expected funding levels between FY 1999 and 2006 by about $7 billion based on the assumption of maintaining current fiscal policy with respect to funding the EM program.

Environmental Liabilities for Active and Surplus Facilities Not Managed by EM

Prior to FY 1999, DOE reported its liability for the non EM contaminated facilities primarily under two categories: (1) active facilities; and (2) surplus facilities not yet transferred to EM. In FY 1999, DOE updated and integrated its pipeline facilities into the active facility cost-modeling strategy and retitled this single category "Environmental liabilities for active and surplus facilities not managed by EM." Also included in this category are cost estimates related to the deactivation and decommissioning of inactive naval reactor facilities, which was disclosed separately last year.

Environmental liabilities for active and surplus facilities not managed by EM represent anticipated remediation costs for facilities managed by ongoing program operations which will ultimately require stabilization, deactivation, and decommissioning. The estimate is largely based on a cost-estimating model used to extrapolate stabilization, deactivation, and decommissioning costs from EM facilities to the active and surplus facilities with similar characteristics. In circumstances where sites have developed an estimate for a facility or facilities included in this category, the site-specific estimate is used rather than the modeling strategy.

High-Level Waste and Spent Nuclear Fuel

The Nuclear Waste Policy Act of 1982 established DOE's responsibility to provide for permanent disposal of the Nation's high-level radioactive waste and spent nuclear fuel. The Act requires the owners and generators of nuclear waste to pay the full cost of the program and, to that end, establishes a fee on civilian nuclear utilities which DOE must collect and annually assess to determine its adequacy.

The most recent contractor estimate, completed in December 1999, of the total cost of a surrogate single repository system (without interim storage) examined two cases, both reflecting the adoption of the Enhanced Design Alternative II (EDA II) (see Report to Update the Total Systems Life Cycle Cost (TSLCC) for Site Recommendation/License Application). Case 1 assumed that closure and decommissioning activities begin 50 years after the beginning of waste emplacement. In Case 2, closure and decommissioning activities begin 125 years after the beginning of waste emplacement, when it is expected that the temperature of the emplacement drift wall will remain below the boiling point of water. Based on the contractor estimate for Case 1, the total system life cycle cost in FY 1999 dollars would be $51,600 million; for Case 2, the contractor estimate is $56,900 million. The design effort is continuing and will likely impact the cost estimates contained in this report. As such, the assessment represents a snapshot in time that will be updated about the time of the release of the Site Recommendation Consideration Report. Yucca Mountain, Nevada, was assumed as the location for the repository since it is the only site that DOE is authorized by law to characterize, but this does not constitute a pre-decision that Yucca Mountain is a suitable repository site. Contractor cost estimates for a two-repository system were not developed since DOE does not have current cost information or designs for a second repository.

To estimate the share of the total system costs that should be allocated to the disposal of DOE's high-level waste and spent nuclear fuel, the methodology announced by DOE in the Federal Register in August 1987 was used. Based on the December 1999 contractor estimate, DOE's share of the future system life cycle cost in FY 1999 dollars would be $12,385 million for Case 1 and $14,107 million for Case 2. DOE's liability was based on the Case 2 estimate. Interest accruing on the difference between DOE's share of costs incurred to date and the actual funding provided to date totaled $833 million. As a result, as of September 30, 1999, DOE's estimated net unfunded liability for its share of costs for the disposal of high-level waste and spent nuclear fuel totaled $14,940 million for Case 2.

The most significant Program changes affecting costs that distinguish the December 1999 contractor estimate from the 1998 Analysis of the Total System Life Cycle Cost (TSLCC) of the Civilian Radioactive Waste Management Program are inclusion of drip shields, increased underground excavation to meet the lower thermal load requirements, and increased waste handling building pool capacity for fuel blending. Also, in the 1998 TSLCC, the period of operations was 100 years. For Case 1, this was decreased to 50 years and for Case 2 it was increased to 125 years.

Other Unfunded Environmental Liabilities

Dispositioning of surplus plutonium

In the September 1998 Joint Statement of Principles for Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes, President Clinton entered into an agreement with Russian President Yeltsin to dispose of 50 metric tons (MT) of surplus plutonium. The 50 MT consists of 41.9 MT currently identified as surplus plus an additional 8.1 MT of weapons-grade plutonium that may be declared surplus in the future. The surplus plutonium will be dispositioned in accordance with the January 2000 Record of Decision on the Surplus Plutonium Disposition, which calls for DOE to pursue a hybrid approach for plutonium disposition that

allows for both immobilization of surplus weapons plutonium in ceramic form and irradiation of surplus plutonium as mixed oxide fuel (MOX) in existing domestic reactors.

The Department recognized an unfunded liability in the amount of $2,266 million in the FY 1998 consolidated financial statements based on the October 1996 Technical Summary Report for Surplus Weapons-Usable Plutonium Disposition. This liability was for dispositioning 50 MT of weapons-grade and non-weapons grade plutonium and was increased to reflect the estimated cost in constant 1998 dollars for the hybrid approach.

For FY 1999, the Department recognized an unfunded liability in the amount of $3,777 million based on costs for the preferred alternative presented in the November 1999 Plutonium Disposition Life Cycle Costs and Cost-Related Comment Resolution Document (cost report). The increase from the October 1996 estimate is primarily due to (1) the use of new construction for all three disposition facilities; (2) an increase in the size of the facilities as a result of revised conceptual designs; and (3) more precise estimates as a result of further development and a better understanding of the technologies, processes, and life cycle costs involved. The cost report estimate of $4,070 million was adjusted to $3,777 million to remove related costs incurred as of year-end, costs reported elsewhere in the financial statements, and the effects of inflation.

Disposition of Depleted Uranium

Over the last four decades, large quantities of uranium were processed using the gaseous diffusion process in order to produce enriched uranium for national defense and civilian purposes by the Department, its predecessor agencies, and by the USEC prior to its privatization in July 1998. Depleted uranium hexafluoride (UF_6) was generated as a byproduct of the process. In April 1999 DOE published a Final Programmatic Environmental Impact Statement (PEIS) for Alternative Strategies for the Long-Term Management and Use of Depleted Uranium Hexafluoride, in which the Department assesses the potential impacts of alternative strategies for managing the UF_6 currently stored in cylinders at three DOE sites: the Paducah site; the Portsmouth site; and the East Tennessee Technology Park (ETTP). The PEIS considered the environmental impacts, benefits and costs, as well as institutional and programmatic needs associated with the management and disposition of approximately 700,000 metric tons of UF_6.

The Department's preferred alternative in the Record of Decision for the long-term management and use of depleted UF_6 is to begin conversion of the depleted UF_6 inventory, as soon as possible, to depleted uranium oxide, depleted uranium metal, or a combination of both. The conversion products, such as fluorine, would be used as much as possible, and the remaining products would would be stored for future uses or disposal. The Department currently expects that conversion to depleted uranium metal would be performed only if uses become available. At this time, the Department does not believe that long term storage as depleted uranium metal and disposal as depleted uranium metal are reasonable alternatives; however, the Department remains open to exploring these options further.

In July 1999, the Department submitted a plan to Congress, the Final Plan for the Conversion of Depleted Uranium Hexafluoride, as required by Public Law 105-204, that summarized a schedule for the construction of conversion facilities at the gaseous diffusion plants at Paducah, Kentucky and Portsmouth, Ohio. In addition, the Department issued an initial draft Request for Proposals in July 1999, to obtain constructive comments from potential builders and operators of the conversion facilities. However, the Department has had to confront the possibility that the depleted UF_6 inventory could be contaminated with transuranic materials such as plutonium and neptunium. Department experts and potential bidders recognized that this contamination could impact the design and operations of the proposed conversion plants, and the steps taken to protect workers at such plants. As a result, the Department launched an assessment of available historic information about the transuranic content of the depleted UF_6 stored by the Department and a cylinder sampling program.

The historical information available yielded very limited results, forcing the Department to rely almost entirely on sampling to assure a complete understanding of the level of transuranics contained in the depleted UF_6 inventory. This sampling is now underway and will continue into the middle of FY 2000. The Department will soon issue a new schedule reflecting the change this development will have on its procurement strategy, but intends to meet the deadline established in P.L. 105-204.The total estimated life-cycle cost of the conversion program is based on costs for three different conversion options ranging $1,731 million to $4,920 million. The conversion program includes: cylinder surveillance and maintenance; transportation of depleted UF_6 from ETTP to a conversion facility; conversion services inclusive of design, construction, operation and decontamination and decommissioning of conversion facilities; storage of uranium conversion products; use of conversion products; and disposal of empty UF_6 containers and products not used. The Department has recorded an unfunded liability in the amount of $2,879 million

representing the most likely of the conversion options available to the Department.

Assumptions

Estimating the cost of DOE's environmental cleanup liability requires making assumptions about future activities and is inherently uncertain. The future course of DOE's environmental management program will depend on a number of fundamental technical and policy choices, many of which have not been made. Ultimately, these decisions will be made on the basis of fulfilling Congressional mandates, regulatory direction, and stakeholder input. Congressional appropriations at lower than anticipated levels would cause increases in life cycle costs.

The cost and environmental implications of alternative choices can be profound. For example, many contaminated sites and facilities could be restored to a pristine condition, suitable for any desired use; they could also be restored to a point where they pose no near-term health risks to surrounding communities but are essentially surrounded by fences and left in place. Achieving pristine conditions would have a higher cost but may or may not warrant the costs and potential ecosystem disruption or be legally required.

The following key assumptions were used in estimating the environmental liability:

- DOE has identified approximately 10,500 potential release sites from which contaminants could migrate into the environment. Although virtually all of these sites have been at least partially characterized, final remedial action and/or regulatory decisions have not been made for most sites. Site specific assumptions regarding the amount and type of contamination and the remediation technologies that will be utilized were used in estimating the environmental restoration costs.

- The first geologic repository for high-level radioactive waste will open in 2010. At that time, it will accept spent nuclear fuel from commercial utilities. In 2016, the repository will begin accepting defense high-level waste and will begin accepting DOE-owned fuel shortly thereafter. An uncertainty relating to projected waste dispositioning costs is that current projections of legacy waste volume exceed storage capacity. This could result in significant cost growth in out years as additional storage capacity is acquired.

- Shipments to the Waste Isolation Pilot Plant (WIPP). In March 1999, WIPP opened and started receiving shipments of transuranic waste. In October 1999, the State of New Mexico issued the RCRA Part B permit for the disposal of mixed transuranic waste. At that time, DOE temporarily halted shipments to WIPP in order to implement the provisions of the permit. Shipments are expected to resume in FY 2000.

- Only existing technologies, such as pumping and treating groundwater, are assumed to be available for estimating cleanup costs. Estimates were based on remedies considered technically and environmentally reasonable and achievable by local project managers and appropriate regulatory authorities.

- Projects with no current feasible remediation approach are excluded from the baseline estimate. The cost estimate would be higher if some remediation were assumed for these areas for which complete cleanup is not technically feasible with existing technologies. However, because no effective remedial technology could be identified, no basis for estimating cost was available. Significant projects excluded are:
  - nuclear explosion test areas (e.g., Nevada Test Site);
  - large surface water bodies (e.g., Clinch and Columbia rivers); and
  - most contaminated ground water (even with treatment, future use will remain restricted)

In addition to the assumptions and exclusions identified above, another factor that could affect the certainty of the estimate includes the adjustment to FY 1999 dollars which is required under Federal accounting standards. Any potential increases caused by future inflation could result in costs that are substantially higher than the recorded liability.

15. Pension and Other Actuarial Liabilities *(in millions)*

	FY 1999	FY 1998
Contractor pension plans	$321	$314
Contractor postretirement benefits other than pensions	6,370	6,187
Contractor disability and life insurance plans	23	20
Total Pension and Other Actuarial Liabilities	$6,714	$6,521

Most of DOE's contractors have defined benefit pension plans under which they promise to pay specified benefits to their employees, such as a percentage of the final average pay for each year of service. DOE's cost under the contracts includes reimbursement of annual contractor contributions to these pension plans. DOE's contractors also sponsor postretirement benefits other than pensions (PRB) consisting of predominantly postretirement health care benefits. In the past, these costs were recognized on a pay-as-you-go or cash basis. Since DOE approves the contractors' pension and postretirement benefit plans and is ultimately responsible for funding the plans, the responsibility for any related liabilities rests with DOE.

DOE reimburses its major contractors for employee disability insurance plans and estimates are recorded as unfunded liabilities for these plans.

Contractor Pension Plans

DOE adopted SFAS No. 87, *Employers' Accounting for Pensions*, beginning in FY 1996 for contractor employees, for whom DOE has a continuing pension obligation. As of September 30, 1999, DOE has prepaid pension costs of $953 million and accrued pension costs of $301 million before minimum liability adjustment and $321 million after minimum liability adjustment. DOE has a continuing obligation for a variety of contractor-sponsored pension plans (41 qualified and 8 nonqualified). In this regard, benefit formulas consist of final average pay (32 plans), career average pay (9 plans), dollar per month of service (7 plans), and one defined contribution plan with future contributions for retired employees. Twenty-one of the plans cover nonunion employees only, 12 cover union employees only, and 16 cover both union and nonunion employees.

For qualified plans, DOE's current funding policy is for contributions made to a trust during a plan year for a separate defined benefit pension plan to not exceed the greater of: (1) the minimum contribution required by Section 302 of the Employee Retirement Income Security Act (ERISA) or (2) the amount estimated to eliminate the unfunded current liability as projected to the end of the plan year. The term "unfunded current liability" refers to the unfunded current liability as defined in Section 302(d)(8) of ERISA. For nonqualified plans, the funding policy is pay-as-you-go.

Plan assets generally include cash and equivalents, stocks, corporate bonds, government bonds, real estate, venture capital, international investments, and insurance contracts.

Assumptions and methods

In order to provide consistency among the various DOE contractors, certain standardized actuarial assumptions were used. These standardized assumptions include the discount rates, mortality assumptions, and an expected long-term rate of return on plan assets, salary scale, and any other economic assumption consistent with an expected long-term inflation rate of 3.0 percent for the entire U.S. economy with adjustments to reflect regional or industry rates as appropriate. In most cases, ERISA valuation actuarial assumptions for demographic assumptions were used.

The following specific assumptions and methods were used in determining the pension estimates:

The weighted average discount rates of 6.5 percent for FY 1999 and 7.0 percent for FY 1998 were used, the average long-term rate of return on assets was 8.15 percent in FY 1999 and 8.3 percent in FY 1998, and the average rate of compensation increase was 4.6 percent in FY 1999 and 4.9 percent in FY 1998 in determining the net periodic pension cost.

The weighted average discount rates used to determine the accrued benefit obligation and projected benefit obligation as of September 30, 1999 and 1998 were 7.5 percent and 6.5 percent, respectively.

Straight line amortization of unrecognized prior service cost over the average remaining years of service of the active plan participants and the minimum amortization of unrecognized gains and losses were used. The transition obligation was amortized over the greater of 15 years or the average remaining service.

Table 1 sets forth the accrued benefit obligation, projected benefit obligation, plan assets, and a reconciliation of the funded status to the prepaid/(accrued) pension cost after minimum liability. Table 2 sets forth the components of net periodic pension cost. Table 3 sets forth contributions and benefit payments.

Table 1	(in millions) September 30, 1999	September 30, 1998
Reconciliation of Funded Status:		
Accumulated Benefit Obligation	$11,236	$12,735
Effect of Future Compensation Increases	1,815	2,173
Projected Benefit Obligation	$13,051	$14,908
Plan Assets	21,245	20,135
Funded Status	$8,194	$5,227
Unrecognized Net (Asset)/Obligation at Transaction	(1,345)	(1,485)
Unrecognized Prior Service Cost	81	56
Unrecognized Actuarial (Gain)/Loss	(6,278)	(3,428)
Net Amount Recognized	$652	$370
Minimum Liability Adjustment	(27)	(130)
Prepaid/(Accrued) Benefit Cost after Minimum Liability	$625	$240
Total Prepaid Benefit Cost after Minimum Liability	946	554
Total (Accrued) Benefit Cost after Minimum Liability	($321)	($314)

In the interest of brevity, information regarding all defined benefit plans is summarized in a single table. Assets of one plan are not available to satisfy liabilities of another plan.

Table 2	(in millions) FY 1999	FY 1998
Components Net Periodic Pension Cost:		
Service Cost	$482	$421
Interest Cost	953	900
Actual Return on Plan Assets	(1,436)	(1,311)
Net Amortization and Deferral	(228)	(209)
Impact of Curtailment or Special Termination Benefits	5	8
Total Net Periodic Pension Cost	($224)	($191)

In 1999, expense of $0.09 million was recognized at Ames Laboratory for an early retirement window. The Ross Aviation plan terminated in 1999 resulting in a settlement loss of $1.43 million. Curtailment losses were realized at Babcock & Wilcox, Princeton, and Kaiser Hill due to staff reductions in the amounts of $1.13 million, $0.08 million, and $4.3 million, respectively. Lockheed Martin Energy Systems recognized a curtailment and settlement gain of $2.2 million due to the transfer of assets and liabilities to USEC. The accrued liability account of $0.4 million was reversed for the National Civilian Radioactive Waste Program non-qualified pension plan since DOE has determined that it has no continuing pension obligation with regard to this plan.

The aggregate pension benefit obligation and aggregate fair value of plan assets for plans with projected benefit obligations in excess of plan assets is $1,495 million and $1,292 million, respectively, as of September 30, 1999.

The aggregate pension accumulated benefit obligation and aggregate fair value of plan assets for pension plans with accumulated benefit obligations in excess of plan assets is $207 million and $154 million, respectively, as of September 30, 1999.

Table 3	(in millions) FY 1999	FY 1998
Employer Contributions	$61	$52
Participant Contributions	$4	$3
Benefit Payments	$745	$634

Contractor Postretirement Benefits Other Than Pensions

DOE adopted SFAS No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions*, beginning in FY 1994 for contractor employees for whom DOE has a continuing obligation. SFAS No. 106 requires that the cost of PRB be accrued during the years that the employees render service. As of September 30, 1999, DOE has an accrued PRB liability of $6,370 million. Prior to FY 1994, PRB costs, consisting of predominantly retiree health care, were recognized as expenses when claims were paid. Generally, the PRB plans are unfunded, and DOE's funding policy is to fund on a pay-as-you-go basis. There are 7 contractors, however, that are prefunding benefits in part as permitted by law. DOE's contractors sponsor a variety of postretirement benefits other than pensions. Benefits consist of medical (37 contractors), dental (16 contractors), life insurance (22 contractors), and Medicare Part B premium reimbursement (4 contractors). Thirty-three

of the contractors sponsor a traditional indemnity plan, a PPO, an HMO, or similar plan. Twenty of these also have a point of service plan, an HMO, or similar plan. Four additional contractors have only a point of service plan, an HMO, or similar plan.

Assumptions and methods

In order to provide consistency among the various DOE contractors, certain standardized actuarial assumptions were used. These standardized assumptions include medical and dental trend rates, discount rates, and mortality assumptions.

The following specific assumptions and methods were used in determining the PRB estimates:

The medical trend rates for under age 65 and the drug trend rates for under age 65 and over age 64 for a point of service plan, an HMO, or similar plan, grade from 7.5 percent in 1998 down to 5.0 percent in 2003 and later, and the medical trend rates for over age 64 grade from 6.5 percent in 1998 down to 5.0 percent in 2003 and later. The medical trend rates for under age 65 and the drug trend rates for under age 65 and over age 64 for a PPO, a traditional indemnity plan, or similar plan, grade from 9.0 percent in 1998 down to 5.0 percent in 2003 and later, and the medical trend rates for over age 64 grade from 8.0 percent in 1998 down to 5.0 percent in 2003 and later. The dental trend rates at all ages grade down from 6.5 percent in 1998 to 5.0 percent in 2003 and later.

The weighted average discount rates of 6.5 percent for FY 1999 and 7.0 percent for FY 1998 were used, and the average long-term rate of return on assets was 7.36 percent in FY 1999 and 7.11 percent in FY 1998 in determining the net periodic postretirement benefit cost. The rate of compensation increase was the same rate as each contractor used to determine pension contributions.

The weighted average discount rates used to determine the accumulated postretirement benefit obligation as of September 30, 1999 and 1998 were 7.5 percent and 6.5 percent, respectively.

Straight line amortization of unrecognized prior service cost over the average remaining years of service to full eligibility for benefits of the active plan participants and the minimum amortization of unrecognized gains and losses were used. DOE chose immediate recognition of the transition obligation existing at the beginning of FY 1994.

Table 4 sets forth the components of the accumulated postretirement benefit obligation, plan assets, and a reconciliation of the funded status to the accrued postretirement benefit liability. Table 5 sets forth the components of net periodic postretirement benefit cost. Table 6 sets forth the contributions and benefit payments.

		(in millions)
Table 4	*September 30, 1999*	*September 30, 1998*
Reconciliation of Funded Status:		
Accumulated Postretirement Benefit Obligation	$4,746	$5,393
Plan Assets	122	125
Funded Status	(4,624)	(5,268)
Unrecognized Prior Service Cost	(129)	(138)
Unrecognized (Gain)/Loss	(1,617)	(781)
Prepaid/(Accrued) Benefit Cost	($6,370)	($6,187)

		(in millions)
Table 5	*FY 1999*	*FY 1998*
Components of Net Periodic Benefit Cost:		
Service Cost	$164	$148
Interest Cost	341	323
Actual Return on Plan Assets	(8)	(9)
Net Amortization and Deferral	(66)	(84)
Impact of Curtailment	(60)	(9)
Total Net Periodic Postretirement Benefit Cost	$371	$369

In 1999, a curtailment loss of $0.06 million was recognized at Ames Laboratories for an early retirement window. A curtailment gain of $59.53 million was realized at Lockheed Martin Energy Systems as a result of the spinoff of liabilities to USEC.

An adjustment of $7.23 million reducing the Net Periodic Benefit Cost was recognized at Pacific Northwest Laboratory to recognize a reduction in the portion of the liability attributable to DOE.

Table 6	FY 1999	FY 1998
	(in millions)	
Employer Contributions	$181	$173
Participant Contributions	26	25
Benefit Payments	$207	$198

16. Contingencies

(in millions)

	FY 1999	FY 1998
Nuclear Waste Fund	$500	$500
Other	2	6
Total Contingencies	$502	$506

DOE is a party in various administrative proceedings, legal actions and tort claims which may ultimately result in settlements or decisions adverse to the Federal government. DOE has accrued contingent liabilities where losses are determined to be probable and the amounts can be estimated.
Other significant contingencies exist where a loss is reasonably possible, or where a loss is probable and an estimate cannot be determined. In some cases, a portion of any loss that may occur may be paid from Treasury's Judgment Fund. The following are significant contingencies:

- *Toxic Releases from DOE's Facilities*

  DOE's present and former contractors are defendants in a number of suits arising from alleged exposure to radioactive and/or other toxic materials, and from environmental contamination of air, water, and soil allegedly affecting the property values of lands in the vicinity of various DOE facilities. Collectively, in the most significant cases involving facilities at Rocky Flats, Colorado; Hanford, Washington; Brookhaven, New York; Paducah, Kentucky; and Mound and Piketon, Ohio, the claimants seek in excess of $12,100 million in damages. DOE's contractors are vigorously contesting all of these cases, and an evaluation of the likely outcome of these claims cannot be estimated at this time.

- *DOE's Waste Acceptance Obligation*

  The Office of Civilian Radioactive Waste Management (OCRWM) is involved with various matters of litigation relating to its obligation in a standard contract (Standard Contract) with utilities to initiate waste acceptance by January 31, 1998, the date specified in Nuclear Waste Policy Act of 1982 (NWPA), as amended. The Court of Appeals for the District of Columbia Circuit has ruled that the Standard Contract (1) imposes an unconditional obligation on DOE to initiate waste acceptance by January 31, 1998, and (2) offers a potentially adequate remedy for the failure of DOE to meet this obligation. *Indiana Michigan Power Co. v. U.S. Department of Energy*, 88 F.3d 1272 (D.C. Cir. 1996); *Northern States Power Co. v. U.S. Department of Energy*, 128 F.3d 754 (D.C. Cir 1997). In addition, the *Northern States* decision precludes DOE from invoking the unavoidable delays clause of the Standard Contract and from asserting traditional sovereign acts defenses in any suits for damages in the Court of Federal Claims. DOE did not appeal the decision in the *Indiana Michigan* case. DOE and the State of Michigan filed petitions for certiorari in the *Northern States* case, which the Supreme Court denied on November 30, 1998.

  These cases do not have a direct impact on the NWF because no contractual damages were sought and the Court denied equitable relief, such as an escrow of funds. Other similiar cases, which are in various stages of litigation, are based on the holdings in these two cases. Claims based on the decisions in the *Indiana Michigan* and *Northern States* cases could affect the NWF in various ways. If a court determines a contract holder must pursue its contractual remedies and proceed under the delays clause of the Standard Contract, the contract holder may be found eligible to receive equitable adjustments of its nuclear waste fees, thereby reducing revenues to the NWF. Alternatively, if a court were to determine a contract holder can pursue a damage suit for breach of contract, the contract holder may obtain a judgment against the Department for money damages. It is unclear whether such a judgment would be paid out of the Judgment Fund, the NWF, or some other source of funds. If a judgment were paid out of the Judgment Fund, there is a possibility that the Judgment Fund would ultimately have to be reimbursed by the NWF, or by other funds appropriated to the Department. If the size of the NWF were to be substantially affected by either equitable adjustments or payments of judgments, the Department might then be obligated to propose fee adjustments pursuant to the NWPA's "full cost recovery" provision, 42 U.S.C. 10222(a)(4). Any

such fee adjustments would be "across the board" and applicable to all utilities with currently operating reactors.

It is too early to evaluate the ultimate impact on the Fund of claims based on the decisions in the *Indiana Michigan* and *Northern States* cases. Resolution of any such claims will involve highly fact-specific and individualized decisions about the incremental costs incurred by each contract holder as a direct result of the delay of the Department in meeting its obligations under the Standard Contract. Estimating any such potential impacts is further complicated by recent, and apparently conflicting decisions rendered by the Court of Federal Claims. Although these decisions are being appealed, and are therefore not final, a preliminary analysis suggests that contract holders may not be entitled to any remedy other than those provided for in the Standard Contract. Thus, the Department may have no liability to make payments to contract holders to address the delay. However, contract holders may be eligible to receive credits against future payments into the NWF. It is not possible at this time to forecast accurately the potential impact on the NWF because of the large number of variables that cannot now be quantified with sufficient certainty. Any forecast at this time must necessarily be based on many assumptions concerning the current and future situations of the contract holders. For the most part, these assumptions relate to general categories of contract holders rather than individual contract holders. The Department currently has little data for individual contract holders as to their actual and projected storage costs, the extent to which such costs would not be incurred but for the delay, and the extent to which those incremental costs could be mitigated. In FY 1998, the Department estimated that its potential liabilities for credits against future payments might be between $500 million and $1 billion. While the Department's financial statements continue to reflect this estimate, it should be noted that the experience of the Department during the past year indicates that there is a very high degree of uncertainty about the assumptions upon which that estimate is based.

- *Uranium Enrichment Decontamination and Decommissioning Fund* - The Energy Policy Act of 1992 requires DOE to collect from domestic utilities up to $150 million a year (to be adjusted for inflation) for 15 years for deposit into the Uranium Enrichment Decontamination and Decommissioning (D&D) Fund, which is available to pay for cleaning up DOE's gaseous diffusion enrichment plants. Utilities have brought a number of lawsuits alleging that the assessment constitutes an unlawful retroactive price increase in breach of their contracts and violates both the Takings and Due Process clauses of the Fifth Amendment by imposing an unlawful retroactive burden upon utilities. The government has won one of those lawsuits, *Yankee Atomic Electric Co. v. United States*, and three others have been dismissed in the Court of Federal Claims and are on appeal to the Court of Appeals for the Federal Circuit.

  In an effort to evade the precedential effect of the *Yankee Atomic* decision, most of the utilities are now pursuing similar claims in either the United States District Court for the District of Columbia or the United States District Court for the Southern District of New York, where the current focus is on the jurisdictional issue of whether the cases belong in the Court of Federal Claims or the District Courts.

  DOE will continue to vigorously contest all challenges to the D&D Fund. As noted above, the cases in the United States Court of Federal Claims are subject to the favorable precedent of the *Yankee Atomic* case, however, it is difficult to predict the outcome of the utilities' efforts to pursue their claims in the District Courts which are not bound by the *Yankee Atomic* precedent. In Yankee Atomic, the plaintiff utility sought review by the Supreme Court, which was denied, and DOE anticipates that both the Federal government and utilities will exhaust all avenues for appeal in the remaining cases. Should DOE ultimately lose, the assessments could be declared unconstitutional or otherwise invalid. Future collections could be enjoined and DOE could be required to repay prior assessments which commenced in FY 1993 from either the D&D Fund or the Judgment Fund. Through 1999, the utilities paid $1,113 million into the D&D Fund and remained liable for $1,049 million in future assessments.

- *Natural Resource Damage Claims* - DOE is disclosing a contingency for potential natural resource damage (NRD) claims filed under the Comprehensive Environmental Response, Compensation, and Liability Act. Such liabilities could result from potential claims filed against DOE for natural resource injuries, primarily those remaining at DOE facilities after cleanup. Although any estimate of such liability is by necessity extremely speculative, the estimated range of DOE's NRD liability is $1,400 million to $2,500 million.

  Notwithstanding the potential for such claims, there neither are currently pending claims against DOE for injuries caused at DOE sites nor have there been any successful NRD claims against DOE. DOE's practice of addressing natural resource injuries during the remedy selection process should

limit the exposure to potential NRD claims. DOE has initiated other efforts as well that are intended to minimize the potential for NRD claims. These efforts include: creating site-specific advisory boards at its facilities; ensuring participation of interested parties in the remedial planning process; and forming natural resource trustee councils at facilities where there is sufficient interest. In view of the foregoing, DOE currently considers estimating its potential NRD liability speculative and any potential payment less than probable but reasonably possible. Therefore, DOE has not recognized specific figures representing NRD liability in its financial statements to date.

The State of New Mexico has recently filed a claim it values at $260 million for injuries to ground water resources at a third party site, South Valley near Albuquerque. DOE's liability, if any, would be paid from the Judgment Fund.

- *Remediation Subcontract Claim* - In 1998, DOE's former contractor for the Idaho National Engineering and Environmental Laboratory (INEEL), Lockheed Martin Idaho Technologies Co. (LMITCO), terminated the Pit 9 Comprehensive Demonstration Project Subcontract with Lockheed Martin Advanced Environmental Systems, Inc. (LMAES) for default and thereafter filed suit against LMAES in the United States District Court for the District of Idaho seeking return of $54 million LMITCO had advanced for that subcontract and for other additional remedies. In response, Lockheed Martin Corporation and LMAES have sued the United States in the United States Court of Federal Claims alleging, *inter alia*, that there was a direct contractual relationship between LMAES and DOE and that termination for default was improper. In furtherance of the latter theory, Lockheed has filed a certified contract claim with LMITCO for $317 million. The Claims Court has deferred DOE's motion to dismiss for lack of jurisdiction pending completion of discovery Lockheed claims is necessary for a proper determination of the jurisdictional issue.

17. Unexpended Appropriations *(in millions)*

	FY 1999	FY 1998
Unobligated		
(a) Available	$2,077	$1,613
(b) Unavailable		
Bonneville Power Administration	313	185
Reimbursable work orders accepted in excess of apportionment authority	262	367
Other appropriations	489	490
Total unobligated - unavailable	$1,064	$1,042
Total unobligated	$3,141	$2,655
Undelivered orders	6,350	6,246
Unfilled customer orders	(1,717)	(1,702)
Advances	(242)	(232)
Apportioned not available	326	85
Power marketing administrations	(1,075)	(693)
Funded environmental liabilities		
Other revolving and special funds	(614)	(610)
Total Unexpended Appropriations	$6,169	$5,749

FY 1998 amounts have been restated to conform with the FY 1999 presentation. These restatements were primarily the result of:

- reclassification of $1,074 million of BPA's unobligated balance from available to unavailable following clarification of Treasury guidance.
- restatement of unobligated balances related to USEC. This includes a restatement of Unobligated balance - unavailable for other appropriations, to include a fund balance of $482 million resulting from a transfer from USEC to the Department (see Note 12). In addition, this includes restatement of other revolving and special fund balances primarily as a result of excluding USEC's unobligated balance. This balance is reported as a liability on the Department's balance sheet.
- restatement of the funded environmental liability balance. In the prior year financial statements, the unexpended appropriations footnote disclosed a reduction of $918 million for funded environmental liabilities. This amount was reported in the cumulative results of operations. The balance has been restated from cumulative results of operations to unexpended appropriations to be consistent with OMB's budget execution reporting guidance.

18. Supporting Schedule of Net Cost for Energy Resources *(in millions)*

	FY 1999		FY 1998	
Power Technologies				
Program Cost	$323		$329	
Less Earned Revenues	(2)		--	
		$321		$329
Building Technology, State and Community Programs		255		310
Federal Energy Management Program		23		23
Industrial Technology		163		163
Transportation Technology		277		256
Coal Research and Development		124		116
Petroleum Reseach and Development		43		66
Gas Reseach and Development		129		128
Clean Coal Technology		55		93
Strategic Petroleum Reserve		318		209
Nuclear Energy Research Initiative		6		
Naval Petroleum Reserves				
Operating Costs	$38		$68	
Less Earned Revenues	(10)		(11)	
Net Operating Loss of Naval Petroleum Reserves	$28		$57	
Less Gain on Sale of NPR-1			(2,848)	
Net Loss (Revenue) of Naval Petroleum Reserves		28		(2,791)
Power Marketing Administrations				
Cost of Sales	$3,099		$3,063	
Less Earned Revenues	(3,226)		(3,113)	
Net Revenue of Power Marketing Administrations		(127)		(50)
Other Energy Resources Activities		36		44
Less Other Earned Revenues				(2)
Total Energy Resources Net Costs (Revenues)		$1,651		($1,106)

FY 1998 amounts have been restated to conform with the FY 1999 presentation.

ENERGY RESOURCES ACTIVITIES - encourage energy efficiency; advance alternative and renewable energy technologies; increase energy choices for all consumers; assure adequate supplies of clean, conventional energy; and reduce U.S. vulnerability to external energy supply disruptions.

Power Technologies - research and development programs that contribute to strengthening the Nation's energy security, providing a cleaner environment, enhancing global sales of U.S. energy products, and increasing industrial competitiveness and Federal technology transfer. Activities range from basic cost-shared research in universities and national laboratories to applied research, development, and field validations in full partnership with private sector manufacturers.

Building Technology, State and Community Programs - research and development to improve the energy efficiency of appliances, building equipment, and the building envelope complemented by programs designed to move advanced technologies into the marketplace and produce near-term energy savings with associated economic and environmental benefits.

Federal Energy Management Program - Reduction in the cost of government by advancing energy efficiency and water conservation, and the use of solar and other renewable energy as a means to reduce energy costs. Major emphasis is placed on using private sector investments to retrofit Federal facilities using energy savings performance contracting, thus stretching federal leveraging to the maximum.

Industrial Technology - cost shared research in critical technology areas identified by industry, with focus on high-risk but promising technologies that decrease industry's use of raw materials and depletable energy and reduce their generation of wastes and pollutants.

Transportation Technology - development and commercialization of transportation technologies which can radically alter current projections of U.S. and world demand for energy, particularly oil, and reduce the associated environmental impacts such as greenhouse gas emissions.

Coal Research and Development - research and development of coal technologies to meet future national energy and environmental demands and to position the U.S. coal industry to respond to growing export market opportunities while maintaining our national energy security.

Petroleum Research and Development - research and development of increased domestic oil production technology, enhanced processing and utilization technologies, and reservoir life extension.

Gas Research and Development - research and development of natural gas exploration, production, processing, and storage technologies.

Clean Coal Technology - joint federal and private industry development of promising advances in coal-based technologies and demonstration of commercial marketplace potential.

Strategic Petroleum Reserve - operation and maintenance of the U.S.'s emergency stored oil supply at four sites in Texas and Louisiana. FY 1999 costs include a $70 million write-off of facilities and a $41 million write-off of unrecoverable oil related to the decommissioning of the Weeks Island storage facility.

Nuclear Energy Research Initiative - supports an R&D effort to address the key issues confronting nuclear power. Through the cooperative work of universities, laboratories, and industry participants, research focuses on the development of advanced nuclear technologies. Key areas of research and development include advanced (Generation IV) reactor designs, reactor and power conversion cycles, improved reactor systems, improved reactor and fuel proliferation resistance, advanced fuels, amelioration of nuclear waste, improved economics and enhanced safety. Also included is supporting work in the areas of material science, chemical science, computer science, and other areas of basic research.

Naval Petroleum Reserves - The Naval Petroleum and Oil Shale Reserves consist of three government-owned oil fields and three oil shale reserves in the western United States. Crude oil, natural gas, and natural gas liquids produced from the Naval Petroleum Reserves are sold to public customers at bid prices. Proceeds from these sales and royalties from leased acreage are returned to Treasury.

Prior to its sale in FY 1998, the Naval Petroleum Reserve No. 1, Elk Hills, was jointly owned by the United States Government and Chevron USA Inc. (Chevron). The assets of two of the oil shale reserves were written off in conjunction with the transfer of the reserves to the Department of the Interior in FY 1999. These assets had a net book value of $10 million.

Net Gain from the Sale of (NPR-1)

As required by the FY 1996 National Defense Authorization Act, DOE sold its interest in NPR-1. It was originally set aside to ensure a future source of crude oil for the U.S. Navy. The field no longer served a national security purpose and was sold to Occidental Petroleum Corporation in February 1998. Pursuant to Congressional directive, 9 percent of the net sale proceeds was set aside in a special Treasury account (Elk Hills School Land Fund) and will be paid out to the State of California over a seven-year period. In FY 1999, $36 million was transferred from this fund to the State of California.

As part of DOE's termination agreement with Chevron, $323 million of the sales proceeds were placed in an escrow fund in FY 1998. Likewise, Chevron provided DOE with a $215 million letter of credit. These two reserves will assure each party that funds will be available when a final determination is made on the settlement of NPR-1 partnership equities. As of the end of FY 1999, approximately $288 million of the balance in DOE's escrow fund is being held for the contingency payment to Chevron, Inc., pending the outcome of the equity finalization. The remaining $35 million is reserved for possible reprogramming for other DOE unfunded requirements.

The following schedule reflects the computation of the net gain on the sale of NPR-1.

	FY 1998
Sales price	$3,650
Cost of sales	
Commissions and divestiture expenses	20
Elk Hills School Land Fund	298
Net book value of assets sold	484
Total cost of sales	$802
Gain on Sale of Elk Hills	$2,848

Power Marketing Administrations

DOE's power marketing administrations market electricity generated primarily by Federal hydropower projects. Preference for the sale of power is given to public bodies and cooperatives. Revenues from selling power and transmission services are used to repay Treasury annual appropriations and maintenance costs, repay the capital investments with interest, and assist capital repayment of other features and certain projects.

19. Supporting Schedule of Net Cost for National Security *(in millions)*

	FY 1999		FY 1998	
Stockpile Stewardship		$1,784		$1,683
Stockpile Management		1,920		2,387
Verification and Control Technology		493		505
Uranium Programs - Downblend HEU at Portsmouth		20		33
International Nuclear Safety		94		89
Naval Reactors		638		680
Nuclear Safeguards and Security		105		96
Intelligence		38		35
Counterintelligence		13		6
Emergency Management/Preparedness		36		31
Worker and Community Transition		50		69
Fissile Materials Disposition		110		110
Russian Origin Uranium Sales				
Cost of Sales	$5		($4)	
Less Earned Revenues	(6)		(3)	
		(1)		(7)
Total National Security Net Costs		$5,300		$5,717

FY 1998 amounts have been restated to conform with the FY 1999 presentation.

NATIONAL SECURITY ACTIVITIES - effectively support and maintain a safe and reliable enduring nuclear weapons stockpile without underground nuclear testing; safely dismantle and dispose of excess weapons; and provide technical leadership for national and global nonproliferation activities.

Stockpile Stewardship - research, development, and engineering support necessary to maintain a safe and reliable U.S. nuclear weapons stockpile, which requires sustaining core competencies, nuclear weapons laboratories, and the Nevada Test Site, and enhancing computational and simulation capabilities.

Stockpile Management - physical maintenance of the U.S. nuclear weapons stockpile, including: continual surveillance and retirement and disposal of weapons: pursuing a dual-track new tritium source: maintaining a worldwide nuclear/radiological accident response capability; and maintaining the infrastructure at the production plants.

Verification and Control Technology - conduct research and development to provide the science and technology required for treaty monitoring, material control, and early detection and characterization of the proliferation of weapons of mass destruction and special nuclear materials, including arms control treaty verification; intelligence collecting and processing supporting Presidential arms control and nonproliferation initiatives; and provide intelligence support in assessing nuclear threats.

Uranium Programs - Downblend HEU at Portsmouth - downblend HEU hexafluoride to LEU hexafluoride for use in filling the USEC commercial orders for enrichment services and safeguarding of all HEU material at the Portsmouth site.

International Nuclear Safety - enhance the safety of Soviet-designed nuclear power plants, help host countries upgrade their nuclear safety cultures and supporting infrastructures, reduce the proliferation threats posed by plutonium and HEU materials available in Russia and other states of the Former Soviet Union and cooperate and coordinate with other Departmental Offices and Government Agencies in the implementation of U.S. Non-Proliferation Policy by increasing confidence that Russian LEU sold to the USEC is derived from HEU removed from dismantled Russian nuclear weapons.

Naval Reactors - design, development, testing, and production of safe, long-lived, militarily-effective nuclear power plants for U.S. Navy ships and submarines, including over 100 operating reactors in nine different operational classes.

Nuclear Safeguards and Security - provide direction and training for protection of nuclear weapons, nuclear materials, classified information, and facilities, including related technology development, and directing classification and declassification activities.

Intelligence - provides the Department, other U.S. Government policy makers, and the Intelligence Community with timely, accurate, high impact foreign intelligence analyses and provides quick-turnaround, specialized technology applications and operational support to the intelligence, special operations, and law enforcement communities. Ensures that the Department's technical, analytical, and research expertise is made available to the Intelligence Community in accordance with Executive Order 12333, "United States Intelligence Activities."

Counterintelligence - enhances the protection of sensitive technologies, information, and expertise against foreign intelligence and terrorist attempts to acquire nuclear weapons information or advanced technologies from the Department's National Laboratories.

Emergency Management/Preparedness - control and direction to ensure comprehensive and integrated planning, preparedness, and response capability for emergencies involving DOE operations or facilities.

Worker and Community Transition - mitigate adverse impact on workers and communities resulting from restructuring, including local economic assistance for job-base conversion.

Fissile Materials Disposition - provide safe, secure, environmentally sound, and inspectable long-term storage of weapons-usable fissile materials; disposal of surplus HEU and plutonium; and technical support for U.S. initiatives to reduce foreign surplus of weapons-usable plutonium.

Sale of Russian Origin Uranium

Section 3112(b) of the USEC Privatization Act of 1996 provided that the USEC, pursuant to the Russian HEU Agreement, transfer to DOE the natural uranium equivalent associated with at least 18 metric tons of Russian origin HEU purchased from the Russian Executive Agent. The Russian HEU Agreement was executed to help meet U.S. nuclear nonproliferation objectives as well as to provide greater economic stability to Russia. A total of 5,521 metric tons of natural uranium was transferred to DOE in December 1996, in accordance with a memorandum of agreement between USEC and DOE.

In accordance with the provisions of the Act, DOE must sell this uranium over a seven-year period. From FY 1997 through FY 1998, DOE shipped 1,742 metric tons to Global Nuclear Services and Supply Limited, the Russian Executive Agent's representative, who had the exclusive right to purchase this material through December 31, 1998. This leaves 3,779 metric tons of the original 5,521 metric tons that may be sold by the DOE to other buyers. The USEC Privatization Act allows DOE to sell this material beginning in 2001 for end use in 2002 and beyond at no more than 3 million pounds per year.

On March 24, 1999, the United States and Russian Federation signed multiple government-to-government agreements. As a result of those agreements, the Department purchased 11,000 metric tons of uranium from the 1997 and 1998 deliveries under the Russian HEU Agreement using $325 million appropriated by Congress, in Public Law 105-277, which was signed by the President on October 21, 1998. Additionally, the Department agreed to stockpile 22,000 metric tons of uranium (including the 11,000 metric tons that was purchased from Russia) for ten years prior to disposition.

P.L. 105-277 also stipulated that a precondition of DOE's purchase of the 1997-98 material was an agreement between Russia and a Western consortium (Cameco, Cogema, USEC) to provide for purchases by the consortium of the natural uranium component applicable to the period from 1999 through 2013. With the execution of this agreement, DOE should have no further obligation to purchase Russian uranium.

20. Supporting Schedule of Net Cost for Environmental Quality *(in millions)*

	FY 1999		FY 1998	
Site Project Completion		$1,155		$937
Defense Facilities Closure Projects		1,403		1,369
Post 2006 Completion		2,524		2,923
Technology Development		294		341
Defense Facility Closure and Energy & Water Development Y2K Requirements		12		
Uranium Enrichment Decontamination and Decommissioning				
Program Costs	$240		$298	
Less Earned Revenues	(123)		(98)	
		117		200
Civilian Radioactive Waste Management				
Program Costs	$376		$428	
Less Earned Revenues	(179)		(216)	
		197		212
Termination Costs		110		121
Uranium Programs		95		55
Fast Flux Test Facility		36		
Legacy Waste Cleanup Adjustment		(5,361)		(5,927)
Total Environmental Quality Net Costs		$582		$231

FY 1998 amounts have been restated to conform with the FY 1999 presentation. Significant restatements involved the reclassification of costs for the Facility Safety ($88 million) and Health Studies ($75 million) responsibility segments to Other Programs for consistency with DOE's budget structure.

ENVIRONMENTAL QUALITY ACTIVITIES - understand and reduce environmental, safety, and health risks and threats and develop the technologies and institutions required for solving domestic and global environmental problems.

Site/Project Completion - provides for cleanup for sites and/or projects that will be completed by FY 2006 at national laboratories and other facilities where DOE will continue to conduct missions beyond 2006.

Defense Facilities Closure Projects - provides for cleanup of designated sites for accelerated closure. EM's goal is to cleanup these sites by 2006. After the cleanup mission is complete at these sites, no further Departmental mission is envisioned, except for long-term surveillance and maintenance and the sites will be available for alternative uses.

Post 2006 Completion - provides for cleanup projects that are projected to continue well beyond 2006. As cleanup is completed, it will be necessary for EM to maintain a presence at most sites to monitor, maintain, and provide information on the contained residual contamination. These activities will be necessary to ensure that the reduction in risk to human health is maintained.

Technology Development - research and development of new more effective and less expensive technological remedies to the environmental and safety problems of the Environmental Management Program. The new technologies are necessary to reduce risks to humans and the environment, reduce cleanup cost, and resolve significant related problems for which no solutions currently exist. Operating expenditures related to legacy waste cleanup activities represent a reduction of DOE's environmental liabilities and are therefore reflected as a legacy waste cleanup adjustment. These costs are excluded from current year program expenses since the expense was accrued in prior years when DOE recorded the environmental liabilities.

Defense Facilities Closure Projects and Energy & Water Y2K Requirements - ensures information technology that is used or acquired is year 2000 compliant, in accordance with Public Law 105-277, the FY 1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act.

Uranium Enrichment Decontamination and Decommissioning - consists of remedial action and other related environmental clean-up activities at sites leased and operated by the USEC, including DOE facilities at these sites, and, additionally, provides for partial reimbursement of remediation costs attributable to other uranium and thorium purchased by the Federal government. Revenue from assessments against domestic utilities is recognized when such assessments are authorized by legislation. Revenue recognized includes known adjustments for transfers between utilities and other reconciliation adjustments. Increases in current and future assessments due to changes in the Consumer Price Index are recognized in each fiscal year as such changes occur.

Civilian Radioactive Waste Management - development and management of a permanent Federal repository for spent nuclear fuel from civilian reactors and high-level radioactive waste from atomic energy defense activities in a manner that assures public and worker safety and protects the environment. The Nuclear Waste Policy Act of 1982 requires DOE to assess fees against owners and generators of high-level radioactive waste and spent nuclear fuel to fund the costs associated with management and disposal activities under Titles I and II of the Act. Fees assessed in FY 1999 and FY 1998 totaled $992 million and $934 million, respectively. Adjustments are made annually to defer the recognition of revenues until earned (i.e, as costs are incurred for the Civilian Radioactive Waste Management program).

Termination Costs - cost-effectively shut down terminated Federal programs and conduct the activities necessary to place unneeded Federal nuclear research facilities into an industrially and radiologically safe shutdown condition.

Uranium Programs - manage the Department's excess uranium and depleted uranium hexafluoride inventories, pre-existing contractual liabilities, and maintain nonleased facilities in a safe and environmentally sound condition.

Fast Flux Test Facility - is a U.S. Government-owned 400 megawatt, sodium-cooled reactor located on the Hanford Site near Richland, Washington that operated from 1982 to 1992 in support of materials testing for nuclear fusion and fission programs. The reactor is currently maintained in a safe and environmentally-compliant standby condition, while the Department conducts a National Environmental Policy Act (NEPA) review to evaluate the environmental effects associated with managing the nuclear R&D infrastructure to meet new mission needs, including either restart or deactivation of the Fast Flux Test Facility. A decision is expected early in the fiscal year 2001.

Legacy Waste Cleanup Adjustment - operating expenditures related to legacy waste cleanup activities which represent a reduction of DOE's environmental liabilities. These costs are excluded from current year program expenses since the expense was accrued in prior years when DOE recorded the environmental liabilities.

21. Supporting Schedule of Net Cost for Science and Technology *(in millions)*

	FY 1999		FY 1998	
Biological and Environmental Research		$397		$387
Fusion Energy Sciences				
Program Costs	$224		$233	
Less Earned Revenues	--		(1)	
		224		232
Basic Energy Sciences		670		654
High Energy Physics		678		638
Nuclear Physics		327		258
Computational and Technology Research		144		156
Superconducting Super Collider		1		6
Small Business Innovative Research/Technology Transfer		88		94
University and Science Education				4
Technical Information Management Program		10		10
University Nuclear Science and Reactor Support		10		8
Advanced Radioisotope Power System		45		32
Isotope Production and Distribution				
Program Costs	$30		$36	
Less Earned Revenues	(9)		(12)	
		21		24
Other Energy Research Activities		4		2
Total Science and Technology Net Costs		$2,619		$2,505

FY 1998 amounts have been restated to conform with the FY 1999 presentation.

SCIENCE AND TECHNOLOGY ACTIVITIES - provide science and tools needed to develop energy technology options, to understand the health and environmental implications of energy activities, and to understand the fundamental nature of energy and matter; provide large scale facilities required in natural sciences to ensure U.S. leadership in the search for knowledge; and apply research and development competencies to help ensure the availability of scientific talent.

Biological and Environmental Research - fundamental science in the pursuit of understanding the consequences to health and the environment of energy production, development, and use, including DOE's support of the national Human Genome and Global Climate Change programs, and providing unique national user facilities for the scientific community.

Fusion Energy Sciences - research and development needed for an economically and environmentally attractive fusion energy source, namely advancing plasma science, developing fusion science, technology, and plasma confinement innovations, and pursuing fusion energy science and technology as a partner in the international effort.

Basic Energy Sciences - fundamental research on materials sciences, chemical sciences, geosciences, biosciences, and engineering sciences that underpins the DOE missions in energy and the environment, that advances energy related basic science on a broad front, and that provides unique national user facilities for the scientific community.

High Energy Physics - research to understand the nature of matter and energy at the most fundamental level, as well as the basic forces which govern all processes in nature, that requires accelerators and detectors utilizing state-of-the-art technologies in many areas, including fast electronics, high speed computing, superconducting magnets, and high power radio-frequency devices.

Nuclear Physics - research to understand the structure and properties of atomic nuclei and the fundamental forces between the constituents that form the nucleus. Nuclear processes determine essential physical characteristics of our universe and the composition of the matter that forms it.

Computational and Technology Research - research that extends from fundamental investigations to technology development, which includes high performance computing and communications, information infrastructure, advanced energy concepts, and technology transfer research.

Superconducting Super Collider - expenditures are for the orderly termination of this activity.

Small Business Innovative Research/Small Business Technology Transfer - DOE-supported research and development of energy related technology that will significantly benefit U.S. businesses, including a pilot technology transfer program initiative.

University and Science Education - provides assistance in science education (precollege through postdoctoral), including reactor fuel assistance, scientific instrumentation, and technology transfer.

Technical Information Management Program - activities to direct, coordinate, and implement the management and dissemination of scientific and technical information resulting from DOE research and development and environmental programs. The program also provides worldwide energy information to the DOE, U.S., industry, academia, and the public through scientific and technical information exchange agreements.

University Nuclear Science and Reactor Support - maintain the capability in the U.S. to conduct research, address pressing environmental challenges, and preserve the nuclear energy option.

Advanced Radioisotope Power System - development, demonstration, testing, and delivery of radioisotope power systems.

Isotope Production and Distribution - serve the national need for a reliable supply of isotope products and services for medicine, industry, and research by developing new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest.

22. Supporting Schedule of Net Cost for Other Programs *(in millions)*

	FY 1999		FY 1998	
Inspector General		$31		$27
Energy Information Administration		72		68
Facility Safety		73		88
Health Studies		91		75
Federal Energy Regulatory Commission				
Program Costs	$193		$192	
Less Earned Revenues	(206)		(192)	
		(13)		0
Reimbursable Work Programs				
Program Costs				
Intragovernmental	$1,292		$1,300	
Public	539		194	
Less Earned Revenues				
Intragovernmental	(1,254)		(1,258)	
Public	(508)		(180)	
		69		56
Services Provided for the U.S. Enrichment Corporation				
Program Costs			$324	
Less Earned Revenues				
Intragovernmental			(324)	
				0
Technology Transfer Activities				
Program Costs	$86		$82	
Less Earned Revenues	(89)		(85)	
		(3)		(3)
Other Goods and Services Provided				
Program Costs				
Intragovernmental	$34		$22	
Public	40		56	
Less Earned Revenues				
Intragovernmental	(42)		(29)	
Public	(73)		(92)	
		(41)		(43)
Other Programs				
Program Costs			$12	
Less Earned Revenues			(24)	
				(12)
Total Other Programs Net Costs		$279		$256

FY 1998 amounts have been restated to conform with the FY 1999 presentation. Significant restatements involved the reclassification of costs for the Facility Safety and Health Studies responsibility segments from the Environmental Quality business line for consistency with DOE's budget structure.

Office of Inspector General - The Office of Inspector General conducts investigations, audits, and inspections to detect and prevent fraud, abuse, and violations of law, and promotes economy, efficiency, and effectiveness of DOE operations.

Energy Information Administration - The Energy Information Administration functions as an independent statistical/analytical agency, develops and maintains a comprehensive energy database, publishes a wide variety of energy reports and analysis as required by law, and responds to energy information inquiries from DOE decision and policymakers, the Congress, other government entities, and the general public. Information disseminated includes data on energy reserves, production, distribution, consumption, prices, technology, and related international economic and financial market information.

Facility Safety - The Office of Environmental Safety and Health Evaluation provides Departmental management with technical assistance and conducts independent oversight in areas of nuclear safety, occupational health and safety, environmental compliance implementation assistance including the National Environmental Policy Act activities, safeguards and security, and safety assistance. These are the bases for such initiatives as the Integrated Safety Management System formulated for improving safety DOE-wide.

Health Studies - The Office of Environmental Safety and Health Evaluation conducts health studies which include Occupational Medicine which is medical surveillance of current and former workers, Epidemiologic Studies which is surveillance of worker injury and illnesses, Public Health Activities which encompasses health studies, health education, and other health related activities at DOE sites, International Health Programs which provide health related studies and activities in the Marshall Islands, the former Soviet Union, and Japan through the Radiation Effects Research Foundation.

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is an independent regulatory organization within DOE which is responsible for setting rates and charges for the transportation and sale of natural gas and for the transmission and sale of electricity and the licensing of hydroelectric power projects. FERC assesses most of its administrative program costs as an annual charge to each regulated entity. These revenues are returned to the Department of Treasury when collected.

Reimbursable and Cooperative Work

DOE performs work for other Federal agencies and private companies on a reimbursable work basis and on a cooperative work basis. Whereas reimbursable work is generally not DOE's direct mission, but part of the customer's mission, cooperative work is part of DOE's direct mission. Reimbursable work is financed by funds of Federal agencies ordering the work or by cash advances from non-Federal customers, and DOE receives no appropriated funds for such work or services. Cooperative work, however, is financed by funds appropriated to DOE that may be used in a cooperative effort with one or more Federal or non-Federal participants. Authorities for DOE to perform reimbursable work include the Economy Act of 1932, the Atomic Energy Act of 1954, Intergovernmental Cooperation Act of 1968, Intergovernmental Personnel Act of 1970, and DOE Organization Act of 1977. Authorities for performance of cooperative work include Public Law 98-438, the Energy Reorganization Act of 1974, section 107(a), and Public Law 95-224, the Federal Grant and Cooperative Agreements Act of 1977.

DOE's policy is to establish prices for materials and services provided to public entities at the Department's full cost and to other Federal agencies at the Department's full cost less depreciation. In some cases, the full cost information reported by DOE in accordance with OMB's Statement of Federal Financial Accounting Standards Number 4, *Managerial Cost Accounting Concepts and Standards for the Federal Government*, exceeds revenues. This results from implementation of provisions contained in the Economy Act of 1932, as amended, the Atomic Energy Act of 1954, as amended, and the National Defense Authorization Act for Fiscal Year 1999 which provide DOE authority to charge customers an amount less than the full cost of the product or service.

OMB's Statement of Federal Financial Accounting Standards Number 7, *Accounting for Revenue and Other Financing Sources*, requires that when goods and services are provided to the public or another Federal agency, reporting entities should disclose practices where revenue received is less than the full cost of the goods and services provided, as well as an estimate, if practicable, of the amount of revenue foregone. The amount for reimbursable and cooperative work was estimated by computing the difference between the full cost reported for the financial statement purposes, including appropriate allocations of costs, and the revenue reported for financial statement purposes, including collections of the Federal administrative charge. Accordingly, DOE estimates revenue foregone for reimbursable and cooperative work activities for FY 1999 and FY 1998 of $69 million and $56 million respectively.

Services Performed for the U.S. Enrichment Corporation

USEC leases DOE's gaseous diffusion plants. While DOE does not receive payment from USEC for the lease, USEC does pay for all services provided by DOE or its contractors. Most of the reimbursements are for the cost of providing electricity to operate the gaseous diffusion plants.

Technology Transfer Program

DOE has entered into cooperative research and development agreements to increase the transfer of Federally funded technologies to the private sector for the benefit of the U.S. economy. This program is primarily implemented through Cooperative Research and Development Agreements between DOE's laboratories and the private sector (may include

industry, non-profits, universities, state or local governments, or individuals). The non-Federal party may provide funds, personnel, services, facilities, equipment or other resources to conduct specific research and development work consistent with the mission of the laboratory.

23. Costs Not Assigned to Programs *(in millions)*

	FY 1999	FY 1998
Changes in unfunded environmental liabilities estimates (see Note 14)	22,092	12,202
Change in unfunded safety and health liabilities (see Note 13)	(372)	890
Change in unfunded liability for USEC (see Note 27)		(242)
Contingent liability for NWF (see Note 16)		500
Other costs	48	59
Total Costs Not Assigned to Programs	$21,768	$13,409

FY 1998 amounts have been restated to conform with the FY 1999 presentation.

24. Prior Period Adjustments *(in millions)*

	FY 1999	FY 1998
Environmental liabilities	($28,485)	$106
Nuclear Waste Fund	($226)	
Write-down of legacy waste facilities and equipment	(1,774)	(173)
Highly enriched uranium valuation allowance		154
Other	143	52
Total Prior Period Adjustments	($30,342)	$139

FY 1998 amounts have been restated to conform with the FY 1999 presentation. Restatements resulted primarily from the correction of a $171 million amount reported in error as a component of Other Prior Period Adjustments. An offsetting error resulted in overstating the Urealized Holding Gain (Loss) on Investments. This amount has also been restated.

Environmental liabilities

In response to an audit finding by the Office of Inspector General, the Department improved its cost estimating guidelines for establishing contingencies/uncertainties, which resulted in a prior period adjustment to the environmental liability.

Nuclear Waste Fund

An analysis conducted in FY 1999 identified several errors in prior period calculations of unexpended appropriations and cumulative results of operations for the Nuclear Waste Fund. As a result, a prior period adjustment was made in FY 1999 to correct the net position balance for the Fund.

Write-down of legacy waste facilities and equipment

DOE changed its capitalization practices related to environmental management processing facilities and equipment during FY 1995. DOE implemented the guidance of the Financial Accounting Standards Board Emerging Issues Task Force Issue 90-8, Capitalization of Costs to Treat Environmental Contamination. This guidance requires the expensing of facilities that treat, store, or dispose of existing wastes generated by past operations (legacy facilities and equipment). Analysis conducted in FY 1999 and FY 1998 identified additional facilities and equipment resulting in write-downs of capitalized property.

Highly enriched uranium valuation allowance

As the result of a Record of Decision issued in July 1996, regarding the disposition of surplus HEU, DOE established a valuation allowance to reduce the carrying value of 26.1 metric tons of this material to be converted to waste. After further evaluation, it was determined that the majority of the material was already in the form of irradiated fuel, which required no processing prior to disposal. Previous guidance provided to field sites had advised them to revalue their irradiated fuel inventory to zero. Based on the above, the allowance of $154 million duplicated actions already taken and was reduced to zero in FY 1998.

25. Statement of Budgetary Resources

FY 1998 amounts have been restated to conform with the FY 1999 presentation. Clarification of Treasury guidance regarding the reporting criteria for budgetary resources and unobligated balances required these changes. These restatements were primarily the result of:

- restatement of BPA's budgetary resources to include BPA's borrowing authority of $253 million
- reclassification of $1,074 million of BPA's available unobligated balance to unavailable.
- restatement of USEC's beginning unobligated balance and the unobligated balance to include a fund balance transferred of $482 million from USEC to the Department during FY 1997.

26. Transfers Out

(in millions)

	FY 1999	FY 1998
Proceeds from the sale of NPR-1		($3,321)
Proceeds from the sale of oil Naval Petroleum Reserves	(6)	(21)
Oil Transferred from the Department of the Interior	96	
Federal Energy Regulatory Commission Revenues	(196)	(175)
Other	(7)	(74)
Total Transfers Out	($113)	($3,591)

FY 1998 amounts have been restated to conform with the FY 1999 presentation.

27. Financing Sources Yet to Be Provided

(in millions)

	FY 1999	FY 1998
Changes in unfunded environmental liabilities estimates (see Note 14)	$22,092	$12,202
Change in unfunded safety and health liabilities (see Note 13)	(372)	890
Change in unfunded liability for USEC		(242)
Change in unfunded actuarial liabilities	(194)	(27)
Nuclear Waste Fund contingent liability accrual (see Note 16)		500
Other unfunded liability changes	(46)	(57)
Total Financing Sources Yet to be Provided	$21,480	$13,266

FY 1998 amounts have been restated to conform with the FY 1999 presentation. The restatement resulted primarily from a reclassification of the NWF contingent liability accrual on the Statement of Financing from the Other Resources that do not Fund Net Cost of Operations.

United States Enrichment Corporation

In December 1994, DOE and USEC signed a memorandum of agreement (MOA) relating to the transfer of functions and activities from DOE to USEC. The MOA provides for DOE to reimburse USEC for costs associated with bringing two Gaseous Diffusion Plants (GDPs) into compliance with Nuclear Regulatory Commission standards (i.e., nuclear safety upgrades). DOE also agreed to assume the costs for closing out the Determination Order transferring DOE's uranium enrichment function to USEC. Accordingly, a $242 million liability was established in FY 1997. On May 18, 1998, DOE signed an amendment to the December 1994, MOA whereby DOE would transfer 3.8 million KgU of natural uranium and 45 metric tons of LEU to USEC in full satisfaction of DOE's liabilities with respect to the nuclear safety upgrades and the Determination Order. A second amendment to the December 1994, MOA was also signed on May 18, 1998. This amendment provided for DOE to transfer an additional 0.8 metric tons of HEU, valued at approximately $35 million, to USEC. DOE in turn received an offsetting credit against amounts owed USEC for services they provided at the two GDPs. Both transfers were effected in May 1998.

28. Custodial Activities

Power Marketing Administrations

The Southeastern, Southwestern, and Western Area power marketing administrations are responsible for collecting and remitting to the Department of Treasury revenues attributable to the hydroelectric power projects owned and operated by the U.S. Department of Defense, Army Corps of Engineers; the U.S. Department of Interior, Bureau of Reclamation, and the U.S. Department of State, International Boundary and Water Commission. These revenues are reported as custodial activities of DOE.

Petroleum Pricing Violation Escrow Fund

Custodial revenues for the Petroleum Pricing Violation Escrow Fund result primarily from interest earned from investment of the fund balance, which is invested in U.S. Treasury Bills and Certificates of Deposit with minority owned financial institutions, pending determination of the disposition of the funds. Funds are disbursed to individuals and groups who are able to provide proof of financial injury related to the violations of Petroleum Pricing Regulations during the 1970's and early 1980's. The Department's Office of Hearings and Appeals also distributes funds to the U.S. Treasury and to the States, Possessions and Territories of the United States.

29. Subsequent Events

Proposed Beryllium Compensation Program

On November 17, 1999, the Administration transmitted legislation to the Congress to establish a program to compensate current and former Department contractor and federal workers, and employees of companies which sold beryllium to the Department, who are disabled or have died from beryllium exposure at Department nuclear facilities or at plants that processed beryllium for the Department. Beryllium has been used at 20 Department sites with an estimated 20,000 workers that may have been exposed. This legislation would also establish compensation programs for a small group of workers at the Oak Ridge facility with a variety of possibly occupation-related illnesses and for workers at the Paducah facility exposed to radioactive contaminants. The cost of the benefits to be paid under the proposed beryllium compensation program cannot be reasonably estimated at this time.

Decontamination and Decommissioning Cost Estimates

In January 2000, the Department announced that it would block the release into commerce of volumetrically contaminated materials. Expected revenue from the recycle of volumetrically contaminated materials is a component of the environmental liability estimate associated with the decontamination and decommissioning of diffusion facilities located in Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. While this decision by the Department will have an impact on the Government's environmental liability for decontamination and decommissioning of diffusion facilities, the Department believes that this programmatic change will not have a significant impact on the total environmental liability for the Department.

Consolidating Schedules - Balance Sheets
As of September 30, 1999 and 1998

(in millions)	FY 1999 Federal Energy Regulatory Commission	FY 1999 Power Marketing Administrations	FY 1999 All Other DOE Programs	FY 1999 Eliminations	FY 1999 Consolidated	FY 1998 Federal Energy Regulatory Commission	FY 1998 Power Marketing Administrations	FY 1998 All Other DOE Programs	FY 1998 Eliminations	FY 1998 Consolidated
ASSETS										
Intra-governmental										
Fund balance with Treasury	$38	$871	$10,621		$11,530	$36	$777	$10,356		$11,169
Investments			10,460		10,460			10,200		10,200
Accounts Receivable, Net		13	1,991	($1,499)	505		14	1,658	($1,190)	482
Regulatory Assets		5,228			5,228		5,228			5,228
Other Assets			7	(1)	6			7	(2)	5
Investments			263		263			263		263
Accounts Receivable, Net	7	345	4,165		4,517	8	343	4,216		4,567
Inventory, Net										
Strategic Petroleum Reserve			15,143		15,143			15,087		15,087
Nuclear Materials			21,911		21,911			21,728		21,728
Other Inventory		84	424		508		89	414		503
General Property, Plant, and Equipment, Net	18	5,029	13,454		18,501	19	5,004	14,817		19,840
Regulatory Assets		7,706			7,706		8,031			8,031
Other Assets		229	1,262		1,491		216	611		827
Total Assets	$63	$19,505	$79,701	($1,500)	$97,769	$63	$19,702	$79,357	($1,192)	$97,930
LIABILITIES										
Intra-governmental Liabilities										
Accounts Payable	$1	$13	$67	($13)	$68	$1	$3	$89	($14)	$79
Debt		8,789			8,789		8,906			8,906
Appropriated Capital Owed to Treasury		2,057			2,057		1,986			1,986
Deferred Revenues			1,164	(835)	329		2	943	(653)	292
Other Liabilities	1	49	183		233		82	199	(1)	280
Accounts Payable	6	221	2,854		3,081	6	290	2,967		3,263
Debt		6,778			6,778		7,056			7,056
Deferred Revenues	9	473	12,614		13,096	10	437	11,061		11,508
Environmental Liabilities			231,292	(652)	230,640			186,414	(524)	185,890
Pension and Other Actuarial Liabilities			6,714		6,714			6,521		6,521
Other Liabilities	31	112	3,575		3,718	27	130	3,814		3,971
Contingencies			502		502			506		506
Total Liabilities	$48	$18,492	$258,965	($1,500)	$276,005	$44	$18,892	$212,514	($1,192)	$230,258
NET POSITION										
Unexpended Appropriations	6	11	6,152		6,169	9	18	5,722		5,749
Cumulative Results of Operations	9	1,002	(185,416)		(184,405)	10	792	(138,879)		(138,077)
Total Net Position	$15	$1,013	($179,264)	$0	($178,236)	$19	$810	($133,157)	$0	($132,328)
Total Liabilities and Net Position	$63	$19,505	$79,701	($1,500)	$97,769	$63	$19,702	$79,357	($1,192)	$97,930

Consolidating Schedules of Net Cost

For the Years Ended September 30, 1999 and 1998

(in millions)	FY 1999					FY 1998				
	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated
Costs										
Energy Resources										
Program Costs		$3,099	$1,790		$4,889		$3,063	$1,805		$4,868
Net Gain on Sale of Naval Petroleum Reserves								(2,848)		(2,848)
Earned Revenues		(3,226)	(12)		(3,238)		(3,113)	(13)		(3,126)
Net Cost of Energy Resources Programs		($127)	$1,778		$1,651		($50)	($1,056)		($1,106)
National Security										
Program Costs			$5,306		$5,306			$5,720		$5,720
Earned Revenues			(6)		(6)			(3)		(3)
Net Cost of National Security Programs			$5,300		$5,300			$5,717		$5,717
Environmental Quality										
Program Costs			$1,153	($269)	$884			$953	($408)	$545
Earned Revenues			(302)		(302)			(314)		(314)
Net Cost of Environmental Quality Programs			$851	($269)	$582			$639	($408)	$231
Science & Technology										
Program Costs			$2,649	($21)	$2,628			$2,537	($19)	$2,518
Earned Revenues			(9)		(9)			(13)		(13)
Net Cost of Science & Technology Programs			$2,640	($21)	$2,619			$2,524	($19)	$2,505
Other Programs										
Program Costs	$193		$2,342	($84)	$2,451	$192		$2,328	($80)	$2,440
Earned Revenues	(206)		(2,050)	84	(2,172)	(192)		(2,072)	80	(2,184)
Net Cost of Other Programs	($13)		$292	$0	$279	$0		$256	$0	$256
Costs Not Assigned to Programs			21,897	(129)	21,768			13,389	20	13,409
Net Cost of Operations	($13)	($127)	$32,758	($419)	$32,199	$0	($50)	$21,469	($407)	$21,012

Consolidating Schedules of Changes In Net Position
For the Years Ended September 30, 1999 and 1998

(in millions)	FY 1999 Federal Energy Regulatory Commission	FY 1999 Power Marketing Administrations	FY 1999 All Other DOE Programs	FY 1999 Eliminations	FY 1999 Consolidated	FY 1998 Federal Energy Regulatory Commission	FY 1998 Power Marketing Administrations	FY 1998 All Other DOE Programs	FY 1998 Eliminations	FY 1998 Consolidated
Net Cost of Operations	$13	$127	($32,758)	$419	($32,199)		$50	($21,469)	$407	($21,012)
Financing Sources (Other Than Exchange Revenues)										
Appropriations Used	174	13	17,688	(398)	17,477	168	6	17,100	(388)	16,886
Taxes (and Other Non-Exchange Revenues)					0			2		2
Imputed Financing	8	28	60		96	8	8	63		79
Transfers-in			(1,009)	1,111	102			(1,166)	1,167	1
Transfers-out	(196)	(2)	1,115	(1,132)	(215)	(175)	(15)	(2,216)	(1,186)	(3,592)
Net Results of Operations	($1)	$166	($14,904)	$0	($14,739)	$1	$49	($7,686)	$0	($7,636)
Prior Period Adjustments (Note 24)		44	(30,386)		(30,342)		26	113		139
Net Change in Cumulative Results of Operations	($1)	$210	($45,290)	$0	($45,081)	$1	$75	($7,573)	$0	($7,497)
Unrealized Holding Gain (Loss) on Investments			(1,247)		(1,247)			774		774
Increase (Decrease) in Unexpended Appropriations	(3)	(7)	430		420	(3)	17	(663)		(649)
Change in Net Position	($4)	$203	($46,107)	$0	($45,908)	($2)	$92	($7,462)	$0	($7,372)
Net Position - Beginning of Period	19	810	(133,157)		(132,328)	21	718	(125,695)		(124,956)
Net Position - End of Period	$15	$1,013	($179,264)	$0	($178,236)	$19	$810	($133,157)	$0	($132,328)

Consolidating Schedules of Budgetary Resources
For the Years Ended September 30, 1999 and 1998

(in millions)	FY 1999 Federal Energy Regulatory Commission	FY 1999 Power Marketing Administrations	FY 1999 All Other DOE Programs	FY 1999 Eliminations	FY 1999 Consolidated	FY 1998 Federal Energy Regulatory Commission	FY 1998 Power Marketing Administrations	FY 1998 All Other DOE Programs	FY 1998 Eliminations	FY 1998 Consolidated
BUDGETARY RESOURCES										
Budgetary Authority	170	499	18,287	(398)	18,558	165	498	17,164	(388)	17,439
Unobligated Balances - Beginning of Period	3	523	2,193		2,719	6	488	2,429		2,923
Spending Authority from Offsetting Collections		2,816	2,093	(86)	4,823		2,637	2,057	(83)	4,611
Adjustments		(162)	(308)		(470)	1	(259)	(162)		(420)
Total Budgetary Resources	$173	$3,676	$22,265	($484)	$25,630	$172	$3,364	$21,488	($471)	$24,553
STATUS OF BUDGETARY RESOURCES										
Obligations Incurred	169	2,773	20,030	(484)	22,488	169	2,843	19,380	(471)	21,921
Unobligated Balances Available	4	591	1,482		2,077	3	336	1,251		1,590
Unobligated Balances - Not Available		312	753		1,065		185	857		1,042
Total, Status of Budgetary Resources	$173	$3,676	$22,265	($484)	$25,630	$172	$3,364	$21,488	($471)	$24,553
OUTLAYS										
Obligations Incurred	169	2,773	20,030	(484)	22,488	169	2,843	19,380	(471)	21,921
Less Spending Authority from Offsetting Collections and Adjustments		(2,819)	(2,111)		(4,930)	(1)	(2,639)	(2,082)		(4,722)
Obligated Balance, Net - Beginning of Period	21	345	7,709		8,075	19	211	7,671		7,901
Obligated Balance Transferred, Net			(548)		(548)			2		2
Less Obligated balance, Net - End of Period	(20)	(237)	(7,644)		(7,901)	(21)	(345)	(7,709)		(8,075)
Total Outlays	$170	$62	$17,436	($484)	$17,184	$166	$70	$17,262	($471)	$17,027

Consolidating Schedules of Financing
For the Years Ended September 30, 1999 and 1998

(in millions)	FY 1999 Federal Energy Regulatory Commission	FY 1999 Power Marketing Administrations	FY 1999 All Other DOE Programs	FY 1999 Eliminations	FY 1999 Consolidated	FY 1998 Federal Energy Regulatory Commission	FY 1998 Power Marketing Administrations	FY 1998 All Other DOE Programs	FY 1998 Eliminations	FY 1998 Consolidated
OBLIGATIONS AND NONBUDGETARY RESOURCES										
Obligations Incurred	$169	$2,773	$20,030	($484)	$22,488	$169	$2,843	$19,380	($471)	$21,921
Less Spending Authority from Offsetting Collections and Adjustments										
Earned Reimbursements										
Collected		(2,742)	(2,153)	67	(4,808)		(2,613)	(2,152)	84	(4,681)
Receivable from Federal Sources		(1)	9		8		(1)	58		57
Change in Unfilled Orders (Decreases) Increases		(23)	(35)	(1)	(59)		(1)	(51)	(1)	(53)
Recoveries of Prior-Year Obligations		(2)	(18)		(20)	(1)	(2)	(25)		(28)
Financing Imputed for Cost Subsidies	8	28	60		96	8	7	64		79
Transfers Out	(196)	(2)	106	(21)	(113)	(175)	(15)	(3,382)	(19)	(3,591)
Exchange Revenues Not in the Budget			(287)		(287)			(310)		(310)
Other		(166)			(166)		(212)			(212)
Total Obligations as Adjusted, and Nonbudgetary Resources	($19)	($135)	$17,712	($419)	$17,139	$1	$6	$13,582	($407)	$13,182
RESOURCES THAT DO NOT FUND NET COST OF OPERATIONS										
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	4	(23)	(7)		(26)		(3)	79		76
Costs Capitalized on the Balance Sheet										
General Property, Plant, and Equipment	(1)	(292)	(1,290)		(1,583)	(3)	(37)	(1,234)		(1,274)
Purchases of Inventory		2	(582)		(580)			(463)		(463)
Financing Sources That Fund Costs of Prior Periods			(5,862)	129	(5,733)		(27)	(6,274)	(20)	(6,321)
Other		159	(2)		157		(339)			(339)
Total Resources that Do Not Fund Net Cost of Operations	$3	($154)	($7,743)	$129	($7,765)	($3)	($406)	($7,892)	($20)	($8,321)
COSTS THAT DO NOT REQUIRE RESOURCES										
Depreciation and Amortization	3	370	1,100		1,473	2	414	1,480		1,896
Revaluation of Assets and Liabilities			(141)		(141)			(167)		(167)
Loss on Disposition of Assets					0			484		484
Other		(208)	221		13		(65)	737		672
Total Costs That Do Not Require Resources	$3	$162	$1,180		$1,345	$2	$349	$2,534	$0	$2,885
FINANCING SOURCES YET TO BE PROVIDED (Note 26)			21,609	(129)	21,480		1	13,245	20	13,266
NET COST OF OPERATIONS	($13)	($127)	$32,758	($419)	$32,199	$0	($50)	$21,469	($407)	$21,012

Consolidating Schedules of Custodial Activities
For the Years Ended September 30, 1999 and 1998

(in millions)	FY 1999					FY 1998				
	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated
SOURCES OF COLLECTIONS										
Cash Collections										
Power marketing administrations		$537			$537		$428			$428
Petroleum Pricing Violation Escrow Fund			$72		72			$74		74
Other	3				3	3				3
Net Collections	$3	$537	$72		$612	$3	$428	$74		$505
Accrual Adjustment										
Power marketing administrations					0		12			12
Petroleum Pricing Violation Escrow Fund			(51)		(51)			(50)		(50)
Total Revenue	$3	$537	$21		$561	$3	$440	$24		$467
DISPOSITION OF REVENUE										
Transferred to Others										
Treasury		(536)			(536)		(440)			(440)
Other	(3)		(32)		(35)	(3)		(54)		(57)
Increase (Decrease) in Amounts to be Transferred		(1)	75		74			53		53
Collections Used for Refunds and Other Payments					0			(2)		(2)
Retained by DOE			(64)		(64)			(21)		(21)
Net Custodial Activity	$0	$0	$0		$0	$0	$0	$0		$0

Required Supplementary Information

This section of the report provides required supplementary information for the Department on deferred maintenance, stewardship and, intra-governmental balances.

- **Deferred maintenance information** is a requirement under the Office of Management and Budget's Statement of Federal Financial Accounting Standards No. 6, *Accounting for Property, Plant and Equipment* and Statement of Federal Financial Accounting Standards No. 14, *Amendments to Deferred Maintenance* and requires deferred maintenance to be disclosed as of the end of the fiscal year. Deferred maintenance is defined in Standard No. 6 as "maintenance that was not performed when it should have been or was scheduled to be and which, therefore, is put off or delayed for a future period." Estimates were developed for (1) structures and facilities and (2) capital equipment.

- **Stewardship information** is a requirement of the Office of Management and Budget's Statement of Federal Financial Accounting Standards No. 8, *Supplementary Stewardship Reporting*. Standard No. 8 requires Federal agencies to report on certain resources entrusted to it, identified as stewardship property, plant, and equipment and stewardship investments. To meet this requirement, the Department is reporting information on its research and development activities.

- **Intra-governmental balances** reporting is required in the Office of Management and Budget's Technical Amendments to Office of Management and Budget's Bulletin 97-01, *Form and Content of Agency Financial Statements*. Under the Technical Amendments, the Department is required to report on its intra-governmental balances for assets and liabilities.

Required Deferred Maintenance Information

Structures and Facilities

- The condition assessment survey (periodic inspections) method was used in measuring a deferred maintenance estimate for buildings and other structures and facilities except for some structures and facilities where a physical barrier was present (e.g., underground pipe systems). In those cases, where a deficiency is identified during normal operations and correction of the deficiency is past due, a deferred maintenance estimate would be applicable. Also, where appropriate, results from previous condition assessments have been adjusted to estimate current plant conditions. Deferred maintenance for excess property was reported only in situations where maintenance is needed for worker and public health and safety concerns.

- In accordance with standards identified in the National Association of College and University Business Officers, in managing the facilities portfolio, the acceptable operating condition standard is equal to a Facility Condition Index (FCI) of 5 percent.

- An amount of $1,136 million of deferred maintenance was estimated to return the assets to acceptable operating condition. The percentage of active buildings above acceptable operating condition is estimated at 85.19 percent.

Capital Equipment

- Pursuant to the cost/benefit considerations provided in SFFAS No. 6, the Department has determined that the requirements for deferred maintenance reporting on personal property (capital equipment) is not applicable to property items with an acquisition cost of less than $100,000, except in situations where maintenance is needed to address worker and public health and safety concerns.

- Various methods were used for measuring deferred maintenance and determining acceptable operating condition for capital equipment including periodic condition assessments, physical inspections, review of work orders, manufacturer and engineering specifications, and other methods, as appropriate.

- An amount of $2.2 million of deferred maintenance was estimated to return the assets to acceptable operating condition.

Required Supplementary Stewardship Report for Research and Development
(Dollars in Thousands)

	Fiscal Year 1999				Fiscal Year 1998			
	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs
BASIC								
Energy Resources				**$26,596**				**$45,215**
Power Technologies	17,189	2,385	19,574		26,969	9,231	36,200	
Coal Research and Development	2,826	286	3,112		1,943	383	2,326	
Power Marketing Administrations	–	–	3,000		–	–	3,016	
Other Energy Resources Activities	732	178	910		3,379	294	3,673	
National Security				**$2,519**				**$11,246**
Verification and Control Technology	2,294	225	2,519		9,582	1,664	11,246	
Environmental Quality				**$72,755**				**$67,012**
Technology Development	60,103	12,652	72,755		57,386	9,626	67,012	
Science and Technology				**$2,369,844**				**$2,345,193**
Biological and Environmental Research	314,125	8,829	322,954		303,722	31,015	334,737	
Fusion Energy Sciences	197,142	26,642	223,784		202,857	21,966	224,823	
Basic Energy Science	585,284	91,301	676,585		571,788	82,251	654,039	
High Energy Physics	548,658	128,315	676,973		494,312	144,551	638,863	
Nuclear Physics	265,062	61,641	326,703		205,695	51,336	257,031	
Computational and Technology Research	49,691	2,793	52,484		121,857	13,293	135,150	
Superconducting Super Collider	8	692	700		4,379	1,852	6,231	
Small Business Innovative Research/Technology Transfer	83,816	3,873	87,689		90,186	4,133	94,319	
Other Energy Research Activities	1,886	86	1,972		–	–	–	
Total Basic	**$2,128,816**	**$339,898**	**$2,471,714**		**$2,094,055**	**$371,595**	**$2,468,666**	

Required Supplementary Stewardship Report for Research and Development
(Dollars in Thousands)

	Fiscal Year 1999				Fiscal Year 1998			
	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs
APPLIED								
Energy Resources				$382,826				$370,764
Power Technologies	140,133	12,608	152,741		112,086	11,900	123,986	
Building, Technology, State and Community Programs	25,300	2,233	27,533		4,021	478	4,499	
Industrial Technology	–	–	–		29,280	3,245	32,525	
Transportation Technology	58,892	6,285	65,177		51,803	5,184	56,987	
Coal Research and Development	47,105	4,769	51,874		48,582	9,585	58,167	
Petroleum Research and Development	13,354	2,920	16,274		22,989	3,257	26,246	
Gas Research and Development	42,578	10,226	52,804		43,759	7,480	51,239	
Power Marketing Administrations	–	–	10,470		--	--	10,470	
Other Energy Resources Activities	4,790	1,163	5,953		5,380	1,265	6,645	
National Security				$1,346,345				$1,331,833
Stockpile Stewardship	1,085,516	119,716	1,205,232		985,968	153,593	1,139,561	
Stockpile Management	55,544	15,869	71,413		36,709	22,320	59,029	
Verification and Control Technology	62,912	6,788	69,700		113,727	19,516	133,243	
Environmental Quality				$147,447				$206,318
Technology Development	61,323	25,624	86,947		115,141	27,180	142,321	
Civilian Radioactive Waste Management	59,006	1,494	60,500		62,108	1,889	63,997	
Science and Technology				$144,361				$24,231
Biological and Environmental Research	51,613	1,399	53,012		-	-	-	
Computational and Technology Research	84,592	6,764	91,356		19,553	1,018	20,571	
University and Science Education	(7)	–	(7)		3,409	251	3,660	
Total Applied	**$1,792,651**	**$217,858**	**$2,020,979**		**$1,654,515**	**$268,161**	**$1,933,146**	

Required Supplementary Stewardship Report for Research and Development

	Fiscal Year 1999				Fiscal Year 1998			
	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs	Direct Costs	Allocable Costs	Total Costs	Total Business Line Costs
DEVELOPMENT								
Energy Resources				**$659,551**				**$691,872**
Power Technologies	132,012	12,993	145,005		102,005	10,554	112,559	
Building Technology, State and Community Program	22,804	1,891	24,695		16,161	1,656	17,817	
Industrial Technology	131,175	18,513	149,688		91,686	10,099	101,785	
Transportation Technology	145,605	16,930	162,535		150,534	15,697	166,231	
Coal Research and Development	44,278	4,483	48,761		46,639	9,202	55,841	
Petroleum Research and Development	21,788	4,765	26,553		34,483	4,886	39,369	
Gas Research and Development	61,271	14,716	75,987		65,638	11,221	76,859	
Clean Coal Technology	-	-	-		84,795	8,639	93,434	
Nuclear Energy Research Initiative	5,866	350	6,216		-	-	-	
Power Marketing Administrations	--	--	11,600		-	-	17,144	
Other Energy Resources Activities	6,849	1,662	8,511		8,982	1,851	10,833	
National Security				**$1,263,341**				**$1,266,798**
Stockpile Stewardship	463,390	60,448	523,838		410,294	74,349	484,643	
Verification and Control Technology	95,237	11,313	106,550		85,860	16,053	101,913	
Naval Reactors	588,597	(8,157)	580,440		588,534	33,560	622,094	
Intelligence	4,375	266	4,641		-	-	-	
Fissile Materials Disposition	43,906	3,966	47,872		49,533	8,615	58,148	
Environmental Quality				**$240, 325**				**$76,344**
Technology Development	91,984	38,435	130,419		56,711	13,387	70,098	
Termination Costs	81,937	27,475	109,412		--	--	--	
Uranium Programs	1,401	(907)	494		5,880	366	6,246	
Science and Technology				**$44,987**				**$31,731**
Advanced Radioisotope Power System	40,433	4,554	44,987		27,931	3,800	31,731	
Total Development	**$1,982,908**	**$213,696**	**$2,208,204**		**1,825,666**	**223,935**	**2,066,745**	
TOTAL RESEARCH & DEVELOPMENT	**$5,904,375**	**$771,452**	**$6,700,897**		**$5,574,236**	**$863,691**	**$6,468,557**	

Required Supplementary Stewardship Report for Research and Development

Energy Resources

Building Technology, State & Community Programs
Applied & Development - Activities related to energy conservation for the building sector, including residential building, commercial building and retrofit technologies.

Coal R&D *Basic, Applied & Development* - Activities related to improving acceptable technology for converting coal to liquid and gaseous fuels, improving methods for the direct combustion of coal, and advancing power conversion systems for generating electricity from coal.

Gas R&D *Applied & Development* - Activities carried out in support of natural gas recovery methods.

Industrial Technology *Development* - Activities conducted to support energy conservation and energy supply for the industry sector.

Other Energy Resources Activities *Basic, Applied & Development* - Cooperative research activities carried out as a result of awards from competitive solicitations initiated under the Fossil energy Federal/State Program. *Applied & Development* - Also included research conducted on the mining safety and health programs.

Nuclear Energy Research Initiative *Development* - Activities carried out to address key issues affecting the future of Nuclear Energy.

Petroleum R&D *Applied & Development* - Activities conducted to support advanced technologies for the petroleum and oil from oil shale recovery of oil and natural gas, technologies and development in drilling, offshore oil production and refining, and characterization and utilization research.

Power Marketing Administrations *Basic, Applied & Development* - Research activities primarily supported the Fish and Wildlife programs at Bonneville Power Administration.

Power Technologies *Basic, Applied & Development*
Research was conducted in solar technologies and other renewable energy programs, including electric energy, geothermal, photovoltaic, hydrogen and hydropower.

Transportation Technology *Applied & Development* - Activities conducted in support of energy conservation for the transportation sector, including automotive alternative fuels and electric vehicles.

National Security

Fissile Materials Disposition *Development* - Activities included the development and demonstration of technologies that enable the Department and the world to dispose of surplus weapons effectively.

Intelligence *Development* - Activities associated with assessing science and technologies and accomplishing the Intelligence Program.

Naval Reactors *Development* - Activities included development, demonstration, improvement, and safe operation of nuclear propulsion plants and reactor cores for application to submarines and surface ships.

Stockpile Management *Applied* - Research activities supporting new technological capabilities necessary to maintain the nuclear weapons stockpile's safety and reliability.

Stockpile Stewardship *Applied* - Research activities supporting new or upgraded experimental, computational, and simulation capabilities necessary to maintain the nuclear weapons stockpile's safety and reliability. *Development* - Development activities supporting the technical, experimental, and physical infrastructure necessary to maintain the nuclear weapons stockpile's safety and reliability.

Verification and Control Technology *Basic, Applied & Development* - This program utilizes unique science and technology development capabilities at the Department's National Laboratories to reduce the threat to U.S. National Security posed by weapons of mass destruction.

Required Supplementary Stewardship Report for Research and Development

Environmental Quality

Civilian Radioactive Waste Management *Applied* - Research activities were carried out on the long-term storage of high energy nuclear waste in a permanent underground repository.

Technology Development *Basic, Applied & Development* - Activities related to environmental cleanup, waste management and related technologies and technology integration.

Termination Costs *Development* - Activities related to phase out of selected nuclear research and development programs and the shut down of selected nuclear energy test facilities.

Uranium Programs *Development* - Activities involved the development and demonstration of enrichment related technologies and the conversion or alternative uses of depleted uranium hexafluoride.

Science and Technology

Advanced Radioisotope Power System *Development* - Activities provided compact, safe nuclear power systems and related technologies to space, national security and other customers.

Basic Energy Science *Basic* - Research activities carried out in nuclear sciences, materials sciences, chemical sciences, engineering geosciences, energy biosciences, advanced energy projects and advanced mathematical sciences.

Biological and Environmental Research *Basic* - Research activities developed knowledge needed to identify, understand, and anticipate the long term health and environmental consequences of energy production, development, and use. *Applied* - Research activities included developing beneficial applications of nuclear and other energy-related technologies for medical diagnosis and treatment.

Computational and Technology Research *Basic* - Fundamental research was conducted in advanced computing research relevant to complex problems of the Department. Provided world class supercomputer and networking facilities for scientists working on problems important to the Department. Conducted activities to establish the feasibility of novel, energy related concepts spanning the Department's mission. *Applied* - Research activities supported high risk, energy-related research to advance science and technology to enable applications impacting energy economy.

Fusion Energy Sciences *Basic* - Broad-based, fundamental research efforts aimed at producing knowledge on fusion.

High Energy Sciences *Basic* - Fundamental research activities directed at understanding the nature of matter and energy.

Nuclear Physics *Basic* - Research activities were directed at understanding the fundamental forces and particles of nature as manifested in nuclear matter.

Other Energy Research Activities *Basic* - The Energy Research Analyses program evaluated the quality and impact of DOE research programs and projects.

Small Business Innovative Research Technology *Basic* - Activities supported the Department's science and technology missions with small businesses.

Superconducting Super Collider *Basic* - This program continued to incur termination costs from the Super Conducting Super Collider, a high energy physics facility.

University and Science Education *Applied* - This program had responsibility for ensuring the Department effectively utilized and leveraged the resources of its laboratory based system to support mathematics and science education.

Schedule of Intra-Governmental Assets and Liabilities
As of September 30, 1999
(in millions)

Intra-Governmental Assets

Agency	Fund Balance with Treasury	Investments	Accounts Receivable	Regulatory Assets	Other
Treasury	$11,530	$10,460	$122		
U.S. Army Corps of Engineers			1	$4,280	
Department of the Interior			2	948	
Department of the Navy			99		
Department of the Army			63		
Office of the Secretary of Defense			56		
Department of the Air Force			48		
Tennessee Valley Authority			22		
General Services Administration			8		
Defense Nuclear Agency			7		
Other			77		$6
Total	**$11,530**	**$10,460**	**$505**	**$5,228**	**$6**

Intra-Governmental Liabilities

Agency	Accounts Payable	Debt	Appropriated Capital Owed to Treasury	Deferred Revenues	Other
Treasury	$5	$8,789	$2,057		$69
Tennessee Valley Authority				$304	
Office of the Secretary of Defense	9				106
Department of the Interior	18				
Department of Agriculture	17				
Department of Labor					15
General Services Administration	8			3	
Office of Personnel Management					10
Other	11			22	33
Total	**$68**	**$8,789**	**$2,057**	**$329**	**$233**

Detailed Performance Results

The Government Performance and Results Act of 1993 requires Federal agencies to report performance results annually. A summary of DOE's FY 1999 performance results is contained in the Overview section of this report. The following pages contain detailed information on the results achieved for all commitments contained in the Secretary's FY 1999 Performance Agreement with the President.

The commitments and supporting performance measures are arranged along the Department's business lines and strategic objectives. Each commitment and measure has an assessment of the Department's performance. The following terms are used to describe the Department's performance:

Exceeded Goal	The results were significantly more than planned.
Met Goal	The results met the target performance level or were slightly above the target.
Nearly Met Goal	The performance was less than the target level but not significantly less.
Below Expectations	The results were significantly less than the target.
Unspecified	End of year results were not available at the time of printing.

A "Plan of Action" is included for measures where performance was "Below Expectations." Some measure that indicate an assessment of "Nearly Met Goal" also have a "Plan of Action."

ENERGY RESOURCES

ER 1-1. Boosting the Nation's Production of Domestic Oil. Support research and development, policies, and improved regulatory practices capable of ending the decline in domestic oil production before 2005. **Assessment:** Met Goal

Success will be measured by:

- *Demonstrate four advanced production enhancement technologies that could ultimately add 190 million barrels of domestic reserves, including 30 million barrels during FY 1999.*

Results: Advanced technologies for improved reservoir management/pressure maintenance and advanced drilling and completion technologies are boosting productivity of mature oil reservoirs in New Mexico and California. Four technology demonstrations have achieved important production and reserve increases even though the full benefits will not be achieved for several years. Technology 1, targeted horizontal drilling offshore California, has almost doubled production. Technology 2, thermal consolidation of sand in the Wilmington, California field, is saving $90,000 to $150,000 per well. Technology 3, advanced reservoir management methods for slope and basin clastic reservoirs, will raise production from 10 percent to 45 percent of oil in place. Technology 4, advanced reservoir characterization for waterflood management, has produced over 50,000 barrels from five well recompletions, and the entire project is expected to produce almost 6 million barrels of additional oil. These projects provided 40 million barrels of incremental oil reserves during FY 1999. **Assessment:** Exceeded Goal

- *Complete an online environmental compliance expert system, developed in cooperation with States, that will improve oil and gas production economics by giving producers online access to Federal and State rules and regulations and allow them to conduct environmental permitting and reporting over the Internet, reducing time and costs related to environmental compliance.*

Results: The online environmental compliance expert system has been completed and a website server is available on the National Petroleum Technology Office web page. The prototype Federal regulatory website has been updated with regulatory information and given a new format that serves as a foundation for the expert system to answer producers' questions on compliance with Federal environmental laws. For State systems, completed a model for State oil and gas regulatory websites with the Interstate Oil and Gas Compact Commission and the State of Indiana. Indiana will help other States implement similar websites. **Assessment:** Nearly Met Goal

ER 1-2. Maintaining an Effective Strategic Petroleum Reserve. Maintain an effective Strategic Petroleum Reserve (SPR) to deter and respond to oil supply disruptions, and act cooperatively with the importing member nations of the International Energy Agency. **Assessment**: Met Goal

Success will be measured by:

- *Initiate additional SPR Infrastructure Life Extension Program projects, thereby bringing program implementation to approximately 96 percent of the $328 million program. Program completion in FY 2000 will increase sustained drawdown capability to 4.1 million barrels per day, compared to 3.7 in FY 1997.*

Results: Initiated additional SPR Infrastructure Life Extension projects as planned for FY 1999. Implementation of the additional projects through September 1999 brings the cumulative Life Extension Program initiation total to 96 percent of the $328 million program baseline. **Assessment:** Met Goal

ER 1-3. Diversifying the International Supply of Oil and Gas. Diversify the international supply of oil and gas. **Assessment**: Met Goal

Success will be measured by:

- *Continue DOE leadership in international energy initiatives that are instrumental in developing, through government-to-government efforts, an effective legal and regulatory framework for private-sector energy investment and policies to encourage development of a broad portfolio of fuel supplies.*

Results: U.S.-Russia Joint Commission: Under the auspices of the Energy Policy Committee, DOE works on a government-to-government basis to seek legislation and regulations fostering increased investment opportunities in the oil sector through the development of implementing regulations to production sharing agreement (PSA) legislation. In FY 1999, Russia passed amendments to its PSA legislation improving the opportunities for western investment. Russia also passed enabling legislation, conforming several existing laws with the PSA legislation. DOE is now working with Russia to encourage adoption of normative acts (implementing regulations) for the PSA legislation. DOE is working with industry and Russian governmental entities to ensure that the proposed Law on Trunk Pipeline Transportation provides the appropriate climate for foreign investment. In the coal sector, DOE will be assisting in drafting business plans to upgrade Russian coal mines. DOE continues to urge that the Federal Energy Commission remain an independent agency since there are measures being developed in Russia to merge it with another ministry. U.S.-Ukraine Bi-National Commission: DOE chairs the Energy Working Group, whose goal is to work on a government-to-government basis urging the Government of Ukraine to develop laws and an environment conducive to western investment. In FY 2000, the Deputy Secretary will participate in a meeting of the U.S.-Ukraine Bi-National Commission to take place in the United States in December. DOE chairs an interagency effort focused on Black Sea energy development and environmental protection. DOE sponsored a workshop in Odessa on regional oil spill response planning and will hold a series of workshops to develop legislation for oil spill response planning. Saudi Arabia: DOE signed an energy technology cooperative memorandum of understanding with the

Kingdom of Saudi Arabia in FY 1999. This agreement will lead to increased technical cooperation between the United States and Saudi Arabia. In FY 2000, a Saudi Team will visit the United States to assess technologies and discuss continued cooperation. The United States also is working on a government-to-government with the Kingdom of Saudi Arabia to change the environment for western investment in the Kingdom. Egypt, Israel, and Palestinian National Authority (PNA): In FY 2000, it is expected that technical cooperation agreements will be signed with the Egyptians and Israelis on solar power and fuel cells, and with the PNA on general energy cooperation. In the Baltics, DOE is pursuing policies to encourage energy privatization and U.S. investment in energy projects. **Assessment:** Met Goal

ER 1-4. Developing Alternative Transportation Fuels and More Efficient Vehicles. Develop alternative transportation fuels and more efficient vehicles that can reduce year 2010 projected oil (crude plus refined products) imports of 12 million barrels per day by 10 percent. **Assessment**: Below Expectation

Success will be measured by:

- *Expand the Clean Cities program to create continuous corridors of alternative transportation fuel availability in and between 10 major urban centers.*

Results: An LNG (liquid natural gas) refueling infrastructure has been established for use by long-haul trucks in Los Angeles, San Francisco, and Las Vegas. This corridor includes 10 large metropolitan areas. **Assessment:** Met Goal

- *Support an industrial partner to complete site preparation and begin construction of industry-owned facility to demonstrate first-of-a-kind cellulosic biomass to ethanol technology from agricultural crop waste.*

Results: Final financing has been delayed until more equity money is attained. This is expected to happen in FY 2000. **Assessment:** Nearly Met Goal

- *Build a single-cylinder proof-of-concept diesel engine that delivers up to 55 percent efficiency.*

Results: A single-cylinder diesel proof-of-concept engine was verified by Caterpillar at 53 percent efficiency. **Assessment:** Nearly Met Goal

ER 1-5. Maximizing the Productivity of Federal Oil Fields. Maximize the productivity of Federal oil fields, consistent with Congressional legislation. **Assessment**: Met Goal

Success will be measured by:

- *With the sale of Elk Hills Naval Petroleum Reserve, work in this area is essentially complete.*

Results: No measure was set for FY 1999. **Assessment:** Not applicable.

ER 1-6. Taking Measures to Avoid Domestic Energy Disruptions. Take measures to avoid, but when needed, respond to domestic energy disruptions. **Assessment**: Met Goal

Success will be measured by:

- *Initiate the development and implementation of a national plan to protect the Nation's energy infrastructure as required by the Presidential Decision Directive 63.*

Results: Critical infrastructure protection was an unfunded mandate in FY 1999, yet with limited contributions within the Department, significant progress has been made. Regarding the first mission, the Department has developed and initiated a process for critical asset identification. Regarding the second mission, DOE has been working with the Nation's electric and gas utilities to assess and improve the security of the information and control systems that run their operations. So far, five electric power companies have undergone vulnerability assessments as part of this program. This program is now being expanded to cover gas and oil companies. Other accomplishments include: establishment of the Office of Critical Infrastructure Protection (OCIP) to coordinate and oversee the Department's PDD-63 responsibilities; partnerships established with energy sector leaders and government technical experts for the purpose of creating an R&D program to support the national effort to assure the nation's critical energy infrastructure; creating an interdepartmental coordination group to develop a Department-wide CIP budget for FY 2001; working with industry to develop a business case for CIP; and establishment of a partnership with the National Infrastructure Protection Center at the FBI and the North American Electric Reliability Council to develop indications and warnings criteria—information on disruptions and threats. **Assessment:** Met Goal

- *Work with industry organizations and government agencies, including the National Petroleum Council, to assess the impact of changing market conditions and regulations on the level and variability of petroleum prices and supply, and provide recommendations to minimize disruptions during change.*

Results: The Department has worked with the National Petroleum Council to carry out a detailed study of Refinery Viability and Product Deliverability addressing the impact of changes in product specifications and market conditions on these issues. That study is nearing completion, with draft results before the Coordinating Subcommittee. The Department also did detailed analysis and filed public comments and recommendations on an EPA Tier II rulemaking proposal and is currently working with EPA to develop an acceptable final rule that does not threaten adequate supplies of reasonably priced gasoline. DOE staff are also working with EPA, at that agency's request on three other ongoing or potential fuel quality rulemakings. **Assessment:** Met Goal

- *Ensure that each power system control area operated by a Power Marketing Administration (PMA) receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North American Electric Reliability Council performance standard.*

Results: The PMAs have received a pass rating for each month for FY 1999. **Assessment:** Met Goal

- *Work with industry organizations and government agencies to establish a comprehensive process to assess Y2K readiness status, promote intersectoral coordination, and provide contingency plans. Provide for timely communication to the public of information regarding readiness status and contingency planning activities.*

Results: As of June 30, 1999, over 99 percent of all mission-critical facilities, systems, and components of U.S. bulk electric systems and 94 percent of electric distribution systems were ready to operate into the year 2000. Over 99 percent of the bulk electric suppliers had developed contingency plans approved by the North American Electric Reliability Council. **Assessment:** Met Goal

ER 2-1. Establishing a More Open, Competitive Electric System. Update the Administration's 1998 legislative proposal and support administrative actions to promote establishment of a more open, competitive, and reliable electric system, with improved environmental performance. **Assessment**: Exceeded Goal

Success will be measured by:

- *Enhance electricity sector modeling capabilities by benchmarking the representation of transmission system constraints against models of physical power flows to better address electric reliability and economic issues, and use this enhanced modeling capability in support of the legislative process.*

Results: Databases were constructed that contain the necessary information to make the power flow simulations required to assess the current transmission representation in the Policy Office Electricity Modeling System. Preliminary simulations for the Eastern Interconnection have been made. **Assessment:** Met Goal

- *Issue a revised Administration proposal on electric utility restructuring and the supporting economic analysis to provide a catalyst for consensus and action.*

Results: A new proposal was released in April 1999. It has been introduced in the House and Senate. A supporting economic analysis was released in May 1999 and was introduced into the Congressional Record at the request of the Secretary. **Assessment:** Met Goal

ER 2-2. Boosting the Nation's Production of Natural Gas. Support R&D policies and improved regulatory practices that can increase domestic natural gas supplies, moderate future price increases, and fuel 25 percent of the anticipated 6 trillion cubic feet (TCF) increase in natural gas demand (of which 3.5 TCF is for electricity generation) through 2010. **Assessment**: Met Goal

Success will be measured by:

- *Complete development of one Advanced Drilling, Completion and Stimulation technology system that could contribute an additional 6 TCF of domestic gas reserves by 2010.*

Results: The DOE-sponsored High Power Slim-hole Motor and Hybrid Bit Drilling System was successfully demonstrated to have higher performance than conventional slim-hole drilling systems at the GRI Catoosa, Oklahoma, test facility in December 1998. This demonstration successfully met the planned goal by marking the completion of development and demonstration of the new technology to industry. The high power motor was shown in laboratory dynamometer testing to have twice the power of conventional slim-hole motors; however, the Catoosa test ran the DOE high power drilling system in comparison to a conventional slim-hole system in the same drilling environment with the following results: (1) the high power slim-hole drilling system drilled at twice the rate of the conventional system; (2) improved bit performance in both soft and hard formations was achieved with the hybrid bit through the combined use of polycrystalline diamond compact cutters and thermally stable polycrystalline diamond cutters; and (3) the high power system was also shown to provide a more positive and reliable restart after stalling, thus improving the operational efficiency over drilling with conventional systems. **Assessment:** Met Goal

ER 2-3. Developing Renewable Domestic Energy. Develop renewable energy technologies and support policies capable of doubling non-hydroelectric renewable energy generating capacity by 2010. **Assessment**: Met Goal

Success will be measured by:

- *Support the Million Solar Roofs Initiative by installing 15,000 energy systems.*

Results: More than 20,000 solar energy systems were installed in FY 1999, more than 50,000 since the program's inception. During FY 1999, 27 new partnerships were formed, bringing the total to 41. **Assessment:** Exceeded Goal

- *Develop codes, standards, and safety specifications for residential photovoltaic (PV) roof systems.*

Results: Due to additional time needed to resolve issues raised by the P929 (PV interconnection) ballot committee members, the full committee vote was delayed until FY 2000. However, two significant actions have been accomplished in this reporting period. The committee recommended practice was approved by the IEEE SCC21 chairman. Also, the IEEE Standards Board approved the project: Standards for Distributed Power Resources Interconnection with Electric Power Systems. The project is now an official standards development project. **Assessment:** Nearly Met Goal

- *Accumulate 750 hours of reliable operation for a distributed concentrating solar power system.*

Results: Almost 3,000 hours of unattended operations have been accumulated for the Boeing/Stirling

Engine Systems concentrating solar power dish/ engine system. **Assessment:** Exceeded Goal

- *Complete design of power plant modifications for co-firing of biomass with coal.*

Results: Construction at GPU Seward Station (Johnstown, PA) and the NIPSCO Bailly Station (Merriville, IN) has been completed for the long-term demonstration testing. **Assessment:** Met Goal

- *Develop an industry-led vision and roadmap for an integrated bioenergy industry to advance the development of biomass derived energy and its use in domestic and global markets.*

Results: The third bioenergy visioning meeting was held in Washington on June 3, 1999, with key leaders from private industry representing the fuels, power, and chemical industries. A revised draft was created based on the feedback that was received at the June meeting and it is currently being circulated for final review from the industry reviewer group. A Vision Review and Adoption Meeting is scheduled for December 1, 1999, with the same industry group. At this meeting, DOE intends to solicit final comments from the group, and hopes this group will adopt development of the roadmaps in the first quarter of FY 2000. **Assessment:** Nearly Met Goal

- *Establish a U.S.-based commercial firm as an internationally recognized certification agent using testing and design review services provided by the National Wind Technology Center.*

Results: Underwriters Laboratory has contacted all U.S. wind turbine manufacturers to announce their availability for international certification of wind turbines using testing facilities at the National Wind Technology Center. **Assessment:** Met Goal

- *Complete three nationwide solar technology Super-Energy Savings Performance Contracts (Super ESPCs) for use by all agencies.*

Results: Completed one solar technology Super-Energy Savings Performance Contract for photovoltaics. Two of the solar technology Super ESPCs will not be developed as planned. One, solar thermal, has been dropped due to a lack of agency demand for a new contract. The other, solar pre-heat, has been dropped due to a cancellation of the solicitation. **Assessment:** Below Expectation

Plan of Action: The Department's Federal Energy Management Program is currently re-evaluating the most appropriate mechanisms to increase deployment of renewable technologies in Federal facilities.

ER 2-4. Reducing Emissions from Existing Fossil Fueled Power Plants and Developing Clean, High Efficiency Fossil Fueled Power Plants for the 21st Century. By 2010, significantly reduce emissions from existing fossil fuel power plants and from new plants by (1) developing market-ready coal power systems with efficiencies over 60 percent (new plants are currently about 35 percent), emissions to less than one-tenth of New Source Performance Standards (NSPS), and CO2 emissions 45 percent below conventional plants; and (2) integrating advanced turbine and fuel cell technology to achieve market-ready gas-fueled power plants with efficiencies over 70 percent. **Assessment**: Met Goal

Success will be measured by:

- *Complete testing of the first commercial-sized fuel cell module (100 KWe) using high temperature solid oxide technology suitable for advanced high-efficiency electrical generation cycles.*

Results: The 100-kWe unit has operated successfully for grater than 6,000 hours. The unit is continuing to operate well at the demonstration site in the Netherlands. **Assessment:** Met Goal

- *Complete full-scale component testing of two advanced, utility-scale turbines with over 60 percent efficiency when used in combined cycles (new plants are currently about 55 percent) and with ultra-low NOx emissions. Initiate advanced gas turbine full speed, no load testing with one gas turbine manufacturer.*

Results: General Electric conducted the full-speed no-load test of the GE 7H ATS machine in December 1999. Due to the acquisition of Westinghouse by Siemens, the Siemens Westinghouse ATS Program schedule has slipped. Continuation application is due to DOE on November 19, 1999. To date, Siemens-Westinghouse has tested about 50 percent of the ATS turbine components. **Assessment:** Nearly Met Goal

- *Complete commercial demonstration of one integrated gasification combined cycle project (Wabash) and continue operations of two other gasification projects in order to establish the engineering foundation leading to a new generation of 60 percent efficient, ultraclean coal power plants.*

Results: The Wabash River IGCC project is on schedule to complete the commercial demonstration on January 1, 2000. The Tampa Electric IGCC project is on schedule and will continue operations throughout FY 2000. The Piñon Pine IGCC project is expected to continue the operational phase throughout FY 2000. Project definition activities are on schedule with the Kentucky Pioneer Energy Project and will continue throughout FY 2000 to completion in January 2001. **Assessment:** Nearly Met Goal

Plan of Action: The Wabash River IGCC project has submitted a request for a 2-year extension of operations through 2002, and to make project modifications for improved performance and economics. DOE is currently evaluating the Wabash request and will make a decision in early FY 2000.

- *Complete review of proposals for the second round in FY 1999, and initiate projects to design and develop advanced catalysts, electrodes, and membranes, as well as advanced separator plates and high temperature sealants under the Russian-American Fuel Cell Consortium.*

Results: Proposals have been submitted for funding of projects under the Russian-American Fuel Cell Consortium (RAFCO), and eight projects have now been funded. In addition, the DOE Under Secretary has asked that a technology roadmap be developed for fuel cell commercialization in Russia in order to evaluate funds for RAFCO under the new Nuclear Cities Initiative. Work on that roadmap is still underway. **Assessment:** Met Goal

ER 2-7. Improving Existing Nuclear Power Plants. Improve nuclear power plant reliability and availability to increase the capacity factor of existing nuclear power plants from the 1996 average of 76 percent to 85 percent by 2010. **Assessment**: Met Goal

Success will be measured by:

- *Complete Memorandums of Understanding with the Nuclear Regulatory Commission and the Electric Power Research Institute (EPRI) to guide future implementation of the Joint DOE-EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants.*

Results: The Office of Nuclear Energy, Science and Technology (NE) and the Nuclear Regulatory Commission (NRC) signed the Cooperative Nuclear Safety Research Memorandum of Understanding (MOU) on August 16, 1999. NE and the Electric Power Research Institute (EPRI) signed the Cooperation in Light Water Reactor Research MOU on September 23, 1999. The MOU with NRC provides the guiding principles under which cooperative research on commercial nuclear power will be planned and conducted by NRC's Office of Nuclear Regulatory Research and DOE's Office of Nuclear Energy, Science and Technology. This MOU benefits both agencies by conserving resources, avoiding duplication, and sharing information and costs. The MOU with EPRI establishes the guiding principles under which cooperative commercial nuclear energy research programs between EPRI and DOE's Office of Nuclear Energy, Science and Technology will be planned and conducted. The primary focus of this MOU will be on the research and development objectives and tasks included in the "Joint DOE-EPRI Strategic R&D Plan for Optimizing Current Nuclear Power Plants." This focus relates to DOE's FY 2000 proposed "Nuclear Energy Plant Optimization" program. **Assessment:** Met Goal

ER 2-8. Maintaining Nuclear Power as a Viable Option for the Future. Maintain a viable nuclear option for future, carbon-free baseload electricity through cooperative technical development activities with U.S. electric industry, national laboratories, and universities that would maintain domestic nuclear capabilities and that would facilitate a U.S. order of an advanced nuclear power plant by 2010. **Assessment**: Met Goal

Success will be measured by:

- *Establish a peer-reviewed Nuclear Energy Research Initiative, initially funded at $19 million, to select and conduct investigator-initiated innovative scientific and engineering research that will address the issues facing the future of nuclear power in the U.S., including proliferation concerns, economics and the management of nuclear waste.*

Results: Following the peer review of the 308 proposals submitted, a total of 46 awards were made involving 45 U.S. and 11 foreign research organizations. The final Nuclear Energy Research Initiative (NERI) grant was awarded September 8, 1999. The U.S. organizations include 20 universities, 8 national laboratories, 16 industrial organizations and 1 government R&D agency, and 32 of the awards involve collaborations of multiple organizations. The NERI program conducts scientific and engineering research that will enhance the performance, efficiency, reliability, proliferation resistance, and economics of nuclear power. **Assessment:** Met Goal

ER 2-9. Developing Advanced Turbines for Cogeneration. Develop and introduce advanced turbines for cogeneration that can reduce annual industrial energy costs by $500 million and carbon emissions by nearly 1.7 million metric tons in 2010. **Assessment**: Met Goal

Success will be measured by:

- *Initiate the 8,000 hour test of the gas turbine engine for the Advanced Turbine System for use in industrial cogeneration.*

Results: The engine is on the test stand to be shipped shortly. Initiation of test is likely to begin in February 1999. **Assessment:** Met Goal

ER 3-1. Designing and Delivering the Vehicles of the Future. Develop and deploy vehicles, fuels, and systems of the future, contributing significantly to the Partnership for a New Generation of Vehicles to develop, by 2004, prototype mid-sized cars capable of 80 miles per gallon that will reduce NOx and CO2 emissions by two-thirds compared to today's new car average without compromising safety, comfort, and cost. **Assessment**: Met Goal

Success will be measured by:

- *By September 1999, in cooperation with industry and other Federal agencies, develop a direct injection power system technical roadmap and a fuel cell power system technical roadmap to integrate fuels and lubricants research and development with development of engine and emissions treatment technologies.*

Results: Draft roadmaps have been completed and are available as of November 1999. **Assessment:** Met Goal

ER 3-2. Improving Efficiency of Energy Intensive Industries. By 2010, reduce industrial energy use per unit of output by 25 percent by supporting industry/government/academia partnerships in R&D to improve efficiency of the Nation's energy intensive industries. **Assessment**: Met Goal

Success will be measured by:

- *Complete roadmaps for six of the major energy intensive industries to achieve each industry vision and start implementing the resulting R&D to achieve up to 25 percent reduction of energy consumption by 2010.*

Results: Forest Products: Agenda 2020: The Path Forward—An Implementation Plan with the American Forest & Paper Association was released in March 1999. Chemicals: the Roadmap on Computational Chemistry, Materials of Construction Roadmap, and Computational Fluid Dynamics Roadmap have been completed. Separations 1999 (part 1) has been completed, and part 2 will be completed in 2000. Agriculture: The Technology Roadmap for Plant/Crop-based Renewable Resources 2020 was published in February 1999. Mining: Mining Cross-Cutting Technologies Roadmap (March 1999) and additional roadmaps are in planning. Glass: a revised Glass MOU was signed in February 1999. Aluminum: The Inert Anode Roadmap was published in February 1999 and Office of Industrial Technologies working with Office of Transportation Technologies, the Industries of the Future program has sponsored an Aluminum Industry Roadmap for Automotive Market which was released in June 1999. Steel: A revised Steel MOU was signed in February 1999. In addition, in the area of combined heat and power a report: Combined Heat and Power (CHP): A Vision for the Future of CHP in the U.S. in 1/2020 was released in September 1999. **Assessment:** Met Goal

- *Continue support for Industrial Assessment Centers operating at 30 participating universities that will conduct approximately 750 combined energy, waste, and productivity assessments.*

Results: The Industrial Assessment Center program remains on track at 30 universities. One university had dropped out, but another has replaced it. **Assessment:** Met Goal

ER 3-3. Improving the Energy Efficiency of Buildings. By 2010, improve the energy efficiency of the existing U.S. building stock, and increase the energy efficiency of new homes by 50 percent and other new buildings by 30 percent, compared to 1996 average new buildings. **Assessment**: Met Goal

Success will be measured by:

- *Develop progress milestones and estimates of energy-related program benefits annually for every Energy Efficiency/Renewable Energy program. Review 25 percent of the milestones and estimated benefits through external peer review each year with a goal of having all milestones and estimated benefits peer-reviewed at least once every four years.*

Results: Performance measures were developed and included in the FY 2000 budget request. An external review of selected program measures of programs was completed in March 1999 by Arthur D. Little. This review covered more than 25 percent of EE milestones and estimated benefits. **Assessment:** Met Goal

- *Accumulate customer economic savings from past and current Energy Efficiency/Renewable Energy programs exceeding $11 billion.*

Results: Estimated annual energy cost savings from Energy Efficiency and Renewable Energy programs exceeded goal by more than $10 billion.

Assessment: Exceeded Goal

- *Maintain an industry cost-share level over 40 percent when averaged across all work with industry.*

Results: Estimated industry cost-share is above 40 percent. **Assessment:** Met Goal

- *Weatherize 67,845 homes, bringing the total number of homes weatherized to 4.7 million.*

Results: Weatherized approximately 68,000 homes in FY 1999, bringing the total number of houses weatherized to 4.7 million. **Assessment:** Exceeded Goal

- *Work with the Federal Trade Commission to allow manufacturers to add the Energy Star logo to the yellow and black "Energy Guide" label for covered products and recruit an additional 1,500 stores to market Energy Star appliances nationwide.*

Results: With the partners recruited this year, we now have a total of 4,000 stores to market Energy Star appliances and assisted in the Federal Trade Commission proposed rule to allow manufacturers to add the Energy Star logo to the FTC Energy Guide label. **Assessment:** Exceeded Goal

- *Recruit 55 additional Rebuild America partnerships. New partners will begin action plans that will result in over 250 million square feet of floor space renovated, reduce annual energy costs by over $90 million, and reduce annual carbon emissions by 0.22 million metric tons.*

Results: We recruited 50 additional Rebuild America partnerships. The new partners are beginning action plans that will result in over 300 million square feet of floor space renovated. **Assessment:** Met Goal

- *Complete 100 homes that are over 50 percent more efficient than typical homes through the Building America program, bringing the total number of homes completed to 700; add five new community-scale projects for building 1,000 additional homes in FY 2000; and transfer research recommendations to the Partnership for Advancing Technology in Housing (PATH).*

Results: We completed approximately 400 homes that are over 50 percent more efficient than typical homes through the Building America program, bringing the total number of homes completed to 1,000. In addition, we have added five new community-scale projects, which are expected to result in more than 1,000 additional homes being built in FY 2000. **Assessment:** Exceeded Goal

ER 4-1. Planning for Energy-Related Greenhouse Gas Reductions. Develop policies, programs, and information to facilitate energy sector reductions

in greenhouse gas emissions. **Assessment**: Unspecified

Success will be measured by:

- *Develop a DOE proposal for guidelines for implementing the flexibility mechanisms included in the Kyoto Protocol.*

Results: DOE worked with EPA and the Department of State to develop proposed guidelines on CDM baselines, Kyoto Mechanism registries, and monitoring and reporting of inventories and CDM/JI project favorable decisions on sinks at COP5. Funding cutbacks prevented DOE/PO from developing its own guidelines proposals. Instead, DOE staff worked with other agencies to develop guidelines. **Assessment:** Nearly Met Goal

Plan of Action: Work on this Performance Measure will continue and accelerate during FY 2000.

- *Support, through quantitative analysis and international contacts, Administration efforts to obtain meaningful commitments for reducing greenhouse gas emissions from developing countries.*

Results: Argentina announced a specific target for greenhouse gas emissions at the UN Conference of Parties on Climate Change in November, 1999. China, Mexico, and South Korea are developing energy models to determine the potential for reductions in greenhouse gas emissions. Brazil has initiated analysis to identify potential Clean Development Mechanism projects whereby they would receive tradable credits for reductions. **Assessment:** Unspecified

- *Lead the U.S. Government technology and climate change strategy development and implementation through: (1) chairing and expanding the Annex II countries' Climate Technology Initiative, which promotes the objectives of the UN Framework Convention on Climate Change by fostering international cooperation for accelerated development and diffusion of climate-friendly technologies and practices for all activities and greenhouse gases, and (2) leading and facilitating the development of U.S. positions on technology issues in the climate negotiations including participation in the UNFCCC technology consultation process.*

Results: During the past year, U.S. Department of Energy staff continued to Chair and expand the Climate Technology Initiative (CTI), which promotes the objectives of the UN Framework Convention on Climate Change by fostering international cooperation for the more rapid development and diffusion of climate-friendly technologies and practices. Along with significantly expanding the number of developed countries actively participating and providing resources, the CTI conducted, under its working group on Capacity Building, two regional technology training courses: one for representatives of the Asian and Pacific region and one for Mexico, Central America, and the Caribbean region. These courses are designed to familiarize technically proficient individuals with contemporary climate-friendly technologies and practices relevant to their country/region so that, when they return home, they will be prepared to train others, thereby realizing a multiplier effect. Additionally, CTI conducted two extremely successful CTI/Industry Joint Seminars on Technology Diffusion: one in cooperation with the Southern African Development Community (SADC) in Zimbabwe and one for Eastern Europe in Slovakia. These seminars are designed to showcase situations where technology diffusion is being successful, as well as identify market barriers and market failures which have impeded the technology transfer contemplated under the Framework Convention. One of the outcomes of the seminar in Africa was the request by SADC for CTI to conduct a regional needs assessment of the energy sector under CTI's Cooperative Technology Implementation Plan (CTIP) program. Work on this bottom-up, collaborative assessment with SADC is proceeding, and preliminary CTIP efforts have been initiated with Thailand.

The Department continues to be the leading technical agency on issues related to technology transfer under the UNFCCC. During the year, the Department continued to provide input and support to the development and negotiation of U.S. positions on technology transfer and related topics, participating directly in the negotiations at COP5 in Bonn, Germany, in October and November. The Department continues to work very closely with the UNFCCC Secretariat in its work related to technology transfer under the Framework Convention, including assisting the Secretariat with its preparation for the Workshop on the Consultative Process for the African region held in Tanzania in August, 1999. **Assessment:** Met Goal

ER 4-2. Cooperating Internationally to Develop Open Energy Markets. Cooperate with foreign governments and international institutions to develop open energy markets, and facilitate the adoption and export of clean, safe, and efficient energy technologies and energy services. **Assessment**: Met Goal

Success will be measured by:

- *Increase U.S. energy-related business internationally by removing policy, legal, and fiscal barriers for U.S. companies. In FY 1999, the Department will: Implement with other African Petroleum Exporting Countries (APEC) economies and the private sector an initiative to promote accelerated investment in natural gas infrastructure and trading networks in the APEC region; Implement the "U.S.-China Energy and Environment Cooperation Initiative," including coordination of interagency effort involving DOE programs, EPA, Commerce, and OSTP to promote rural electrification, urban air quality, clean energy sources, and energy efficiency; Lead a regulatory reform initiative to promote economic growth through private investment in environmentally sound energy development and regional integration in Sub-Saharan Africa, including South Africa; and Lead a regulatory reform initiative under the Binational Commission to pro-*

mote adoption by the Russian Government of transparent, fair, and consistent regulations in the oil and gas and power sectors in order to attract investment.

Results: APEC: Obtained APEC Energy Ministers' (21 members) approval of major US -led initiative to identify policy reform principles to reduce investor risk in natural gas. Implementation and follow-up included US hosted government-business workshop in April 1999 to identify priority principles and other actions to accelerate implementation. Actions underway include establishing "implementing teams" that will be invited to advise countries on how to implement principles. Initiative was developed in close cooperation with business. Implementation includes participation in a new Business Network (with two U.S. members), an advisory group to the APEC Energy Working Group, at all stages, including implementing teams. As part of the focus on how to implement agreed policy initiatives, such as the Natural Gas Initiative, a system of advisory teams is being tested on how to implement specific principles in the Initiative's Forum on Environment and Development. In cooperation with the Office of the Vice President, the Office of Science and Technology Policy, and the Commerce Department, DOE has hosted a number of bilateral meetings with the PRC to identify and promote energy cooperative activities under the Forum. Most recently, on April 9, 1999, DOE hosted a meeting of the Energy Policy Working Group under the Vice President's U.S.-China Forum on Environment and Development. Specific activities include: establishment of a U.S.-China Oil and Gas Industry Forum which met in July 1998 and met again in November 1999; a wide range of cooperative programs in energy efficiency and renewable energy; and cooperation in global climate change and clean coal technology.

Binational Commission: Russia—DOE organized several workshops to share information on the development and implementation of transparent and consistent oil and gas pipeline regulations with the Russian Federal Energy Commission. The workshops resulted in the drafting of oil and gas regulations by the Russian Federal Energy Commission that will help attract investment. African Initiative—Secretary Richardson launched an Energy Initiative for Africa on April 1, 1999. Following up on President Clinton's commitment to expand energy cooperation with Africa, the Initiative aims to facilitate economic growth by fostering trade and investment and encouraging regional market development, which has the best chance of attracting private sector interest. The Initiative involves close private industry participation, other U.S. agencies, and multilateral institutions. Cooperative activities include promoting clean energy technologies, such as natural gas and renewable energy, and capacity building through training and workshops for energy and business personnel. A cornerstone of the Initiative will be the U.S.-Africa Energy Ministers Conference to be held in Tucson, Arizona, on December 13-15, 1999, on energy and transportation infrastructure issues, which will include the Department of Transportation. Bilaterally, DOE participates actively in the Binational Commission with South Africa (established in 1995) and through several other mechanisms with Angola, Ghana, Nigeria, and Senegal. **Assessment:** Met Goal

ER 5-1. Expanding Public Access to Energy Information. Develop and expand public access to energy data, forecasts, analyses, and educational materials. **Assessment**: Met Goal

Success will be measured by:

- *Achieve a growth rate of at least 20 percent per year in the average number of unique monthly users of the Energy Resources Board Web Site (from about 71,000 per month in 1997).*

Results: The average unique monthly users of the Energy Resources Board Web Site numbered 348,528. This represents an increase in excess of 100 percent from the previous year. **Assessment:** Exceeded Goal

- *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020.*

Results: EIA published the Domestic Annual Energy Outlook (AEO) in December 1998. An International Energy Outlook was published in March 1999. **Assessment:** Met Goal

ER 5-2. Developing Innovative Options for 21st Century Energy Markets. Carry out research and scenario analysis to help identify and understand options that could revolutionize 21st century energy markets. **Assessment**: Met Goal

Success will be measured by:

- *Complete scale-up of the Sorbent Enhanced Reformer concept for hydrogen production.*

Results: Demonstrated that extruded adsorbent could be promoted at the larger scale using spray impregnation methods. Carried out carbon dioxide/nitrogen breakthrough experiments at 450 degrees C with column of adsorbent and stability of adsorbent under repeated cycles. Demonstrated that the presence of steam does not affect the adsorbent's ability to remove carbon dioxide or its capacity. **Assessment:** Met Goal

- *Complete preliminary version of gas hydrate seismic model based on field and laboratory data.*

Results: Modeling the quantitative relationships between seismic response and hydrate volumes will lead to accurate estimates of these vast U.S. methane resources and provide information necessary to target production tests and global carbon cycle studies of methane hydrates. Preliminary seismic models have been completed based on the data from the Mackenzie Delta well (seismic, well logs, and cores). **Assessment:** Met Goal

- *Initiate a coordinated, Department-wide program to develop lower-cost, environmentally acceptable technology approaches to carbon capture and sequestration.*

Results: Two major items have been completed in this research area: a draft report titled "Working Paper on Carbon Sequestration Science and Technology" and the selection of six concepts to identify promising carbon sequestration options. The draft report, which was completed in March, was jointly developed by the Offices of Science and Fossil Energy. It details the emerging science and technology of carbon sequestration (the capture and secure storage of carbon dioxide emitted from the combustion of fossil fuels). The report identifies key research needs in several aspects of carbon sequestration, including technologies for separating and capturing carbon dioxide from energy systems, and sequestering it in geological formations or the oceans or possibly enhancing the natural carbon cycle. The six concepts selected for further development propose different ways to sequester carbon dioxide. Preliminary feasibility studies for 12 projects resulting from an earlier solicitation were completed in March. Each of the six projects will be extended for 22 months, permitting larger scale experimentation and more extensive technical and economic assessments. **Assessment:** Met Goal

NATIONAL SECURITY

NS 1-1. Maintaining the Enduring Stockpile. Extend the life of U.S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities. Improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging, and continually evaluate the safety, reliability, and performance of the nuclear weapons stockpile. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Report annually to the President on the need or lack of need to resume underground testing to certify the safety and reliability of the nuclear weapons stockpile.*

Results: The Department has met its goal. The establishment of an annual process for the review and certification of the safety and reliability of the nuclear weapons stockpile was directed by President Clinton and is crucial to the Nation's pursuit of the Comprehensive Test Ban Treaty. The Secretaries of Defense and Energy must inform the President each year whether the nuclear stockpile has any safety or reliability concerns that require underground testing. In reaching their conclusion, they are advised by the Directors of DOE's national weapons laboratories, the Commander of the U.S. Strategic Command, and the joint Nuclear Weapons Council. The third annual certification was completed in December 1998. Sandia National Laboratories, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory published technical reports for the fourth annual certification in July 1999, completing the portion of the fourth annual certification cycle which is unique to DOE. The joint Nuclear Weapons Council report is now in draft form and is expected to be issued before the end of 1999. **Assessment:** Met Goal

- *Meet all annual weapons alteration and modification schedules developed jointly by DOE and DOD.*

Results: The Department nearly met this performance goal. While weapons in the stockpile are safe, weapon alterations and modifications are crucial to upgrade the stockpile to meet higher safety margins, replace faulty components, meet changed military requirements, or extend the life of the weapon. In FY 1999, there was no requirement for modification, but 11 weapon alterations were ongoing, either through research and development activities or refurbishment. The alterations were for the B61 (five), B83 (two), W76 (one), W78 (one), and W87 (two). DOE met the annual schedule for nine weapon alterations. **Assessment:** Nearly Met Goal

Plan Of Action: For alterations 342 (W87) and 752 (B83), recovery schedules have been developed with DOD, and DOE is meeting the new revised schedule.

NS 1-4. Developing a Replacement Source of Tritium. Provide a reliable source of tritium as required for the nuclear weapons stockpile by FY 2005 or FY 2007 depending on the production option selected. **Assessment:** Met Goal

Success will be measured by:

- *Continue development of the dual-path options and select, by December 1998, a primary tritium production technology.*

Results: The Department met its goal by selecting a primary tritium production technology in December 1998. In order to function as designed, all U.S. nuclear weapons require the use of tritium, which has not been produced by the United States since 1988. Because tritium, a radioactive isotope of hydrogen, decays at a rate of 5.5 percent per year, it must be replenished periodically. The current inventory of tritium is dwindling and will be sufficient to meet requirements only until about 2005, after which the 5-year tritium reserve would be impacted. Thus, it is necessary that a new domestic source of tritium be established by then. In December 1998, the Secretary announced his preference for producing tritium in commercial reactors. In May 1999, the Department issued a consolidated Record of Decision announcing that tritium will be produced in the Watts Bar and Sequoyah reactors operated by the Tennessee Valley Authority (TVA). The Record of Decision also stated DOE's intention to construct a new Tritium Extraction Facility at the Savannah River Site and to complete design of the Accelerator for Production of Tritium (APT) as the backup tritium technology. At the end of FY 1999, DOE and TVA had reached an agreement in principle for irradiation services, but TVA has delayed its formal signing of the agreement until it can convene a full board of directors meeting after two new directors are confirmed by the Senate. This, in turn, will delay the initiation of the process to amend the operating licenses of TVA's reactors to permit tritium production. However, the delay is not expected to delay the start of tritium production in FY 2003. Thirty two tritium-producing rods have been irradiated in TVA's Watts Bar reactor for a full operating cycle. The rods have been taken to DOE's Argonne National Laboratory-West in Idaho, where they are undergoing various non-destructive post-irradiation examinations. The Nuclear Regulatory Commission's Safety Evaluation Report on the rods cited no significant safety hazards involving their use in commercial reactors. The Department has issued a request for proposals to manufacture production-scale quantities of the rods. Detailed design and site preparation for the Tritium Extraction Facility has begun. In June 1999, the APT Project was rebaselined to reflect its status as the backup tritium-production technology. Engineering development and demonstration of key components of the accelerator system continued as planned throughout FY 1999. Activities included integrated operation of the Low Energy Demonstration Accelerator (LEDA), development and testing of high-energy radiofrequency linear accelerator technology, target/blanket performance and material studies, and tritium separation facilities. The first continuous-wave beam through integrated front-end accelerator components was achieved on July 30. Since then, testing continued at gradually increased power levels in order to demonstrate 100 milliamp continuous-wave beam operation. Los Alamos scientists successfully accomplished this critical milestone on September 17. Development of design packages for each major facility subsystem and prototype design of key elements continued throughout FY 1999. Integration of safety requirements into the design process, facility and system design descriptions and safety documentation progressed. **Assessment:** Met Goal

NS 2-1. Replacing Underground Testing with Science. Develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of underground testing by FY 2004. **Assessment:** Exceeded Goal

Success will be measured by:

- *Demonstrate a 3-trillion operations per second computer system.*

Results: The Department has exceeded its goal of demonstrating a 3-trillion operations per second computer system. The Accelerated Strategic Computing Initiative (ASCI) is a time-critical, essential element of the Department's Stockpile Stewardship Program. ASCI will enable DOE to develop the advanced simulation and modeling technologies necessary to shift from the past stockpile management approach based on new weapon development and nuclear testing to a science-based approach based on maintenance of the existing stockpile through advanced simulation and fundamental experiments. Specifically, ASCI will create and provide to all stewardship activities the leading-edge weapon simulation capabilities that are essential for maintaining the safety, reliability, and performance of the nation's nuclear stockpile under the current nuclear test moratorium and to the challenge set forth by the Comprehensive Test Ban Treaty. The ASCI Blue-Pacific system at Lawrence Livermore National Laboratory is currently operating at 3.89 trillion operations per second, approximately 30 percent faster than our performance goal. In addition, the ASCI Red system at Sandia National Laboratories is operating at 3.15 trillion operations per second and the ASCI Blue-Mountain system at Los Alamos National Laboratory is operating at 3.07 trillion operations per second. These systems are being used by ASCI's code development teams and weapons designers to run weapons simulations that are larger and more complex than was possible on previous machines. These simulations include higher resolution, improved physics models, and more robust computational math. **Assessment:** Exceeded Goal

NS 2-2. Developing New Experimental Capabilities for Understanding Weapons Science. Develop new nuclear weapons physics experimental test capabilities. **Assessment:** Below Expectation

Success will be measured by:

- *Continue construction of the National Ignition Facility (NIF) according to its Project Execution Plan schedules.*

Results: The Department's performance in meeting this goal during FY 1999 was below expectations. The

project's progress measured against the baseline currently included in the Project Execution Plan has met expectations. There was excellent progress and cost control on conventional facilities construction, the optics vendor development program proceeded as planned and the underlying technical basis for the project remains sound. There has been rapid progress in design activities of the special laser equipment, though overall design remains behind schedule. In addition, a new laser deployment strategy was developed that better meets the needs of the Stockpile Stewardship Program and makes the facility more flexible and useful to other users as well.

However, in late August it was announced that delays in completing the design of laser and support equipment, coupled with additional costs for assembly of the laser infrastructure, are projected to significantly impact project cost and schedule. During the course of FY 1999, the project developed a new understanding of the stringent requirements for cleanliness and alignment of the laser system, which resulted in the need to redesign some aspects of the laser support equipment and to replan the deployment sequence of the laser system. The method of accomplishing the construction of the lasers in the building will require involvement of architectural/engineering firms and high-technology industry that was not previously planned. This is an out-year issue that was identified by the project staff working with the Department. **Assessment:** Below Expectation

Plan Of Action: The Secretary has issued a six-point plan to get the project back on track, and Defense Programs management has responded with an action plan. The Secretary has directed that aggressive inquiries be made by the Department, by outside experts, and by Lawrence Livermore National Laboratory, to determine why this problem arose and how best to proceed in a cost-effective and expeditious manner to complete the project as close to budget and schedule as possible. An integral part of the corrective action will be a review by the Secretary of Energy Advisory Board.

Although project managers are taking aggressive engineering and management steps to mitigate the cost and schedule issues associated with the laser system, the Department anticipated that resolving this issue will necessitate a baseline change at the Acquisition Executive level to accurately reflect future effort required for completing the project. Consistent with Conference Report language accompanying the FY 2000 Energy and Water Development Appropriations Act, a new project baseline will be completed in time for Secretarial approval and submittal to Congress not later than June 1, 2000.

NS 2-3. Conducting Experiments to Advance Our Understanding of Weapons Behavior. Advance our understanding of the fundamental characteristics of weapons behavior through systems engineering and advanced experiments and modeling to support future assessments of weapons safety, reliability, and performance. **Assessment:** Met Goal

Success will be measured by:

- *Conduct two or three subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon.*

Results: The Department has met its goal. Three subcritical experiments were conducted in FY 1999. On December 11, 1998, we conducted the first subcritical experiment of FY 1999, Cimarron, a Los Alamos National Laboratory (LANL) experiment. On February 9, 1999, Clarinet, a Lawrence Livermore National Laboratory (LLNL) subcritical experiment, was successfully executed. On September 30, 1999, we successfully executed Oboe 1, the first in a LLNL series of smaller subcritical experiments. The Cimarron experiment obtained data on the behavior of plutonium subjected to shock from high explosives. The Clarinet experiment obtained data on plutonium shocked with high explosives using both newly fabricated and aged samples. The Oboe series of experiments will also obtain data to improve our understanding of the complex behavior of metal surfaces under high explosive shock conditions. Data from subcritical experiments will be used to develop the science-based stewardship computer models. Additionally, the subcritical experiments make a significant contribution to maintaining nuclear test readiness, required by Safeguard C of the Comprehensive Test Ban Treaty and Presidential Decision Directive. **Assessment:** Met Goal

NS 3-1. Downsizing and Modernizing the National Security Enterprise. Provide an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise. Ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements. **Assessment:** Below Expectation

Success will be measured by:

- *Plan, coordinate, conduct, and participate in an Interagency National Security Technology Exchange (INTSE) conference.*

Results: The DOE Office of Nonproliferation and National Security hosted the FY 1999 INSTE in Germantown, MD, from May 25-27, 1999. Participants included the Department of Defense, Department of State, FBI, CIA, and National Security Council, as well as DOE R&D program representatives. Briefings focused on counterterrorism and security technologies. **Assessment:** Met Goal

- *Develop a comprehensive Weapons of Mass Destruction Defense Plan which addresses security planning, equipment, training, and exercise requirements.*

Results: The Department has received a significant number of comments on the draft revised protective force order from field offices and headquarters elements as well as other stakeholders. The major changes are being resolved through coordinated discussions with headquarters program offices. **Assessment:** Met Goal

- *Ensure that all facilities required for successful achievement of the Stockpile Stewardship Plan remain operational.*

Results: Two key activities are under way to provide operational production facilities for the successful implementation of the Stockpile Stewardship Plan: resumption of Enriched Uranium Operations (EUO) at the Y-12 Plant near Oak Ridge, Tennessee, and establishment of a Pit Production Program at the Los Alamos National Laboratory in New Mexico. At the Y-12 Plant, shipping/receiving, assembly/disassembly, depleted uranium operations, and evaluation of canned subassemblies were all restored by 1997. The first phase (Phase A) of the enriched uranium operations resumption process (resuming casting, rolling and forming, machining operations, partial material control, and accountability functions) was completed in December 1998. The second and final phase (Phase B) of EUO resumption restores chemical recovery processing and enriched uranium metal production capabilities. EUO Phase B resumption activities are significantly behind the FY 1999 schedule of September 1999 for enriched uranium metal production and June 2000 for chemical recovery processing. In the effort to reestablish the pit production capabilities at Los Alamos, the Chemistry and Metallurgy Research Upgrades project at LANL has been re-baselined, focusing resources on those upgrades necessary to ensure facility operability for the next ten years. The Department and LANL have begun pre-conceptual planning to replace the capabilities provided by this facility. The Transition Manufacturing and Safety Equipment (TMSE) project at LANL will provide urgent and near-term process equipment and infrastructure necessary for fabrication and certification of a War Reserve quality pit. To date, 11 of 30 TMSE sub-projects have been individually authorized and work initiated. Development of an overall baseline for this project is approximately four months behind schedule. The Capability Maintenance and Improvement Project (CHIP) will provide infrastructure improvements necessary to support a limited pit manufacturing capability at LANL. The project is currently planned as a new start in FY 2002. **Assessment:** Below Expectation

Plan Of Action: The significant delays in resumption of EUO Phase B capabilities were due to inadequate design and project controls for the hydrogen fluoride supply system line item project, and inadequately estimating the material condition and resources required to accomplish the restart efforts. The schedules to complete the remaining Phase B tasks are currently under review by a new contractor management team and DOE line management. A commitment to provide a new schedule and budget for the completion of Phase B resumption by December 31, 1999, was made in a briefing to the Deputy Secretary of Energy on November 12, 1999.

- *Meet the established schedules for downsizing and modernizing of our production facilities.*

Results: The Department did not quite meet its established schedules for downsizing and modernization our production facilities during FY 1999. Downsizing and modernization of our production facilities are planned under the Stockpile Management Restructuring Initiative (SMRI). This initiative includes the tritium facilities at the Savannah River Site near Aiken, South Carolina; uranium machining, recycling, and storage facilities at the Y-12 Plant; weapons assembly/disassembly and high explosive fabrication facilities at the Pantex Plant near Amarillo, Texas; and non-nuclear production facilities for electronic, electro-optical devices, plastic, and machined parts at the Kansas City Plant in Kansas City, Missouri. Construction funds for the downsizing at Savannah River and Y-12 were received in FY1998 and FY1999. Construction funds for the Kansas City and Pantex SMRI projects were received in FY1999; however, there was a Congressional requirement to have an Independent External Assessment report delivered to the Congressional Committees before obligating any of these funds. The reports were delivered to the Committees as required, but the obligation of funds was not authorized until May 28, 1999. This was eight months after the established schedule date for the authorization. The schedules for these two projects are being reestablished for performance measurement. The Savannah River SMRI project was 7 percent and the Y-12 SMRI project was 9 percent behind the established schedules. **Assessment:** Nearly Met Goal

- *Complete the shipment of plutonium pits from Rocky Flats to Pantex.*

Results: Shipments of surplus plutonium pits from the Rocky Flats Environmental Technology Site (RFETS) to the Pantex Plant were completed in April 1999. **Assessment:** Met Goal

- *Conduct oversight reviews to ensure that an effective Safeguards and Security program is maintained at all nuclear weapons facilities.*

Results: To date, the Office of Independent Oversight and Performance Assurance (OA) has conducted nine safeguards and security oversight reviews. **Assessment:** Met Goal

NS 3-3. Protecting Nuclear Materials, Information, and Facilities. Ensure and enhance protection of nuclear materials, sensitive information, and facilities. Provide DOE-related intelligence and threat assessment support to members of the national security community. **Assessment:** Unspecified

Success will be measured by:

- *Implement the DOE Counter-intelligence Action Plan pursuant to Presidential Decision Directive-61 to strengthen controls and protections of sensitive information, especially at the nuclear weapons laboratories.*

Results: In February 1998, the President issued Presidential Decision Directive 61 (PDD-61) designed to reorganize and improve the counterintelligence program of the U. S. Department of Energy. Subsequent to the release of PDD-61, the Office of Counter-

intelligence (OCI) developed a Counterintelligence Implementation Plan, which included 46 recommendations to achieve this goal. The 46 recommendations were segregated into three tiers to emphasize those which were most critical. As of September 30, 1999, 92 percent of the most critical (Tier I) recommendations had been implemented and 74 percent of the total 46 recommendations had been implemented. **Assessment:** Nearly Met Goal

- *Issue timely technical reports and threat assessments regarding potential domestic and/or foreign proliferant risks.*

Results:

Threat Assessment U.S. Department of Energy Pantex Plant—October 1998

Threat Assessment Lawrence Livermore National Laboratory—December 1998

Threat Assessment U.S. Department of Energy Nevada Test Site—February 1999

Planned Accomplishments:

Threat Assessment U.S. Department of Energy Hanford Site—May 1999

Threat Assessment Idaho National Engineering and Environmental Laboratory—July 1999

Threat Assessment Los Alamos National Laboratory—September1999

Threat Assessment Sandia National Laboratory - September 1999

Issuance and dissemination of a consolidated report, for the years 1997 and 1998, on the illicit trafficking in nuclear materials—September 1999

Issuance and dissemination of a special research report dealing with the security and vulnerability of certain nuclear material stockpiles in Former Soviet Union (FSU) countries and its (potential) impact on trafficking in materials of proliferation concern—September 1999.

These reports address the potential threat for a malevolent act directed at specific Department of Energy sites by adversaries. The Federal Bureau of Investigation (FBI) and the Bureau of Alcohol, Tobacco and Firearms (ATF) assist DOE in the development of these products, which provide a comprehensive assessment of external threats to DOE facilities. The Department is currently on track to meet or exceed the measures of success stated for this element. **Assessment:** Unspecified

- *Implement advanced technologies to prevent the theft or diversion of special nuclear materials, including the unattended, on-line gamma-ray monitor.*

Results: Technologies under development include: A portable measurement tool for gross nuclear material mass determinations; providing matrix correction techniques to allow accurate measurement of large crates to prevent smuggling of special nuclear materials; a low-wattage electrical calibration heater system to calibrate calorimetry instruments; transfer the neutron counting system technology to a commercial manufacturer; and provide a cost-effective technique for rapid nondestructive assay of plutonium in residues and impure materials. **Assessment:** Met Goal

- *Develop information on nuclear materials contained in waste in a new Departmental database for all nuclear materials by the end of the first quarter of FY 1999.*

Results: A plan to expand Nuclear Materials Management of Safeguards and Security (NMMSS) was developed by NN-44 and approved on April 9, 1998. The Department is currently scheduling workshops with field and headquarters to identify functional requirements for an upgraded NMMSS. The Department has supported the development and implementation of a standard site, item-level core nuclear materials accounting system for DOE facilities—the Local Area Network Materials Accounting System (LANMAS). Fourteen sites have committed to using LANMAS and are in various stages of installation / implementation. **Assessment:** Nearly Met Goal

Plan Of Action: A pilot program to test the feasibility of recording transfers of nuclear materials between waste sites in the current NMMSS system is ongoing at this time. NAC, Inc., the operating contractor for NMMSS, has provided a cost estimate for developing and maintaining a waste module in the current NMMSS system.

- *Further the protection of all U.S. origin nuclear materials in the United States and abroad from possible theft, loss, or illicit trafficking.*

Results: In addition to compensatory measures to ensure strict accounting and storage of all materials, enhanced measurement capabilities are being implemented to allow for measurement of materials not amenable to previous methods. **Assessment:** Met Goal

- *Develop advanced safeguards and security technologies for implementation in FY 2000.*

Results: Technologies developed by the Office of Safeguards and Security for implementation in FY 2000 include: An advanced operator training simulation tool for high-security dispatch application where the protection of critical national assets and national security are at stake; modernization of the Department's standardized access control system (ARGUS) to prevent unauthorized access to DOE facilities and assets; the Smart Camera project, which implements PC-based digital camera technology over an ATM network for the purpose of improving intrusion detection systems for primary alarm assessments; provide a capability for DOE sites to protect against flashrom hardware; and deliver the Access Delay Technology Transfer Manual to provide DOE sites with a reference guide for determining delay times for physical barriers and activated delay systems. **Assessment:** Met Goal

- *Initiate needed material protection, control, and accountability (MPC&A) upgrades at DOE facilities*

with weapons-usable material.

Results: Focus on MPC&A at several DOE facilities has been elevated, to include regularly scheduled measurements and inventories, as well as formation of a senior steering group to oversee the program. Where needed, compensatory measures have been instituted to retain materials in secure storage. **Assessment:** Met Goal

NS 3-5. Maintaining Readiness for Nuclear or Other Emergencies. Maintain nuclear test readiness and enhance emergency management capabilities to address any nuclear weapons, radiological, or other emergency in the United States or abroad. **Assessment:** Met Goal

Success will be measured by:

- *Maintain robust emergency response assets in accordance with Presidential Decision Directive 39, The Atomic Energy Act, Executive Order 12656, and Federal Emergency Plans.*

Results: The Department's Emergency Response Program exceeded its goal level for Fiscal Year 1999. This rating is based upon the successful deployments of the Department's radiological assets in support of U.S. Ambassadors abroad and Special Events. The Department's Emergency Response Program provides a national capability to respond to any radiological emergency or nuclear accident within the United States and abroad. The all-volunteer force that makes up the cadre of deployment forces is mostly from the nuclear weapons laboratories. The seven major capabilities/assets maintained are the Aerial Measuring System (AMS), the Accident Response Group (ARG), the Atmospheric Release Advisory Capability (ARAC), the Federal Radiological Monitoring and Assessment Center (FRMAC), the Radiological Assistance Program (RAP), the Nuclear Emergency Search Team (NEST), and the Radiation Emergency Assistance Center and Training Site (REAC/TS). These capabilities are maintained primarily through participation in international, national, state, and local operations, exercises, and training. Highlights of these activities for FY 1999 are as follows: During FY 1999, DOE radiological assets participated in 26 exercises and 24 real-world events. Also, REAC/TS responded to 59 (55 U.S. and 4 foreign) calls for medical assistance for 134 individuals and provided radiation accident management training to 177 health care professionals. In addition, REAC/TS and RAP personnel participated in Domestic Preparedness Training in 31 cities in support of Nunn, Lugar, Domenici legislation. The program trained 4,639 state and local first responders on nuclear/radiological awareness. Also, this program trained 1,048 state and local bomb technicians. Additionally, the program loaned 215 Radiation Pager "S" detectors to state and local bomb squads, enhancing their capability to detect potential nuclear/radiological incidents. This program positioned nuclear/radiological technical crisis response assets in the National Capital Area to respond to a terrorist Weapons of Mass Destruction incident during the NATO 50th Anniversary Summit. During FY 1999, REAC/TS participated in a joint project with Boston University in the first in a series of accident drills/exercises in Yerevan, Armenia. The drill/exercise was organized and sponsored by the International Atomic Energy Agency, with emphasis on medical management of radiation accidents involving five of the newly independent states of the former Soviet Union. During December 1998, a capabilities exercise (CAPEX) was conducted for the Nuclear Weapons Council, Congressional staff, and White House personnel. The objective of the CAPEX was to demonstrate the capability to simultaneously deploy and exercise DOE's complete array of emergency response assets. This included incident and accident assets such as NEST's Search Response Team, Joint Technical Operations Team, and the Nuclear/Radiological Advisory Team as well as ARG, AMS, ARAC, FRMAC, and RAP. This was the first time that all these assets were deployed and exercised at a single location, which tested capabilities to interact and be interoperable and the larger issue of command and control. All exercise objectives were successfully met. The Department of State (DOS) has developed a program to train and educate the American Embassies and Host Governments on the Crisis and Consequence Management for dealing with terrorist acts utilizing Nuclear, Radiological, Chemical, and Biological Weapons of Mass Destruction. In June 1999, the Emergency Response Program participated in a DOS-led interagency team to provide its first seminar/tabletop exercise to the U.S. Embassy in Jordan and Senior Level Host Government Officials. This program consists of a four-day tabletop exercise with the U.S. Embassy and Host Government. With respect to radiological incidents, the Department's emergency response program, during September 1999, deployed a special team to Phnom Penh, Cambodia, in support of the U.S. Embassy and the Government of Cambodia. The purpose of this deployment was to investigate a potentially serious situation in and around the Phnom Penh area. The team found no evidence of the concern raised by the Government of Cambodia. The Government of Cambodia expressed its appreciation through the U.S. Ambassador for the U.S. Government's quick response and superb cooperation. During August 1999, the Federal Bureau of Investigation (FBI) contacted the Office of Emergency Response regarding packages received by five Federal agencies in the Washington, D.C., area that purportedly contained radiological material. Arrangements were made with a team from DOE's office at Andrews Air Force Base to receive the packages from the FBI, survey the packages using a High Purity Germanium Detector, and store the packages under rules of evidence. The FBI requested DOE to store the packages until they were ready to retrieve them and fly them in an FBI plane to DOE's Savannah River Laboratory for a complete radiological analysis. In August of 1999, pursuant to direction from the Secretary, the responsibility for the management of these emergency response assets was transferred from the Office of Defense Programs to the Office of Security and Emergency Operations. **Assessment:** Exceeded Goal

- *Ensure that the capability to resume underground testing is maintained in accordance with the Presidential Decision Directive and Safeguard C of the Comprehensive Test Ban Treaty (CTBT).*

Results: The Department met its goal in maintaining it capability to resume underground nuclear testing. Maintaining the capability to resume nuclear testing requires DOE to maintain: (1) test facilities and equipment at the Nevada Test Site (NTS), (2) nuclear testing skills of personnel at both the NTS and the nuclear weapons laboratories, and (3) access to experienced personnel through knowledge capture and archiving. Experiments that require large quantities of high-explosives or experiments that require special nuclear materials driven by small amounts of high-explosives, the latter referred to as subcritical experiments, are conducted at the NTS. These experiments and specially designed test readiness exercises maintain NTS personnel test readiness skills, including containment, security, assembly, storage and transportation, insertion and emplacement, timing and control, arming and firing, diagnostics, and test control center activities. Three subcritical experiments, Cimarron, Clarinet, and Oboe 1, and 19 high-explosive experiments were conducted in FY 1999, as well as a Nuclear Explosive Safety Study exercise, which was performed with LANL. For the purpose of managing equipment and facilities essential to conducting an underground nuclear test, the DOE Nevada Operations Office has an ongoing archiving program which captures on videotape the knowledge and testing experience of departing personnel as well as data, photos, drawings, procedures, nuclear explosive safety studies, containment evaluation plans, lessons learned, and other information. In FY 1999, 7 video tape modules were completed; 3 new CD ROMs were created; and over 41,000 pages related to underground tests were scanned into the Document Management and Archived Records System. Additionally, many milestones toward implementing a computer aided management decision system (the Decision Support System, or DSS) were achieved: the Compliance Requirements database was linked to the DSS to identify requirements of UGT procedures, DOE orders, laws, certifications, permits, and qualifications; dynamic models for UGT functional areas covering Control Room Activities, Readiness Briefings, Arming and Firing, Area Control, Test Execution, and Treaty Verification were completed; and a reporting function, making it easier to perform cost-benefit analysis, was added. **Assessment:** Met Goal

- *Demonstrate improvement of a comprehensive management system to ensure effective Departmental response to all DOE emergencies.*

Results: Accomplishments through September 30, 1999: Conducted an emergency management technical assistance appraisal at Brookhaven National Laboratory (October 1998); Conducted an evaluation of the emergency management program at Hanford (March 1999); and evaluated the Hanford major emergency response exercise in June 1999. Major emergency response exercises were conducted at: Pantex Plant (March 1999); Hanford (June 1999); Nevada Test Site (June 1999); Los Alamos National Laboratory (July 1999); Rocky Flats Environmental Technology Site (May 1999); Lawrence Livermore National Laboratory (June 1999); Transportation Safeguards Division (April 1999); Mound (June 1999); Waste Isolation Pilot Plant (July 1999); Savannah River Site (August 1999); Sandia National Laboratory (September 1999); and radiological assistance to the State of Pennsylvania ("Vigilant Lion," September 1999). The Federal Radiological Monitoring and Assessment Center participated in an exercise at the Indian Point nuclear power plant (May 1999), and DOE radiological emergency response assets participated in a number of domestic consequence management related exercises throughout FY 1999. Conducted the following training courses: emergency decisionmaking for Ohio Field Office at Mound facility (December 1998); Integrating Emergency and Occurrence Reporting and an introduction to Emergency Action Level Development (November 1998 and May 1999); consequence assessment for Nevada Operations Office (December 1998); emergency decisionmaking for Y-12 Plant (April 1999); and exercise development for Pennsylvania Emergency Management Agency (April 1999). Conducted a technical meeting in conjunction with Soldier Biological and Chemical Command to discuss emergency planning aspects associated with response to chemical agents (October 1998). Conducted a DOE complex-wide information-sharing meeting on emergency management activities, including consequence assessment and protective actions (May 1999). Participated in numerous interagency emergency planning meetings associated with the Federal Response Plan, the Federal Radiological Emergency Preparedness Plan, and the National Contingency Plan. Participated in numerous intra- and inter-agency Y2K readiness activities, including a DOE Y2K Readiness Exercise (April 1999) and Y2K readiness drills by DOE sites (September 1999). Represented DOE at meetings of the Environmental Protection Agency's National Advisory Committee (NAC) for Acute Exposure Guideline Levels. Continued expansion of the Emergency Communications Network (data/video/voice) to Departmental elements and other Federal agencies. Participated in implementing the plan for addressing the Defense Nuclear Facilities Safety Board Recommendation 98-1, which improves the effectiveness to address and resolve environment, safety, and health issues identified by DOE internal oversight organizations. These accomplishments represent an important contribution to successful performance of this measure because of the wide spectrum of emergency management activities addressed. Virtually all elements of the Department benefit from theses accomplishments, which should result in overall comprehensive management system improvements to ensure effective Departmental response to all DOE emergencies. The Department has met the measures of success. The conduct of emergency response exercises at DOE sites and facilities actively demonstrates the state of response performance, and provides lessons learned to further improve emergency management across the complex. **Assessment:** Met Goal

NS 3-6. Managing Contractor Work Force Restructuring. Mitigate the impacts on workers and communities from contractor work force restructuring and assist community planning. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Support local community transition activities that will create or retain cumulatively 15,000 to 20,000 new private-sector jobs by the end of FY 1999.*

Results: Actual number of jobs created or retained was 22,186. **Assessment:** Exceeded Goal

- *Achieve annual recurring costs savings from separated workers that is at least three times the one-time cost of separation.*

Results: The ratio was about four times the one-time cost of separation. **Assessment:** Exceeded Goal

- *Keep involuntary separations between 30 and 60 percent of the positions eliminated while assuring maintenance of essential work force skills mix and productivity.*

Results: The percentage of involuntary separations was approximately 63 percent. The ability to offer enhanced voluntary separation packages was limited by Congressional budget reductions. **Assessment:** Nearly Met Goal

- *Implement initiatives to accelerate asset conversion and reuse that will result in more than $1 billion in long-term savings to the Department and facilitate economic diversification of local communities.*

Results: Identified property retention rate of 98 percent in 1997-1998. Attempting to establish HQ/Field coordination to designate properties for economic diversification of local communities. **Assessment:** Below Expectation

Plan of Action: This measure has been reviewed and determined to contain elements not within the jurisdiction of the Office of Worker and Community Transition. This measure has been eliminated from the FY 2000 performance measures and a different measure has been developed for asset management which will more accurately reflect program actions.

NS 4-1. Reducing the Weapons Stockpile. Dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner. **Assessment:** Below Expectation

Success will be measured by:

- *Evaluate the impacts of warhead dismantlement and transparency initiatives.*

Results: In FY 1999, the Department funded three different studies to comprehensively evaluate the impacts of warhead dismantlement and transparency initiatives. The three studies were all completed on time and covered three different DOE facilities that could be potentially impacted by various warhead dismantlement and transparency initiatives. **Assessment:** Met Goal

- *Adhere to schedules for the safe and secure dismantlement of approximately 275 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.*

Results: In FY 1999, 207 nuclear warheads were dismantled, significantly less than the performance goal. Dismantlement of the W69 Short-Range Attack Missile warhead was completed in FY 1999. However, during FY 1999, dismantlement of the W79 Artillery-Fired Atomic Projectile warhead was at a rate lower than expected due to technical difficulties with the process and facility modifications, and dismantling of the W56 Minuteman II warhead was delayed by technical difficulties. No reliability figures or plans for military facilities have been affected. **Assessment:** Below Expectation

Plan Of Action: The backlog of retired warheads yet to be dismantled will be completed in FY 2005, not FY 2003 as previously planned.

NS 4-2. Reducing Inventories of Surplus Weapons-Usable Fissile Materials Worldwide in a Safe, Secure, Transparent, and Irreversible Manner. Implement the disposition of surplus highly enriched uranium (HEU) and plutonium and provide technical support to attain reciprocal actions for the disposition of surplus Russian plutonium. Minimize the future demand for HEU in civilian programs through the development of alternative low enriched uranium (LEU) fuels for research reactors and targets for medical isotope production. Support international efforts to place excess fissile materials under International Atomic Energy Agency (IAEA) safeguards. **Assessment:** Met Goal

Success will be measured by:

- *Complete the final Environmental Impact Statement and issue a Record of Decision on siting plutonium disposition facilities.*

Results: The draft Surplus Plutonium Disposition Environmental Impact Statement (EIS) was released for public review and comment in July 1998, and a supplement to the draft EIS, containing site-specific environmental analysis of the commercial reactor sites where mixed oxide (MOX) fuel will be irradiated, was issued in April 1999. The Department issued the final EIS on November 12, 1999, and expects to issue a Record of Decision in late December. **Assessment:** Nearly Met Goal

- *Initiate, by the end of FY 1999, negotiations with Russia on a bilateral agreement for the disposition of surplus weapons plutonium.*

Results: Formal negotiations with Russia on a bilateral agreement for the disposition of surplus weapons plutonium commenced in February 1999. Through the end of FY 1999, seven rounds of negotiations have taken place and the parties expect to complete the agreement in the near future. **Assessment:** Exceeded Goal

- *Initiate design for Pit Disassembly and Conversion and Mixed Oxide (MOX) Fuel Fabrication facilities.*

Results: In March 1999, the Department awarded a contract to Duke Engineering & Services, COGEMA, Inc., and Stone & Webster (DCS) to provide MOX fuel fabrication and irradiation services. DCS is currently conducting design work on the MOX fuel fabrication facility. In August 1999, the Department awarded a contract to Raytheon Engineers and Constructors for the design of a pit disassembly and conversion facility. **Assessment:** Met Goal

- *Continue transfer of U.S. surplus HEU to the United States Enrichment Corporation for dilution and subsequent sale.*

Results: In FY 1999, the Department transferred approximately seven metric tons of HEU from Portsmouth, Ohio, to the United States Enrichment Corporation. A total of 50 metric tons of surplus HEU will be transferred to USEC over the next six years. **Assessment:** Met Goal

- *Place over 20 metric tons of excess highly enriched uranium (HEU) under International Atomic Energy Agency (IAEA) safeguards in FY 1999.*

Results: The goal of placing over 20 metric tons of excess HEU under IAEA safeguards has been met. Thirteen metric tons of HEU were blended down to LEU at the Portsmouth Gaseous Diffusion Plant. The IAEA verified the HEU downblending operations. Seven metric tons of HEU were transferred to the BWXT facility in Lynchburg, Virginia, for downblending. The IAEA began the safeguarding of the HEU downblending operations at BWXT in November 1999. **Assessment:** Met Goal

- *Monitor the dilution of 30 metric tons of highly enriched uranium (HEU) to low enriched uranium (LEU) from dismantled Russian nuclear weapons for purchase by the United States Enrichment Corporation.*

Results: Monitoring was performed by staff making special monitoring visits (SMVs) and by the permanent presence office staff to comply with the 1993 U.S./Russia agreement. **Assessment:** Met Goal

- *Remove all highly enriched uranium oxides from the Portsmouth site.*

Results: All highly enriched uranium oxides have been removed from the Portsmouth Gaseous Diffusion Plant site. This activity was completed on June 23, 1999. A security sweep and downgrading of the X-345 building used for storing highly enriched uranium was completed by September 30, 1999, and the facility was downgraded from category I to category III, as reported in the September 30, 1999, draft DOE Annual Report on the Status of Environment, Safety, and Health Conditions at the Paducah and Portsmouth Gaseous Diffusion Plants for Fiscal Year 1999. This action will significantly reduce the safeguards and security operating costs to DOE at Portsmouth. **Assessment:** Met Goal

NS 5-1. Strengthening the Nuclear Nonproliferation Regime. Strengthen the nuclear nonproliferation regime through support of treaties and international agreements. **Assessment:** Met Goal

Success will be measured by:

- *Support U.S.-led negotiations on the Fissile Material Cut-Off Treaty at the United Nations multilateral conference on disarmament in Geneva.*

Results: The goal was met. During FY 1999, the Conference on Disarmament failed to renew the ad hoc committee with the negotiating mandate for the FMCT. The Department did support the U.S. Government interagency working group and the U.S. delegation in Geneva in their efforts to move forward on treaty negotiations. **Assessment:** Met Goal

NS 5-2. Minimizing the Risks of Proliferation. Work with the states of the former Soviet Union and others to minimize the risks of proliferation. **Assessment:** Exceeded Goal

Success will be measured by:

- *Continue to improve and integrate technology practices, facilities, and training for material protection, control, and accounting for approximately 650 metric tons of weapons-usable material at 53 locations.*

Results: Goal was exceeded by adding 2 additional sites to the 55 locations and initiating additional projects to meet performance targets. **Assessment:** Exceeded Goal

- *Field an initial joint DOE-Customs Service remote inspection system capable of identifying radiation signatures of potential nuclear smuggling packages.*

Results: This successful effort has come to be known as the Second Line of Defense (SLD) Program. The SLD program achieved multiple successes during FY 1998-99. These include: a signed protocol between the Russian Federation (RF) State Customs Committee and the Department of Energy and the submission of an SLD memorandum of understanding to the Russian interagency for approval. The SLD program is creating a site prioritization and selection study which includes near-term surveying of six Caspian/Black Sea ports for nuclear detection equipment deployment. Recently, SLD completed the installation of nuclear detection equipment at Sheremetyevo International Airport Phase 1 and Astrakan Seaport. For the training portions of the SLD program, a training implementation architecture was created for RF Customs, and nuclear detection training equipment for the two RF Customs training academies was procured. **Assessment:** Exceeded Goal

- *Further the Nuclear Cities Initiative (NEI) promoting cooperation with the closed cities in the Russian nuclear weapon complex to improve the prospects for defense conversion and employment of former weapon scientists.*

Results: During FY 1999, several projects were approved, including the Open Computing Center at Sarov and International Development Centers at Sarov, Snezhinsk and Zheleznogorsk. Preliminary work is underway on additional projects in the three closed cities where NCI works. **Assessment:** Exceeded Goal

- *Support non-proliferation objectives through concluding key science and technology agreements on: Geologic research connected to radioactive waste disposal with the Russian Ministry of Atomic energy; Renewal of the existing Peaceful Uses of Atomic Energy Agreement and beginning negotiations for a new and expanded agreement with Russia; and Specific cooperative projects under the U.S.-China Peaceful Uses of Nuclear Technologies Agreement.*

Results: Although some progress was made in terms of negotiating an agreement with the Russians on geologic disposal, issues relating to taxes and customs duties remain. The diplomatic note that the United States sent to extend the Peaceful Uses of Atomic Energy Agreement has not resulted in a reciprocal note from the Russians, which is needed to extend the agreement. Finally, we are awaiting the first Joint Coordinating Committee meeting under the U.S.-China Peaceful Uses of Nuclear Technologies Agreement. **Assessment:** Nearly Met Goal

Plan Of Action: A third series of negotiating sessions is being planned for February 2000 in Moscow for the geologic repository agreement. We have made senior Minatom staff aware of the failure of the Russian government to send us their diplomatic note regarding the Peaceful Uses Agreement and are alerting the Vice President's office of this failure; we are continuing to work with the Chinese government on setting up the first Joint Coordinating Committee meeting, though this is a sensitive issue now given other events relating to the Chinese.

NS 5-3. Advancing Nonproliferation Technology. Develop technologies and systems for detection of nuclear weapons proliferation and for treaty monitoring. **Assessment:** Met Goal

Success will be measured by:

- *Complete development and delivery to customers of two new counter-nuclear-smuggling detection technologies, one portable/hand-held and the other for wide area tracking and interdiction.*

Results: A portable gas-cooled germanium detector has been delivered to the International Atomic Energy Agency, which will use it to monitor uranium enrichment levels at blend-down facilities. A data fusion algorithm to aid in tracking moving radiation sources has been delivered to the operational customer. **Assessment:** Met Goal

- *Demonstrate, through airborne field tests, two new technologies that use chemical detection methods to remotely characterize weapons-of-mass-destruction proliferation activities.*

Results: Airborne field tests for both of the new technologies have been completed. The results are classified. **Assessment:** Met Goal

- *Deliver to the U.S. National Data Center for the CTBT the first half (Release 3) of an operational knowledge base that can be accessed by automated processing systems and human analysts to provide monitoring and verification confidence.*

Results: Delivery of Release 3 of the knowledge base, along with the automated user interfaces and interactive tools needed for operators to access that knowledge, was completed in July, 1999. Work is now proceeding on the next increment, Release 4. **Assessment:** Met Goal

NS 6-1. Providing Special Nuclear Power Systems for National Security. Provide the U.S. Navy with safe, militarily effective nuclear propulsion plants and ensure their continued safe and reliable operation. Meet ongoing and future national security requirements for special nuclear power systems. **Assessment:** Met Goal

Success will be measured by:

- *Ensure radiation exposures to workers or the public from Naval Reactors activities are within Federal limits and no significant findings result from environmental inspections by State and Federal regulators.*

Results: Radiological controls and environmental programs continue to be conducted in accordance with applicable requirements. Environmental inspections by Federal and State regulators conducted this fiscal year have identified no major findings. No radiation exposures from Naval Reactors activities exceeded Federal limits. **Assessment:** Met Goal

- *Develop new reactor plants, including the next generation reactor, which will be 85 percent complete by the end of FY 1999, and ensure the safety, performance reliability, and service life of operating reactors.*

Results: Naval Reactors continues to meet program goals in carrying out testing, development, and analyses in the applicable technology areas to ensure the safe and reliable operation of reactor plants in Navy warships. A key indicator of the success of these efforts is that nuclear powered warships have safely accumulated an additional 100 reactor years of operation this year, resulting in over 118 million miles steamed without a reactor incident.

Development of the next generation reactor for the Navy's New Attack Submarine is progressing ahead of schedule. Development and qualification testing is proceeding on components and systems, such as the control drive mechanism units and new concept steam generator to demonstrate design acceptability. On October 5, 1998, the Department of Defense approved the Navy's request for a new nuclear powered aircraft carrier (CVNX Class), including a new propulsion plant which Naval Reactors will develop. **Assessment:** Exceeded Goal

NS 7-1 Enhancing the Safety of Soviet-Designed Reactors and Promoting International Nuclear Safety. Assist countries in reducing the risks from Soviet-designed nuclear power plants and implement a self-sustaining nuclear safety improvement program capable of reaching internationally accepted

safety practices. Promote nuclear safety culture improvements internationally by providing strong leadership in international nuclear safety organizations and centers. **Assessment:** Met Goal

Success will be measured by:

- *Promote U.S. positions and practices in international forums that advocate safe reactor operations.*

Results: U.S. positions were represented in various international forums, most notably involving the IAEA (December 15-16, 1998, Final Meeting of the Advisory Group on the Safety of VVER and RBMK reactors) and the G-24 (March 25-26, 1999, Meeting of the Nuclear Safety Coordination Group). Additional meetings that have been held include the IAEA conferences on Strengthening Nuclear Safety in Eastern Europe (June 14-18, 1999) and Decommissioning the Kazakhstan BN-350 Breeder Reactor (August 6-8, 1999). Particular emphasis has been placed on coordinating and improving efforts to identify and correct Y2K induced problems at Soviet-designed NPPs. **Assessment:** Met Goal

- *Complete the installation of Safety Parameter Display Systems to improve operator response to emergencies at Leningrad-Unit 4 and Novororonezh-Unit 4 in Russia.*

Results: The Novovoronezh SPDS has been installed and passed the site acceptance test. The Leningrad SPDS project has been delayed due to U. S. Government sanctions against working with the Russian organization NIKIET. **Assessment:** Nearly Met Goal

- *Complete the development and implementation of an effective reactor plant operator training program at key plants based on the Systematic Approach to Training methodology used in the United States and provide and incorporate plant simulators into the operator training programs.*

Results: The transfer and adaptation of two training programs developed at the Khmelnytskyy NPP in Ukraine and the Balakovo NPP in Russia to other Soviet-designed plants in Russia was completed in July 1999. Similarly, development of additional reactor operator simulator training material at the Khmelnytskyy NPP was completed by August 1999. The Balakovo Unit 4 analytical simulator and the upgrade to the Zaporizhzhya Unit 5 full-scope simulator was completed and formally turned over to the NPPs in June 1999. **Assessment:** Met Goal

- *Complete plans for critical asset identification within the Department and test vulnerability assessment techniques in two components of the Energy Sector in countries of the former Soviet Union.*

Results: There is an error in the publication of this performance measure. This measure was intended to be for the Critical Infrastructure Protection Program, which is what we are going to report on further in this text. However, as it is written, with the words "in countries of the former Soviet Union," no such program exists. The following text should replace the description of this measure: "Complete plans for critical asset identification within the Department and test vulnerability assessment techniques in two components of the Energy Sector." The results of this revised measure follow: Critical Infrastructure protection was an unfunded mandate in FY 1999, yet with limited contributions within the Department, significant progress has been made for critical asset identification and testing of vulnerability assessment techniques. For example, as a result of DOE's focus on working with the Nation's electric and gas utilities to assess and improve the security of the information and control systems that run their operations, five electric power companies have undergone vulnerability assessments as part of this program. This program is now being expanded to cover gas and oil companies. **Assessment:** Below Expectation

Plan Of Action: Continue to establish criteria for critical asset identification focused on DOE facilities and conducting an Information Assurance Outreach Program focused on working with the nation's electric and gas utilities to assess and improve the security of the information and control systems that run their operations. The Critical Infrastructure Protection Task Force will also continue its focus to implement energy sector security and other PDD-63 related responsibilities.

- *Provide preliminary safety assessment results to determine near-term safety improvements at eight nuclear power plants in Russia and Ukraine.*

Results: Due to host countries modifying reactor operating plans and the imposition of sanctions against NIKIET, the goal of performing eight in-depth safety assessments was reduced to six. The work on all six projects is well underway. Preliminary safety assessment results have been completed for the plants by September 1999. **Assessment:** Met Goal

NS 7-3. Assisting in the Shutdown of the Chernobyl Nuclear Power Plant. Work closely with the United States Agency for International Development to assist in the multi-national effort to shut down Chornobyl Units 1, 2, and 3 in Ukraine before January 2001 and reduce the risk of possible collapse of the Unit 4 sarcophagus. **Assessment:** Met Goal

Success will be measured by:

- *Complete a comprehensive decommissioning engineering survey of Chornobyl Unit 1.*

Results: The decommissioning survey of Chornobyl Unit 1 has been completed. Survey results are being prepared for Departmental managers. **Assessment:** Met Goal

ENVIRONMENTAL QUALITY

EQ 1-1. Reducing Worker, Public, and Environmental Risks. Identify and fund projects to reduce the most serious risks first and prevent further increases in relative risk at all sites. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Stabilize and safely store 6 metric tons of heavy metal of spent nuclear fuel (SNF).*

Results: For FY 1999, 0.340 metric tons of heavy metal of spent nuclear fuel was stabilized. This was significantly different from the planned 6 metric tons of heavy metal to be stabilized. This difference was due to the Three Mile Island (TMI) SNF activities at Idaho (which were the bulk of the planned stabilization activities) being greatly impacted by a criticality issue discovered in the de-watering system operation that precluded processing the TMI canisters. **Assessment:** Below Expectation

Plan Of Action: Plans for continuing activities with the TMI fuel include restricted operation of the old system to process 13 canisters during November and December 1999, redesign of the de-watering system (complete October 1999), and restart of unrestricted TMI operations by February 2000. The one to two months before unrestricted restart are to complete Quality Assurance/Quality Control checks, update procedures and the Safety Analysis Report, and train qualified operators.

- *Stabilize 33,000 kilograms bulk of plutonium residues, 40 liters of plutonium solution, and 332 containers of plutonium metals/oxides.*

Results: For FY 1999, 31,033 kilograms bulk of plutonium residues, 16 liters of plutonium solution and 275 containers of plutonium metals/oxides were stabilized. The totals are not a significant difference from the planned activities. Rocky Flats Environmental Technology Site (RFETS) stabilized 30,864 kg bulk of plutonium residues and the Savannah River site (SR) stabilized 169 kg bulk. A significant portion of the SR stabilization work was going to be the RFETS sand, slag, and crucible (SS&C), approximately 1,000 kg bulk. However, technical issues with the shipping container delayed shipping of the material from RFETS to SR; consequently, SR stabilization activities were delayed. To offset the delay, SR stabilized plutonium residues stored at SR. An amended Record of Decision was issued in August 1999 to package RFETS SS&C for WIPP disposal. Stabilization of the 40 liters of plutonium solutions at Richland (RL) was not achieved due to delayed restart of the prototype stabilization system. This system is a one-of-a-kind laboratory system that was initially delayed due to seismic safety concerns and then by equipment failures during start-up system checks. The prototype plutonium solution stabilization system is now functioning properly. In FY 2000, a different process for solution stabilization will be installed and operated that is expected to recover the FY 1999 shortfall. This new system was used successfully at RFETS. RL changed the sequencing of the stabilization of plutonium metals and oxides because of relative risk priorities between the two material types. It was determined that metals should be repackaged only when the repackaging system is available in FY 2000. Therefore, stabilization of oxides began first in FY 1999. This affected the final number of containers stabilized by decreasing the expectation from 238 containers to 110. The decrease is due to a lower throughput rate for oxide stabilization. RL was able to stabilize 40 more containers than the expected 110. In addition, SR completed stabilization of 125 containers of plutonium metals and oxides. **Assessment:** Nearly Met Goal

EQ 2-1. Accelerating and Completing Geographic Site Cleanup. Complete clean up at 43 of the Department's 53 remaining sites by 2006. Continue cleanup at the 10 remaining sites, including the five largest sites, scheduled for completion in the post-2006 timeframe. Cleanup progress is measured by completion of geographic sites where the Office of Environmental Management is responsible for remediation of contaminants and other material. Interim progress is demonstrated by cleaning up portions of the EM geographic sites, referred to as "Release Sites" and "Facilities." Cleaning up these areas ultimately leads to the completion of the entire geographic site. **Assessment:** Met Goal

Success will be measured by:

- *Complete 80 facility decommissionings. (This will bring the number of completed facility decommissionings to about 530 out of a total inventory of approximately 3,350 facilities.)*

Results: Results indicate that 92 facility decommissionings were completed during FY 1999, achieving 115 percent of the performance target. **Assessment:** Exceeded Goal

- *Complete 120 facility decommissioning assessments.*

Results: Results indicate that 109 facility decommissioning assessments were completed during FY 1999, achieving 90 percent of the performance target. **Assessment:** Nearly Met Goal

- *Complete remediation at 3 geographic sites, increasing the total completed to 68 of 113 geographic sites. (This is a milestone of a FMFIA corrective action plan.)*

Results: Remediation of three geographic sites was completed during FY 1999: Ames Laboratory in Iowa, Princeton Plasma Physics Laboratory in New Jersey, and Sandia National Laboratories in California. **Assessment:** Met Goal

- *Complete 310 release site assessments.*

Results: Results indicate that 288 release site assessments were completed during FY 1999, or 93 percent of the performance target. Results achieved in FY 1999 are within 10 percent of the performance target and are not significantly different from the stated goal.

Assessment: Nearly Met Goal

- *Complete 165 release site cleanups. (This will bring the number of completed release site cleanups to about 4,290 out of a total inventory of approximately 9,700 release sites.)*

Results: Results indicate that 161 release site cleanups were completed during FY 1999. The year-end status is rated as "Met Goal" since the results equate to 98 percent of the performance target. **Assessment:** Nearly Met Goal

EQ 3-1. Making Disposal-Ready and Disposing of Waste Generated During Past and Current DOE Activities. Safely and expeditiously make disposal-ready and dispose of waste generated during past and current DOE activities. Prepare transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP) and ship as soon as legal and regulatory constraints are removed. **Assessment:** Met Goal

Success will be measured by:

- *Ship 100 to 200 cubic meters of TRU waste to WIPP for disposal.*

Results: Approximately 280 cubic meters of TRU waste were successfully shipped to WIPP for disposal in FY 1999. **Assessment:** Exceeded Goal

- *Make disposal-ready 700 cubic meters of TRU waste.*

Results: The status of this commitment is intentionally listed as "unspecified." The make disposal-ready measure was intended to be a placeholder in the corporate performance measures to show interim progress in the TRU waste program until the Waste Isolation Pilot Plant (WIPP) was opened for disposal operations and actual shipments of TRU waste could be reported. As of September 30, 1999, approximately 370 cubic meters of TRU waste were made disposal-ready, 282 of which were received for disposal at WIPP. The delayed opening of WIPP postponed the preparation of additional waste for disposal. **Assessment:** Unspecified

- *Produce 15 canisters of HLW at the West Valley Demonstration Project.*

Results: The West Valley Demonstration Project produced 12 canisters of HLW in FY 1999. High level waste processing was impacted by an off-normal event in the Vitrification Facility in early August. The melter was put into idle for an extended period until the problem was resolved and operations resumed in late September. **Assessment:** Nearly Met Goal

- *Produce 200 canisters of high level waste (HLW) at the Defense Waste Processing Facility at the Savannah River Site.*

Results: The Defense Waste Processing Facility produced 236 canisters of HLW in FY 1999, exceeding the goal of 200 canisters. **Assessment:** Exceeded Goal

- *Dispose of 15,000 cubic meters of mixed low level waste.*

Results: Nine field offices disposed of a total of over 14,300 cubic meters of mixed low-level waste, very nearly meeting the goal of 15,000. **Assessment:** Nearly Met Goal

Plan Of Action: Availability of a DOE disposal site for mixed low-level waste in FY 2000 will facilitate meeting this success measure in the future.

- *Dispose of 73,000 cubic meters of low level waste.*

Results: Nine field offices disposed of a total of over 49,400 cubic meters of low level waste, significantly less than the goal of 73,000. Aggressive cleanup plans at Nevada Test Site did not materialize due to lack of agreement with the State on cleanup standards. Also, estimated large shipments of previously generated (stored) waste from Oak Ridge Operations Office to an offsite DOE disposal facility did not occur due to lack of NEPA authority. Even though the volume fell below expectations, it was one of the strongest years for disposal to date. **Assessment:** Below Expectation

Plan Of Action: The Department will work to resolve obstacles to meeting future performance goals.

EQ 4-1. Preventing Future Pollution. Incorporate pollution prevention, including waste minimization, recycling, and reuse of materials, into all DOE activities in accordance with Executive Order 13101. **Assessment:** Met Goal

Success will be measured by:

- *Reduce by 10 percent the waste resulting from the execution of cleanup, stabilization, and decommissioning activities, from the annual planned baseline volumes.*

Results: The Department avoided over 27,000 cubic meters of waste from pollution prevention projects for its cleanup, stabilization, and decommissioning activities. This reduction represents more than the 16,000 cubic meters reduction committed in the EM Corporate Commitment document. The Department fully met this measure. **Assessment:** Exceeded Goal

- *Reduce routine waste generation by 45 percent based on 1993 waste generation rates. (Data for reporting will be available at the end of calendar year 1999.)*

Results: Data on routine waste generation will be collected at the beginning of calendar year 2000 and will not be available until April 2000. However, the Department was able to achieve this reduction in FY 1998 and there is no indication that waste generation will increase significantly in FY 1999. **Assessment:** Unspecified

Plan Of Action: This measure will be changed in order to provide results in future reports.

- *Implement projects that reduce/avoid the generation of radioactive, mixed, and hazardous wastes by 2,000 cubic meters.*

Results: The Department implemented pollution prevention projects in the first half of 1999 that avoided

5,000 cubic meters of wastes. This performance measure has been successfully met. **Assessment:** Exceeded Goal

EQ 5-1. Continuing with Yucca Mountain Site Characterization. Complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission. **Assessment:** Met Goal

Success will be measured by:

- *Complete peer review of the total system performance assessment to provide formal, independent evaluation and critique.*

Results: The peer review of the total system performance assessment was completed on May 26, 1999, and the Final Peer Review Report containing comment responses was completed on August 12, 1999. The review panel's recommendations have been factored into FY 2000 and outyear planning. **Assessment:** Met Goal

- *Complete repository and waste package design inputs for use in total system performance assessment for the repository license application.*

Results: Repository and waste package design inputs were completed on August 27, 1999, and will be used in the development of the total system performance assessment for the Yucca Mountain site recommendation. **Assessment:** Met Goal

- *Publish a draft Environmental Impact Statement (EIS). The Nuclear Waste Policy Act requires a Final EIS to accompany the site recommendation.*

Results: The draft Environmental Impact Statement was completed in July 1999 and published in the *Federal Register* on August 13, 1999. **Assessment:** Met Goal

EQ 5-2. Developing Waste Acceptance and Transportation Capability. Maintain the capability to initiate plans to transport spent nuclear fuel and high level waste as soon as a Federal facility is designated under the Nuclear Waste Policy Act, as amended.

No performance measures were proposed for this objective in FY 1999.

EQ 6-1. Reducing Environmental Cleanup Costs Through Enhanced Performance. Significantly enhance performance, increase efficiency, and reduce costs through increased use of fixed-price competitive contracting, optimized project sequencing, recycling and other waste minimization techniques, privatization, systems engineering, and benchmarking. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Continue the development and implementation of the privatization strategy by: Commencing Phase II (design completion and facility construction) of the Idaho National Engineering and Environmental Laboratory (INEEL) Advanced Mixed Waste Treatment Project (AMWTP); Awarding the contract for the INEEL Spent Nuclear Fuel (SNF) Dry Storage Project; and Awarding the contract for the Oak Ridge Waste Disposal Project (design completion/construction/operation).*

Results: The DOE Record of Decision on the AMWTP Environmental Impact Statement was signed on March 22, 1999. The decision was to construct and operate an AMWTP facility at the INEEL in accordance with DOE's contract with BNFL Inc. Commencement of Phase II was authorized by DOE on May 4, 1999. BNFL Inc. has commenced Phase II activities. **Assessment:** Met Goal.

Awarding the contract for the INEEL SNF Dry Storage Project: The RFP was issued on January 29, 1999. Contract award was planned by the end of September 1999. However, issues arose that have precluded awarding of this contract to date. These issues include: additional information required from the bidders; a DOE policy decision needed on labor issues; and potential protest issues. The tentative award date is now January 2000. **Assessment:** Nearly Met Goal

Awarding the contract for the Oak Ridge Waste Disposal Project: Contract award is expected in December 1999 following conclusion of the Congressional notification period and approval of the CERCLA Record of Decision. The delay in contract award beyond the original FY 1999 schedule does not significantly impact the goal of achieving cleanup program efficiencies and reducing costs through privatization. The Request for Proposals was issued in May 1999, four months behind schedule. The additional effort that went into the development and review of the solicitation achieved the desired outcome. An extremely cost-effective proposal was submitted and a vendor was selected in August 1999. Parallel efforts related to CERCLA documentation and Congressional reporting were accelerated to reduce the overall schedule impact. The Congressional notification report was submitted in September 1999, in accordance with Section 3132 of the National Defense Authorization Act for FY 1998. EPA, the Tennessee Department of Environment and Conservation and DOE are expected to approve the CERCLA Record of Decision in early November. Based on the vendor proposal, the contract award will represent a significant cost savings compared with the previously validated and independently reviewed cost estimates for this project. **Assessment:** Nearly Met Goal

EQ 6-2. Developing and Deploying Innovative Cleanup Technologies. Develop and deploy innovative environmental cleanup, nuclear waste, and spent fuel treatment technologies that reduce cost, resolve currently intractable problems, and/or are more protective of workers and the environment. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Meet all commitments made to the Ohio Environmental Protection Agency and the Defense Nuclear Facilities Safety Board to ensure the safety of the Department's inventory of depleted uranium hexafluoride.*

Results: The Department continues to manage its depleted uranium cylinders in a manner consistent with both Ohio EPA and DNFSB commitments. The Department continues to maintain the inventory in a manner to ensure safety of the workers, community, and environment. All commitments to the OEPA continue to be met with the UF6 Cylinder Project at Portsmouth as validated by the OEPA visit this year. The State reviewed our compliance with the Director's Final Findings and Orders and had no findings. The required periodic inspections were completed in April; radiological surveys were completed on all full DUF6 cylinders in July; ultrasonic wall measurements were completed on 150 cylinders in August and quarterly sampling of rainwater run-off continues.

All formal commitments to DNFSB Recommendation 95-1 related to systems engineering and safety analysis continue to be met. In addition, since the issuance of Recommendation 95-1, 3768 cylinders have been painted, which represents about 35 percent of the "worst case" cylinder population. A status review of the Depleted Uranium Cylinder Project with the DNFSB staff in July 1999 had no significant findings. **Assessment:** Met Goal

- *Maintain the Fast Flux Test Facility in a safe, environmentally compliant standby condition to permit implementation of an anticipated Secretarial decision in FY 1999 to deactivate or pursue potential restart to support a range of national research reactor requirements.*

Results: The facility was maintained in compliance with all applicable Federal and state health, safety, and environmental regulations during FY 1999. In August 1999, the Department announced the Secretary of Energy's decision to conduct a National Environmental Policy Act review of the environmental impacts associated with returning the Fast Flux Test Facility to operation. This decision by Secretary Richardson followed careful consideration of the results from the 90-day program scoping plan prepared by Pacific Northwest National Laboratory, recommendations from the Department's independent Nuclear Energy Research Advisory Committee (NERAC), and advice from staff. **Assessment:** Met Goal

- *Complete the conversion and disposition of 100 percent of the secondary sodium coolant from the Experimental Breeder Reactor-II and 40 percent of the Fermi reactor sodium coolant in storage at Argonne National Laboratory-West.*

Results: The conversion of the sodium coolant identified in this measure was completed, but not the disposition. Specifically, Argonne National Laboratory (ANL) has treated 100 percent of secondary sodium coolant from the Experimental Breeder Reactor-II and 40 percent of the Fermi sodium coolant, using the Sodium Processing Facility (SPF) at ANL-West. This treatment resulted in approximately 945 drums of solidified sodium hydroxide which are to be disposed of in the Radioactive Waste Management Complex (RWMC). **Assessment:** Nearly Met Goal

Plan Of Action: Activities are currently underway to confirm all the drums meet disposal requirements. Once these confirmation actions have been finalized, a revised schedule for sodium disposal at the RWMC will be established. Sodium disposal at the RWMC is expected to be completed during FY 2000.

- *Accomplish 60 innovative technology deployments.*

Results: The field has reported 125 first-time innovative technology deployments. **Assessment:** Exceeded Goal

- *Demonstrate 22 alternative technology systems that meet the performance-specification based needs as identified by the Site Technology Coordination Groups.*

Results: In FY 1999, 27 full-scale demonstrations of innovative technologies were completed. **Assessment:** Exceeded Goal

- *Make 40 alternative technology systems ready for implementation with cost and engineering performance data.*

Results: As reported by the Focus Areas and documented with Innovative Technology Summary Reports, 40 innovative technologies were made ready for implementation. **Assessment:** Met Goal

- *Complete the demonstration of the electrometallurgical spent fuel treatment technology by the end of FY1999 using Experimental Breeder Reactor-II spent nuclear fuel.*

Results: The demonstration of the electrometallurgical spent fuel treatment technology was completed. The demonstration involved EBR-II "driver" fuel and EBR-II "blanket" fuel. Operations verified repeatability and sustained treatment throughput rates of the electrometallurgical treatment process for both of these fuel types. The National Academy of Science Committee on Electrometallurgical Treatment Techniques for DOE Spent Nuclear Fuel has been given the final demonstration data and reports and will independently confirm that the demonstration met all success criteria. The Committee's findings and recommendations will be provided in a National Research Council report to be published in December 1999. **Assessment:** Met Goal

EQ 6-3. Completing Deactiviation of Surplus Facilities. Reduce operating costs by completing deactivation of surplus facilities and placing them in a safe and environmentally sound condition, requiring minimal surveillance and maintenance. **Assessment:** Met Goal

Success will be measured by:

- *Complete 65 surplus facility deactivations.*

Results: For FY 1999, a total of 64 facility deactivations were completed. **Assessment:** Nearly Met Goal

EQ 7-1. Making DOE Lands and Facilities Available for Other Uses. In conjunction with stakeholders, develop comprehensive land use plans for DOE

sites that provide information on alternative uses, ownership, environmental requirements, and implementation schedules. **Assessment:** Met Goal

Success will be measured by:

- *Complete mission justification analysis for land and facilities at 5 of the remaining 15 sites. (FI)*

Results: Mission justification analyses for Cheltenham SECOM Site (ALO), Keswick Switchyard (WAPA), Nevada Support Facility (NVO), Hanford Site, Savannah River Plant, and Brookhaven National Laboratory (BNL), were completed in FY 1999 and subsequently surveyed by GSA. **Assessment:** Met Goal

- *Release a background report on Long-term Stewardship ("Moving from Cleanup to Stewardship") by March 31, 1999. (This report was one of the commitments published in the June 1998 Paths to Closure document.)*

Results: The background report was published in September 1999. **Assessment:** Met Goal

- *Begin the formal study on long-term stewardship pursuant to the 1998 Programmatic Environmental Impact Statement (PEIS) settlement agreement, which requires a public scoping and comment process, and complete the scoping process portion of the study.*

Results: The background report on long-term stewardship was completed as part of Paths to Closure commitments. The Department has developed plans, including milestones, deliverables, schedules, cost estimates, and roles and responsibilities. A Notice of Intent was published on October 6. A Public meeting was held on October 28. **Assessment:** Met Goal

SCIENCE AND TECHNOLOGY

ST 1-1. Conducting Relevant, High Quality, Innovative Research That Responds to the Needs of the DOE Mission. Conduct relevant, high quality, innovative research that responds to the needs of the DOE mission. **Assessment:** Met Goal

Success will be measured by:

- *Complete sequencing of 30 million subunits and draft sequence of 30 million additional subunits of human DNA for submission to publicly accessible databases.*

Results: The Department's human genome program (HGP) contribution to the determination of the complete DNA sequence are part of a coordinated international effort. During the first months of FY 1999, the DNA sequencing goals of this international effort underwent significant discussion and change. As a result, the international community agreed to complete a high quality draft of the human genome in the spring of 2000 and to determine the complete sequence of the human genome by 2003, both goals several years ahead of the original schedule. The high quality working draft of the human genome will provide scientists and medical researchers with much of the information they need to begin unraveling the mysteries of life and for developing new drugs and medical treatments several years before the complete sequence is available

During FY 1999, the HGP human DNA sequencing efforts at the DOE Joint Genome Institute, the University of Washington, and Stanford University combined to produce 15.2 million subunits of human DNA sequenced to "Bermuda Standards," the accepted international quality standard. Thus, we did not meet the original first goal of 30 million subunits completely sequenced. However, in accordance with the new goals of the international human genome project, the HGP produced 55 million subunits of "high quality draft" and 70 million of "phase I draft" sequences, greatly exceeding the second goal of 30 million additional subunits of draft human DNA sequence. The level of DNA sequence produced by the DOE between October 1, 1998 and September 30, 1999 actually reflects an increase in sequencing output over DOE's original goals for FY 1999 and is consistent with the current goals of the international human genome project. **Assessment:** Nearly Met Goal

- *Maintain optimum operating schedules at major scientific user facilities to serve thousands of researchers from universities, national laboratories, and industry.*

Results: The Office of Science is operating its major scientific user facilities under optimum schedules to serve researchers at universities, national laboratories, and industry. These facilities enable the acquisition of new knowledge that often cannot be obtained by any other means. This fiscal year, many thousands of scientists are conducting experiments at the user facilities, and thousands of other researchers collaborate with these users to analyze the data from the

experiments and publish new scientific findings in peer-reviewed journals. **Assessment:** Met Goal

ST 1-2. Providing New Insights Into the Fundamental Nature of Energy and Matter. Provide new insights into the fundamental nature of energy and matter. **Assessment:** Met Goal

Success will be measured by:

- *Complete preparations and begin operation of the newly completed B-factory at the Stanford Linear Accelerator Center and the Main Injector at Fermilab.*

Results: B-factory: The B-factory construction was completed within cost and on schedule. It began operations in May 1999, and the run is going extremely well—so well, in fact, that a two-month shutdown scheduled for September was postponed until late December. It has already achieved a world record luminosity of 1.35 x 1033 and, in this short time, has already reached about half of its design luminosity. Main Injector: Construction of the Fermilab Main Injector was completed within cost and on schedule, and it is operating in support of a Tevatron fixed target run. **Assessment:** Met Goal

- *Complete construction and begin operation of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory.*

Results: The RHIC construction project was completed on-cost and on-schedule. **Assessment:** Met Goal

- *Deliver on the 1999 US/DOE commitments to the international Large Hadron Collider project.*

Results: The U.S. Large Hadron Collider (LHC) projects—U.S. LHC Accelerator, U.S. ATLAS, and U.S. CMS—are now producing equipment for the LHC and ATLAS and CMS experiments. In the final quarter of FY 1999, the U.S. collaborators delivered superconducting cable measurement equipment and produced prototype components for the detectors' calorimeters and data acquisition electronics. **Assessment:** Met Goal

ST 1-3. Searching for and Utilizing the Best Scientific Talent from All Sources to Perform DOE Research. Search for and utilize the best talent from all sources to perform DOE research. **Assessment:** Met Goal

Success will be measured by:

- *Complete a search for and name Directors of the Argonne National Laboratory, Fermi National Accelerator Laboratory, and Stanford Linear Accelerator Center (SLAC).*

Results: SLAC: On December 22, 1998, Jonathan Dorfan, a professor of physics who, since 1994, led the B-factory project to pursue the question of why we live in a universe dominated by matter rather than equal parts of matter and anti-matter, was named the Director of Stanford Linear Accelerator Center. Fermi: On March 5, 1999, Michael Witherell, a professor at the University of California, Santa Barbara, with a distinguished career in experimental physics, was named Fermilab Director. Argonne: The Laboratory Director Search Committee is on schedule. The Committee expects to develop a list of about 15 highly qualified candidates from the initial slate by year-end. **Assessment:** Nearly Met Goal

ST 1-4. Developing Science to Support DOE's Participation in Energy and Other National Policy Formulations. Develop science to support DOE's participation in energy and other national policy formulations. **Assessment:** Met Goal

Success will be measured by:

- *Continue collaborative efforts with NASA on space science and exploration.*

Results: (1) Alpha Magnetic Spectrometer (AMS): Data from last year's shuttle flight has been analyzed and interesting results were published. All aspects are on track for the AMS to go on the international space station in 2004 (or perhaps later). (2) Gamma-Ray Large Area Space Telescope (GLAST): SLAC has developed a prototype detector module which is currently being tested. They have submitted a proposal outlining their scientific and technical plan in response to NASA's Announcement of Opportunity. The proposal is currently under review, and results are expected by next March. (3) Booster Application Facility (BAF) (Radiation simulator at Brookhaven for manned Mars mission): Developing funding profile for this $33 million project (profile completed after March 2000). **Assessment:** Met Goal

- *Initiate a new joint Biological and Environmental Research-Basic Energy Sciences program in fundamental science that will underpin new opportunities and technologies in carbon capture.*

Results: A draft Carbon Sequestration Roadmap report has been authored by over 80 scientists and published with a "Techline." This draft report (the final is to be published early calendar 2000) is another step in the process to identify and prioritize research topics for a long-term research program in carbon sequestration. Two new Centers for carbon sequestration have been selected through competitive peer review process and awards have been made. One center, led by Oak Ridge National Laboratory, Pacific Northwest National Laboratory, and Argonne National Laboratory and collaborating with six universities and institutes, supports research that investigates the enhancement of the natural terrestrial cycle. The other center, led by Lawrence Livermore National Laboratory and Lawrence Berkeley National Laboratory and also collaborating with six universities and research laboratories, investigates enhancing the natural oceanic cycle and the efficacy and impacts of deep carbon dioxide injection. A workshop to open the research agenda priority-setting process to the public was held in September. Over 200 participants related their own experience with carbon sequestration research and offered opinions on priorities. An editorial and favorable articles were published in *Nature* magazine and the *National Journal* about the work-

shop and the research program. A solicitation for fundamental research in carbon management was issued, and projects ranging from fundamental studies on photosynthesis to lightweight materials, photovoltaics, catalysis, membranes and separations, and reservoir characterization were funded. In addition, three microbes that are critical to the natural carbon cycle sequestration have been selected, and sequencing their genomes has already started. **Assessment:** Exceeded Goal

- *Determine 70 percent of the DNA sequence of 10 additional microbes with potential use in waste cleanup or energy production.*

Results: During FY 1999, the DNA sequences of five microbes with potential use in waste cleanup or energy production were completely determined. More than 95 percent of the DNA sequences of seven additional microbes were determined and made available to the public. Finally, more than 70 percent of the DNA sequence from one additional microbe has been determined and made publicly available. Among these organisms are the remarkable radiation resistant microbe Deinococcus radiodurans, a potential workhorse for helping cleanup DOE waste sites, and Shewenella putrefaciens, an organism that can consume toxic organic pollutants and convert toxic metals and radionuclides to less toxic forms. **Assessment:** Exceeded Goal

ST 1-5. Supporting Emerging Sciences That Are Important to the Future of DOE and the Nation. Support emerging sciences that are important to the future of DOE and the Nation, including interdisciplinary research that addresses the Nation's most pressing problems. **Assessment:** Met Goal

Success will be measured by:

- *Initiate change-out of the beryllium reflector at the High Flux Isotope Reactor at Oak Ridge National Laboratory and improvements to the facility's beam tubes and monochromators.*

Results: Design of the replacement beryllium reflector for the High Flux Isotope Reactor at Oak Ridge National Laboratory has been initiated, and modifications to the facility's HB-2 beam tube are underway to allow beam access for additional neutron scattering instruments, which will receive 2 to 3 times higher neutron flux than currently available. **Assessment:** Met Goal

- *Conduct, with at least 25 to 30 patients, Boron Neutron Capture Therapy (BNCT) Research Phase I/II clinical trials at reactor sources with neutrons.*

Results: Accrual of patients into the phase I clinical trial has been completed. A total of 54 patients were treated during calender years 1998-1999, 20 patients during 1999. Patient treatments were terminated because the clinical endpoint of the study, maximum safe dose, was reached. Clinical follow-up of patients who were treated is ongoing with further analysis of the clinical data. **Assessment:** Below Expectation

- *Discover new biological structures with more than 60 percent of the new biological structures published in the peer-reviewed literature resulting from data generated as part of the structural biology synchrotron user station program.*

Results: Structural biology stations at the synchrotron user facilities were utilized 100 percent of the operating time. There were 231 users in 1999, an increase of 30 percent compared to the previous year. More than 60 percent of the high-resolution three dimensional protein structures were published in peer reviewed journals. Among the many protein structures determined was the ribosome, the protein-synthesizing machinery in cells. It is the largest protein structure determined to this date. **Assessment:** Met Goal

ST 1-6. Leveraging Research Opportunities. Leverage research opportunities through science partnerships and pursue international science collaborations. **Assessment:** Met Goal

Success will be measured by:

- *Conduct five intensive operations periods at the Atmospheric Radiation Measurement (ARM) Southern Great Plains site and redeploy an atmospheric radiation and cloud station from the Arctic Ocean to Atqasuk, Alaska.*

Results: The deployment of equipment from the SHEBA operation in the Arctic Ocean to the Atqasuk site, 50 km south of Barrow, was completed in September 1999. Its operation will complement the North Slope of Alaska Barrow site by providing measurements over a land surface (the Barrow site is located on the shore of the Arctic Ocean and provides an air/sea/atmosphere interface environment). Data from Atqasuk are available from the ARM archive. During FY 1999 the Southern Great Plains site was fully operational, providing a continuing data set designed to improve climate prediction, and exceeded the five intensive operations periods goal. In addition, ARM supported two intensive operations periods at the North Slope of Alaska site and one at the Tropical Western Pacific site. The results will impact the way measurements of shortwave radiation are interpreted and will provide improved measurements of water vapor, particularly for severely dry conditions such as found in extremely cold polar environments. The Tropical Western Pacific activity is important to improving the performance of large-scale models for open ocean areas where there is scant knowledge and little quantified understanding of cloud and cloud-radiation interaction processes. **Assessment:** Exceeded Goal

- *Provide advanced simulations of possible climate response to increasing atmospheric concentrations of greenhouse gases at subcontinental spatial scales.*

Results: The Parallel Climate Model (PCM), which is a fully coupled atmosphere-ocean-sea ice model, was designed to be efficient on a range of high performance computer systems so that it was easily portable and capable of running at several different computational centers. As a result, four sets of ensemble

simulations have either been completed or will be finished within the next few months using the PCM. The first is historical climate integration for the period from 1870-1990 (i.e., best estimate of conditions in 1990). Additionally, three future climate projections are included using different atmospheric forcing assumptions; the Intergovernmental Panel on Climate Change (IPCC) suggested climate change WRE450, WRE550, and WRE650 scenarios. These include rates of change for greenhouse gases, ozone, sulfate aerosols, etc. The model runs will be used for the next IPCC 2000 Scientific Assessment. The data are being made available through a publicly accessible archive for use by other researchers. **Assessment:** Met Goal

- *Restructure the technology program sub-element in the Fusion Energy Science Program to focus on domestic fusion program needs while maintaining strategic participation in international collaborative activities.*

Results: Major restructuring began in late 1998 to shift from tasks related to the International Thermonuclear Experimental Reactor (ITER) project to a broad portfolio of design, analysis, and R&D activities. These activities serve our domestic fusion program and international collaboration interests, emphasize enabling technologies that support domestic plasma physics experiments and provide opportunities for access to experiments and facilities worldwide with test conditions and capabilities not available in the United States. **Assessment:** Met Goal

ST 2-1. Developing the Technologies to Meet DOE's Energy, National Security, and Environmental Goals. Develop the technologies required to meet DOE's energy, national security, and environmental quality goals. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications and maintain 95 percent on-time deliveries.*

Results: Isotope Programs delivered 1,126 shipments in this period to domestic and overseas customers. Only two orders did not meet customer specifications. One was replaced immediately to the customer's satisfaction. The second was rescheduled to accommodate the customer's revised needs. This accomplished on-time delivery records greater than 95 percent, exceeding our goal. **Assessment:** Exceeded Goal

- *Initiate construction and commissioning of the Los Alamos Target Irradiation Station, to improve isotope quality with greater operating efficiency.*

Results: Construction activities that will lead to the commissioning of the Isotope Production Facility (formerly the Los Alamos Target Irradiation Station) have been initiated. On November 16, 1998, Title I/II Design and the procurement of Special Facilities Equipment was authorized. In January 1999, the facility design contract was awarded to Merrick & Company. Overall, the design activities are progressing at a pace that will allow the project to be completed on schedule. The project was subjected to a congressionally mandated independent design review that identified only minor issues, contained very positive remarks and cited several noteworthy good practices. The review team specifically noted the excellent communications among project team members and that the project was well positioned for success. **Assessment:** Met Goal

- *Complete equipment installation necessary for an emergency backup supply of molybdenum-99, issue a request for proposals to privatize molybdenum-99 production and business activities by May 1999, and after evaluation, award a contract by September 1999 to the most qualified firm.*

Results: The molybdenum-99 project accomplished 100 percent of the construction work required to provide an emergency backup supply, and 90 percent of the equipment was procured. An innovative and streamlined procurement process for privatization of U.S. molybdenum-99 production was also completed. During 1999, the molybdenum-99 supply situation improved to such an extent that the U.S. Government decided not to complete equipment installation and testing. The need for an emergency backup for molybdenum-99 was greatly mitigated by the progress in the construction of new Canadian reactors and the expansion of other suppliers' capacity. Therefore, it was decided that Federal investment to complete equipment installation was no longer necessary. While the U.S. molybdenum-99 facility is ready and available for privatization proposals, the improved supply situation has discouraged potential investors. **Assessment:** Nearly Met Goal

- *Develop the Advanced Computational Testing and Simulation Toolkit so that simulation can be used in place of experiments which are too dangerous, expensive, inaccessible, or politically unacceptable.*

Results: Three important elements applied to examine the success of development of the ACTS toolkit include the following: more clients using the toolkit, improved performance of the tools for the clients, and providing new capabilities. A specific example of success where two of these elements apply is the following: The latest generation of ordinary differential equation solvers for systems, whose behavior combines fine scale and large scale features, developed at LLNL has been interfaced with a large family of parallel algebraic solvers developed at ANL. This coupled software system has enabled several new applications. One of these is a collaboration of researchers at Louisiana Tech University and Oak Ridge National Laboratory (ORNL) to develop a code for fully three-dimensional simulations of the dynamics of microstructural interactions in materials. It requires the solution of a large number of ordinary differential equations. Using the toolkit, the problem size was expanded from on the order of 100's of degrees of freedom to on the order of 10,000's. Another example of the success is that a common component architecture has emerged that allows components like the equation solver to transparently couple to other software components by following a standard specification.

Assessment: Exceeded Goal

ST 2-2. Pursuing Technology Research Partnerships. Pursue technology research partnerships with industry, academia, and other government agencies and proactively accelerate the transition of technologies to end users. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Provide fundamental research in environmental sciences, biology, molecular sciences, and computational modeling that will underpin the cleanup of contaminated sites.*

Results: During FY 1999, sampling of both groundwater and sediment was conducted at the Shiprock, New Mexico, and Gunnison, Colorado, Uranium Mill Tailing Remediation Action (UMTRA) Program Sites. The purpose of collecting the samples was to determine the dominant electron accepting processes occurring at these sites and to determine if biotransformation of U and other contaminants was occurring under field conditions. Results indicate that a diverse and active microbial community is present in the subsurface at the Shiprock site and that it may be possible to move the site from dominantly nitrate reduction to sulfate reduction by addition of an electron donor such as formate. At Gunnison, one of the locations sampled appears to be sulfate reducing. **Assessment:** Met Goal

- *Complete the initial SC/EM Pilot Collaborative Research Program and, in cooperation with EM, initiate development of the most promising cleanup technologies arising from these projects.*

Results: The SC/EM Pilot Collaborative Research Program has been completed. **Assessment:** Below Expectation

Plan Of Action: A current lack of funds has prevented efforts to initiate the further development of technologies that have arisen out of these research project. One of the nine technologies has been reviewed and received funding in FY 1999 from the Environmental Management Science program.

ST 3-1. Managing the National Laboratories, Science-User Facilities, and Other Research Providers and Research Facilities. Manage the National Laboratories, science-user facilities, and other DOE research providers and research facilities in a more integrated, responsive, and cost-effective way, building on unique core strengths and corresponding roles. Design, construct, and operate research facilities in a timely and cost-effective manner. **Assessment:** Met Goal

Success will be measured by:

- *Begin Title I design activities, initiate subcontracts and long-lead procurements, and continue R&D work necessary to begin construction activities of the Spallation Neutron Source.*

Results: Title I design activities, initial subcontract work, and long-lead procurements have been initiated. The R&D work necessary to begin construction activities of the Spallation Neutron Source is continuing. **Assessment:** Met Goal

- *Complete prototype development of a "virtual laboratory" approach and implement at least three program trial applications.*

Results: The approach for a prototype "virtual laboratory" varies somewhat as a function of the science discipline and goals involved. Two pilot collaboratories are being funded as a joint effort across science and technology offices. The Materials Microcharacterization Collaboratory has multiple sites available where remote users can participate in in-situ electron microscopy experiments. On the other hand, the Diesel Combustion Collaboratory has focused on providing technology for synchronous sharing of video, audio, data, and applications to make doing the science, engineering, and information exchange for the Diesel Combustion Research CRADA partners more efficient. The third project, one of the Grand Challenges, has recently made significant progress toward quasi-real time 3-D imaging of samples on an Advanced Photon Source tomographic beamline. In addition, 25 percent of the projects approved for the Virtual NMR Facility at the EMSL plan to use the facility remotely, a clear endorsement of the value of collaborative technology. **Assessment:** Exceeded Goal

- *Organize a national research team for the National Spherical Torus Experiment (NSTX) project at Princeton Plasma Physics Laboratory, begin experimental operations by June 1999, and complete the project by September 1999.*

Results: The national research team is in place and functioning effectively. The first-plasma milestone was achieved on February 15, 1999. Experimental results through the end of the fiscal year have demonstrated plasma currents of 450 kA. Remote collaboration capabilities have been implemented to allow offsite researchers to fully participate in research colloquiums and reviews. The construction project has been completed. Antennas for radio frequency heating were installed for use in FY 2000 experiments. Diagnostics installations planned for the fiscal year were completed on schedule. **Assessment:** Met Goal

- *Receive from the Program Advisory Committees (PACs), an assessment, of the quality of research and program relevance at major Fusion Energy operating facilities.*

Results: Each of the three major fusion facilities has a PAC that provides the facility operator with advice on the relevance and quality of proposed research. In addition, the Fusion Facilities Coordinating Committee advises the facilities operators on issues common to all fusion facilities. Each facility PAC and the Fusion Facilities Coordinating Committee met during the fiscal year. This activity will continue throughout the lifetime of each facility. **Assessment:** Met Goal

- *Accomplish the milestone of the Federal Managers Financial Integrity Act (FMFIA) corrective action plan to complete corrective actions identified in the DOE Action Plan for Improved Management of Brookhaven National Laboratory.*

Results: During FY 1999, DOE observed many positive changes at Brookhaven National Laboratory. In June 1999, DOE's Office of Environment, Safety and Health performed a Safety Management evaluation of BNL and determined extensive progress was made in establishing an effective Integrated Safety Management System. Particular improvements were recognized in Management Commitment to ES&H. In addition, on November 16, 1999, Secretary Richardson announced his decision to permanently shut down the High Flux Beam Reactor. This latter action completes the Department's commitment to examine its options regarding the future path for this reactor. Based on the observed cultural and management changes, the Department believes that the weaknesses at Brookhaven National Laboratory are being adequately addressed. **Assessment:** Met Goal

ST 3-3. Improving the Management, Dissemination, Sharing, and Use of Technical Information Across DOE. Improve the management, dissemination, sharing, and use of scientific and technical information. **Assessment:** Met Goal

Success will be measured by:

- *Implement streamlined policies and procedures for managing the Department's scientific and technical information, using decentralized sources in a cost-effective and efficient manner.*

Results: All major DOE laboratories, contractor sites, and field locations (over 40 unique sites) have been connected to an online means of electronically capturing DOE-sponsored scientific and technical information in FY 1999. The DOE Energy Link (E-Link) system was developed and implemented to provide a more effective complex-wide means of announcing and making full-text information electronically accessible. Over 80 percent of DOE site submissions for announcement of research results is now received electronically, as is over 30 percent of the full-text documents, far ahead of the schedule for achieving 100 percent electronic submission by 2004. Streamlined policies and procedures to facilitate electronic information management in accordance with DOE G 241.1 were developed and approved by the DOE scientific and technical community with revisions to encourage use of electronic means for announcing and providing distributed access to DOE scientific and technical information. Transition of in-house processes to an electronic environment is now a performance indicator for most DOE field and contractor elements. As a result, effective policies, procedures, and mechanisms are now in place to provide a common, complex-wide means of announcing and delivering information in a distributed electronic environment starting at the document's point-of-origin. Consistency, comprehensiveness, and ease of access are improved for the customer, and the value of DOE's research results are enhanced. **Assessment:** Exceeded Goal

- *Implement a common distributed electronic infrastructure across DOE that effectively provides researchers and the public timely access to the Department's scientific and technical information.*

Results: Over 1.5 million accesses to products containing DOE's scientific and technical information were recorded in FY 1999, exceeding the target of 1.25 million. The Web-based EnergyFiles Virtual Library of Energy Science and Technology initiated single-query searching across 500 heterogeneous databases and web sites through the development and implementation of EnergyPortal as its search engine, providing first-of-its-kind distributed searching of full-text and other record types with no requirements for standardization. The DOE Information Bridge, an element of EnergyFiles that provides online full-text of DOE research reports at no charge via the Internet, added over 26,000 documents and had over 98,000 full-text documents downloaded by customers in FY 1999, far exceeding projections of 15,000 and 50,000, respectively, for the fiscal year.

As a result of these accomplishments, DOE researchers, academia, industry, and the public have greater, more effective, and more efficient access to full-text and other scientific and technical information describing energy-related research activities across the Complex and around the world. The accomplishments support scientific discovery within the Complex, meet the DOE requirements for providing public access to government information, and establish the foundation for a national library of energy science and technology. **Assessment:** Exceeded Goal

- *Conduct a user satisfaction survey to demonstrate that at least 75 percent are satisfied or very satisfied with our computer facilities and networks.*

Results: The measure of user satisfaction for the SCIENCE computer facility, the National Energy Research Scientific Computing (NERSC) Center, and the SCIENCE network, ESnet, have been determined separately. Both of these are operated 24 hours a day, 7 days a week, 52 weeks a year.

For ESnet, the measure was determined in an independent review in May 1998. Comments from the May 1998 review are: "The committee found the core services provided by ESnet to be excellent in quality based on both qualitative (user reports) and quantitative (network measurement) data. Further, the cost effectiveness of the ESnet project is outstanding. Network capacity has been consistently upgraded to provide a good service in the face of steadily increasing traffic and planned programmatic needs." More information on the review is available at the URL www.es.net. Because there are more than 135,000 users of ESnet, it is difficult to determine the actual numerical percentage of users that are satisfied or very satisfied. Open ESnet user meetings are held twice a year and users site representatives report that users are very satisfied with ESnet performance. In addition, network performance monitoring by various groups, both within ESnet and external to ESnet, report that ESnet is a premier network used worldwide by scientists and engineers and is very successful. ESnet continues to meet or exceed its goals and is on track with the services it provides to the DOE user community.

For the NERSC Center, the measure was determined by a 37-question user survey taken in the summer of

1998. The results of the survey are at the URL www.nersc.gov/whatsnew/survey/. The respondents to this survey numbered 38, about 6 percent of the actual 2,425 registered users, or about 13 percent of the 1,118 actual users. The average rating was 5.43 on a scale of 1 (very unsatisfied) to 7 (very satisfied). Taking a rating of 4 as 'satisfied' the users are statistically halfway between 'very satisfied' and 'satisfied.' One question on the survey asked for a relative rating of satisfaction with respect to other Centers; only 5 of the 38 responding users felt that one or more other centers were better.

The NERSC Center measure was again determined by a user survey—a much more comprehensive one—taken in the summer of 1999. The results of the survey are at the URL http://hpcf.nersc.gov/about/survey/99/intro1.html. The respondents to this survey numbered 117, about 13 percent of the 1,410 active users. (The goal was to obtain 20 percent.) The average rating was nearly 6.0 on a scale of 1 (very unsatisfied) to 7 (very satisfied). Ratings were obtained on nearly 100 elements of NERSC and ratings spanned the range between 6.6 (very satisfied) to 4.0 (satisfied); the average rating on each element increased by more that 0.7 over the 1998 survey. This year the question on the survey asking for a relative rating of satisfaction with respect to other computing centers; only 4 of the 55 responding users felt that some center had an element better than NERSC. Thirty-eight indicated that NERSC deserves its reputation of being one of the best computing centers in the world. This recent survey also asked the users for their recommendations on many of the information services and other elements of NERSC and plans are set to respond to these suggestions. The measurement has been successful and the NERSC progress outstanding. There will be a new survey after the new computing system is installed, accepted and fully commissioned and the users have gained some experience using it. **Assessment:** Exceeded Goal

ST 3-4. Improving Peer and Program Review Processes. Improve peer and program review processes. **Assessment:** Met Goal

Success will be measured by:

- *Receive from the National Research Council an assessment, of the quality of science in the Fusion Energy Sciences research programs.*

Results: The NAS has established a review committee to assess, among other things, the quality of the science produced by the Fusion Energy Sciences program. The members of the committee were selected and met several times during the fiscal year. An interim report with initial comments was submitted in August of the fiscal year. **Assessment:** Nearly Met Goal

Plan Of Action: The committee's interim report was of significant use to the Office of Fusion Energy Sciences in developing program plans and FY 2001 budgets. The final report to be issued in FY 2000 will contain a more comprehensive assessment and address long-term issues facing the field.

- *Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees.*

Results: During FY 1998, the Nuclear Science Advisory Committee held a major review, and issued a report on "Scientific Opportunities and Funding Priorities for the DOE Medium Energy Nuclear Physics Program." That report was issued September 1998. The FY 2000 Nuclear Physics budget submission to Congress is strongly influenced by the recommendations of that report. **Assessment:** Met Goal

ST 4-1. Developing and Promoting Technologies and Programs That Deliver Information and Contribute to Learning in Science, Math, Engineering, and Technology. Develop and promote technologies and programs that deliver information and contribute to learning in science, math, engineering and technology and, in general, expand access to DOE's technical information. Leverage DOE's human and physical research infrastructure, working with the National Science Foundation and other Federal agencies, to promote science awareness, enable advanced educational research opportunities, build capabilities at educational institutions, and improve educational opportunities for diverse groups. **Assessment:** Met Goal

Success will be measured by:

- *Attract outstanding U.S. students to pursue nuclear engineering degrees by: Increasing the number of fellowships from 14 to 22; Increasing the number of Nuclear Engineering Education Grants from 19 to over 40; Providing summer on-the-job training to 29 junior and senior nuclear engineering scholarship recipients.*

Results: Fellowships increased from 14 to 22. Total continuing and new NEER grants increased from 19 to 39; all 29 junior and senior scholarship recipients were offered internships. Attracting outstanding students to pursue nuclear engineering degrees will help maintain the nuclear engineering manpower infrastructure into the next century. NEER awards were significantly higher in dollar amount thus limiting awards to 39. **Assessment:** Met Goal

- *Support U.S. universities' nuclear energy research and education capabilities by: Providing fresh fuel to all university reactors requesting this service; Funding at least 20 universities with research reactors for reactor upgrades and improvements; Partnering with 19 or more private companies to fund DOE/Industry Matching Grants Program for universities; Increasing the funding for Reactor Sharing by 40 percent over FY 1998, enabling each of the 26 schools involved in the program to improve the use of their reactors for teaching, training, and education within the surrounding community.*

Results: All universities requiring fuel received it and continue to operate their reactors; 21 universities received funding to upgrade the performance of their reactors; partnered with over 20 private companies to fund the DOE/Industry Matching Grants program for

21 universities; and all 22 schools requesting reactor sharing funds received it with an average increase of 40 percent to those requesting increases. These programs provide continuing support for university nuclear engineering programs and university research reactors which play a major role in helping to maintain adequate U.S. nuclear engineering research and education infrastructure. **Assessment:** Met Goal

- *Initiate a Significant Opportunities Program in the broader sciences of global change for outstanding undergraduate and graduate students.*

Results: The Summer Undergraduate Research Experience (SURE) program was initiated in FY 1999 with 16 awards, and the Graduate Research Environmental Fellowships (GREF) program was initiated in FY 1999 with 10 awards. A two-week orientation course was held at the National Institute for Global Environmental Change (NIGEC) for all of the SURE and GREF students in June, and the students then spent the summer on assignment at various DOE laboratory facilities. At the end of the summer, a symposium was held where each of the students presented research results from their summer efforts. **Assessment:** Met Goal

- *Provide web-based access to energy-related scientific and technical information obtained by DOE via interagency, U.S. business and industry, and international agreements, exchanges, and partnerships.*

Results: In FY 1999, an initiative was undertaken to use the collective purchasing power of the DOE/contractor community to reduce individual site costs for journal subscriptions; and 22 sites were represented under this initiative as of September 30. Arrangements with publishers such as the American Association for the Advancement of Science (AAAS) have resulted in significant savings at various sites; and nine sites are participating in an Elsevier/Los Alamos National Laboratory agreement, which collectively has resulted in sites gaining access to the equivalent of millions of dollars in electronic technical journals while avoiding the market cost of subscribing individually. Facilitating access to information and information products of interest to the Department, targeted for FY 1999, was accomplished through the development and release of Version 1 of PubSCIENCE to the Department and the public. PubSCIENCE, containing 1,000 journal titles from 20 publishers of peer-reviewed scientific and technical journals from around the world, provides one-stop access to journal literature with the capability to search across journals with a single query at no cost to the user. Online on October 1 and officially unveiled by Secretary Richardson at a ribbon-cutting ceremony on October 12, PubSCIENCE far exceeded projections of a December 31 introduction with only 40 journal titles. In addition, 81,000 foreign research citations were acquired at no cost to the Department in FY 1999 through exchange agreements with multilateral international organizations and bilateral international exchanges. These citations were received in exchange for approximately 33,000 citations from U.S. sources. As a result of these accomplishments, complex-wide cost avoidance is achieved by leveraging purchasing power to gain electronic access to the information needed to conduct R&D activities, enabling a growing number of program managers and researchers to utilize an important new tool in increasing efficiency and keeping abreast of science news across the disciplines. Information available is not only increased, but ease of access to scientific journals is also facilitated through PubSCIENCE. Foreign information available via multinational exchange adds to the body of knowledge in energy-related scientific disciplines, and findings can be incorporated into research projects to maximize return on taxpayer investment. **Assessment:** Exceeded Goal

- *Continue to make 2 to 10 appointments each in the Biological and Environmental Research program's Alexander Hollander Distinguished Post Doctoral Fellowship; and the multi-agency SOARS Program (Significant Opportunities in Atmospheric Research and Science) for outstanding Hispanic, Native American, and African American students in the atmospheric and related sciences.*

Results: Ten new Hollaender Distinguished Post-Doctoral Fellowships have been awarded. Four SOARS protogees are being sponsored this year by DOE. These students are attending the summer SOARS program at the National Center for Atmospheric Research. **Assessment:** Exceeded Goal

CORPORATE MANAGEMENT

CM 1-1. Instituting a Sound ES&H Culture. Integrate and embed risk-based outcome oriented environment, safety, and health (ES&H) management practices into the performance of DOE's day-to-day work. Clearly identify and fund ES&H priorities and ensure resources are appropriately spent on those priorities. **Assessment:** Exceeded Goal

Success will be measured by:

- *Prevent fatalities, serious accidents, and environmental releases at Departmental sites.*

Results: DOE had no work-related fatalities during FY 1999. Further, trends of worker safety and health have been steadily improving for several years. Trends of environmental releases have been on a downward trend for 3 years. **Assessment:** Exceeded Goal

- *Implement Integrated Safety Management Systems in all major management and operations contracts.*

Results: The Integrated Safety Management System has been incorporated in all major management and operation contracts. **Assessment:** Met Goal

- *Provide expanded access to information on health-related risks from operating our facilities to ensure that minority and low-income populations, which may be disproportionately adversely impacted by DOE facilities, understand the Department's environmental justice goals and strategies.*

Results: In order to provide expanded access to information about the Department's environmental justice goals, the "Subsistence and Environmental Health Newsletter" was published in November 1998 and Summer 1999. It was distributed to 3000 targeted individuals, organizations, and communities across the country. The newsletter provides individuals and organizations with information about an array of issues affecting diverse population groups, with different lifestyles, in different geographic locations across the country—all of which can influence patterns of exposure to environmental contaminants. Additionally, the newsletter describes activities undertaken to address those issues, at both DOE and non-DOE sites.

Among the topics addressed in the newsletter are food safety, potential uptake of radionuclides in food crops grown near DOE sites, and community-partnership approaches to research. Each issue presents technically accurate and understandable information that also is meaningful to different groups across the country. Newsletters provide useful tips for minimizing or preventing exposure to contaminants in foodstuffs and sources of additional information. Although the newsletter is targeted primarily at affected individuals and community groups, it also has proven informative to the research community. The newsletter is a Departmental vehicle for risk communication that addresses issues of concern to communities across the country. **Assessment:** Met Goal

- *Conduct oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, accidents, and safeguards and security.*

Results: Completed the following activities:
Environment, Safety, and Health Evaluations:
— Integrated Safety Management Evaluation of the Y-12 Plant, December 1998
— Focused Safety Management Evaluation of the Nevada Test Site, March 1999
— Focused Safety Management Evaluation of the Rocky Flats Environmental Technology Site, March 1999
— Focused Review of the Yucca Mountain Project, April-May 1999
— Focused Safety Management Evaluation of the Nevada Test Site, April 1999
— Focused Safety Management Evaluation of the Brookhaven National Laboratory, June 1999
Special Reviews and Studies:
— Independent Technical Review of Argonne National Laboratory-West Radiation Contamination Incident, December 1998
— Limited Review of DOE Unclassified Computer Systems (December 1998)
— Independent Oversight Review of Department of Energy Unclassified Computer Systems, December 1998
— Interim Report of the Office of Oversight Review of the Effectiveness of DOE Occupational Medicine Programs, January 1999
— Independent Oversight Assessment of Radiation Protection Programs within the Department of Energy, May 1999
— Evaluation of the Nevada Test Site Emergency Management Exercise—Sunrise '99, June 1999
Follow-up Reviews:
— Independent Oversight Follow-up Review of Aviation Safety Programs in the Department of Energy, November 1998
— Independent Oversight Follow-up Review of the 1996 Integrated Safety Management Evaluation at the Pacific Northwest National Laboratory, November 1998
— Follow-up Review of the Construction Fatality at Brookhaven National Laboratory, June 1999
Safeguards and Security Inspections:
— Safeguards and Security Inspection of the Los Alamos National Laboratory, November 1998
— Review of DOE Unclassified Computer Systems, December 1998
— Site Profile of the Oak Ridge National Laboratory, January 1999
— Kansas City Follow-up Review, February 1999
— Savannah River Follow-up Review, March 1999
— Hanford Follow-up Review, April 1999
— Safeguards and Security Inspection of the Lawrence Livermore National Laboratory, April - May 1999
— Safeguards and Security Inspection of the Sandia National Laboratories, New Mexico June - July 1999
— Safeguards and Security Inspection of the Los Alamos National Laboratory, August 1999
Assessment: Met Goal

- *Prepare a draft Department of Energy implementation plan for the Administration's Clean Water Initiative.*

Results: In October 1998, the Department completed the preparation of a draft implementation plan for the Administration's Clean Water Initiative. **Assessment:** Met Goal

CM 1-3. Ensuring Employees Are Qualifies in Their ES&H Responsibilities. Ensure that all DOE employees are appropriately trained and technically competent commensurate with their ES&H responsibilities. **Assessment:** Met Goal

Success will be measured by:

- *Improve Federal technical workforce capabilities at defense sites by implementing the FY 1999 milestones of the Revised Implementation Plan for DNFSB Recommendation 93-3.*

Results: FY 1999 milestones for the revised 93-3 Implementation Plan have been met and accomplished 90 days ahead of schedule. All requested materials have been provided to the Defense Nuclear Facilities Safety Board to support the Board's action to close Recommendation 93-3. Closure is anticipated in the first quarter of FY 2000. **Assessment:** Met Goal

CM 1-4. Investigating Feasibility of Independent External Oversight of Safety and Health at DOE Sites. Work with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration to evaluate the costs and benefits of independent external regulation of safety and health. **Assessment:** Met Goal

Success will be measured by:

- *Complete the ongoing pilot projects which assess DOE facilities against the standards that the NRC believes would be appropriate to ensure radiological safety.*

Results: Reports were prepared for each of the three Pilots that were conducted. Two of the reports were delivered to the Congress on March 31, 1999. The third report was finished and sent to Congress on July 2,1999. **Assessment:** Met Goal

CM 2-1. Involving Stakeholders in the Policy-making Process. Foster strong partnerships with neighboring DOE communities, regulators, and other stakeholders to determine priorities and solutions. **Assessment:** Met Goal

Success will be measured by:

- *Conduct stakeholder meetings to increase public involvement in crosscutting environmental quality issues. The meeting participants will include advisory board members, state and local governments, Native American Tribes, and other stakeholders across the country.*

Results: The Office of Intergovernmental and Public Accountability assists approximately 12 Site-Specific Advisory Boards across the DOE-Environmental Management (EM) complex in conducting monthly stakeholder meetings. These boards are comprised of representatives from state and local governments, Native American Tribes, and individuals with an interest in EM activities at a particular site.

As well, this Office sponsors cross-cutting meetings on issues such as Transportation and Environmental Justice. The Office of Intergovernmental and Public Accountability also works with specific groups such as the State and Tribal Government Working Group (STGWG). This year an estimated 150 stakeholder meetings have been conducted. **Assessment:** Met Goal

- *Conduct "Communicating with the Public" training sessions for DOE managers.*

Results: The Office of Intergovernmental and Public Accountability conducted training sessions in: October 13-16, 1998 (Federal Energy Technology Center), November 4-5, 1998 (Brookhaven), January 12-13, 1999 (Idaho), March 24-25 (Washington, DC), April 7-8 (Nevada), September 29-30 (Savannah River), November 9 and December 8 (Lawrence Berkeley) **Assessment:** Met Goal

- *Respond to an estimated total of 500,000 public requests for information and documents from the Center for Environmental Management Information within an average of two business days per request.*

Results: Responded to public requests received for information within an average of two business days per request. Requests are obtained electronically, via telephone, walk-in and through the web site. **Assessment:** Met Goal

CM 2-2. Improving Communications with Customers and the Public. Increase customer and public awareness of DOE's mission areas by improving the quality, timeliness, frequency, and sufficiency of information disseminated on the Department's functions, successes, lessons learned, and future activities. **Assessment:** Met Goal

Success will be measured by:

- *Reduce the Freedom of Information Act backlog by 10 percent and the average case age by 10 percent over the previous year.*

Results: We reduced the Freedom of Information Act backlog to 304 cases, which met the 10 percent reduction goal. We nearly met the goal (achieved 84 percent of the goal) of reducing the average FOIA case age by 10 percent. This part of the overall goal was not met due to the 49 cases that required coordination with other Federal agencies and involved classified information. We did not have control over the processing time with these agencies which slowed down our overall time. **Assessment:** Nearly Met Goal

Plan Of Action: We will continue to streamline the FOIA process and reduce both the backlog and average case age.

- *Improve the quality and volume of information on the DOE's World Wide Web site and demonstrate*

user-interest through a higher number of home page visits (hits) per year.

Results: The DOE home page continues its proven record of increased service to a networked public accessing information electronically. The page, which is a portal to other home pages, is visited more than 250,000 times each fiscal quarter. The volume of public information generated by Departmental elements is such that a search engine is provided as a prominent feature of the page. More than one in four visitors use this feature to locate and access information. Additionally, design enhancements to the page are underway to improve content presentation, ease of use, accessibility and improved navigation. This effort is being undertaken now in anticipation of continued growth trends and a recognition of public reliance on the home page as an information resource. **Assessment:** Met Goal

CM 2-3. Increasing Openness with the Public. Increase openness with the public by prudently declassifying information about the Department's activities while maintaining a balance with the Nation's security. **Assessment:** Met Goal

Success will be measured by:

- *Implement 10 CFR Part 1045 through reviewing 100 percent of other agency classification guides submitted, and by conducting five on-site reviews of other-agency Restricted Data programs.*

Results: The Department successfully completed reviews of 100 percent of the classification guides submitted by other agencies under 10 CFR Part 1045. There were a total of five such guides submitted. The other-agency guides are reviewed to determine their consistency with the Department's Restricted Data and Formerly Restricted Data classification topics, thus enhancing the protection of such critical information throughout government. With regard to the other-agency onsite visits, the Department was required under Public Law (P.L.) 105-261, section 3161, to shift its focus from appraising other-agencies' classification programs to appraising their declassification programs. The law requires the Department to minimize the risk that sensitive nuclear weapon information will be inadvertently released during the other-agency E.O. 12958 declassification process. Therefore, in lieu of conducting on-site reviews under the regulation this fiscal year which focus primarily on classification programs, the Department conducted on-site reviews under the aforementioned statute focusing on other-agency declassification programs. 10 CFR Part 1045 onsite visits will resume in FY 2000. The on-site review effort is only one component of the Department's responsibilities under P.L. 105-261. Under this statute the Department also developed and initiated a training program for other-agency reviewers. This training program, under which over 900 reviewers were trained, required that significant resources be diverted from the on-site review program. Therefore, the Department did not have sufficient resources to conduct five on-site reviews as projected at the beginning of the year. The Department conducted three such reviews.

Assessment: Nearly Met Goal

Plan Of Action: The other-agency training program, which extends into FY 2000 and beyond, will continue to draw resources from the on-site review program. In addition, the Department will conduct extensive training for its own newly hired reviewers supporting P.L. 105-261 other-agency declassification audit program (recently expanded by P.L. 1056-65, section 3149) in FY 2000. Resources at hand will allow the Department to conduct a total of three onsite reviews under the statute and/or the regulation in FY 2000.

- *Continue reviewing DOE documents for possible declassification and release of those that no longer need to be withheld for security purposes.*

Results: The Department reviewed over 5 million pages for possible declassification. Of those reviewed, over 2 million pages of documents were declassified or confirmed to be unclassified. The remainder of the pages contained information which would harm the Nation's security and were, therefore, not released to the public. **Assessment:** Met Goal

- *Implement the fundamental Classification Policy Review recommendations and issue 40 classification guides in the streamlined format containing the updated guidance.*

Results: The Department completed 19 guide revisions plus 6 new guide issuances during the past fiscal year. In total, over the past two years, over 50 guide revisions and 15 new guide issuances have been accomplished. All guide revisions for the Fundamental Classification Policy Review (FCPR) have been prepared; over 80 percent have been approved by the Department of Energy for issuance. The remaining 20 percent require approval by the Department of Defense (DOD) before they can be issued. Therefore, the Department is currently awaiting DOD approval before final guide implementation is possible. **Assessment:** Nearly Met Goal

Plan Of Action: The Department will implement all remaining FCPR guide changes within 6 months of final approval. Already in FY2000, seven guide revisions and two new guide issuances have been accomplished.

CM 2-4. Developing a Public Health Agenda for DOE Sites. Work with the Department of Health and Human Services (HHS) to prepare a consolidated and coherent strategy for worker and public health effects studies and activities. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Issue an initial status report on the development of a public health agenda by December 31, 1998, and a final public health agenda for each site, which reflects customer and stakeholder input, shall be issued by September 30, 1999.*

Results: Initial status report was delivered. Draft public health agenda was issued April 15, 1999, and public comments were received by July 30,1999. However, public comments have taken longer than anticipated to resolve; therefore, the report was not issued

on September 30, 1999. We expect the report to be completed in FY 2000. **Assessment:** Nearly Met Goal

CM 3-1. Improving Managerial Performance and Accountability. Improve decision-making, ensure accountability, maximize Departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Identify functional and technical system requirements for developing a Business Management Information System (BMIS) with a special emphasis on financial management, and develop business scenarios for its evaluation (a milestone of a FMFIA corrective action plan).*

Results: Five requirements teams with members from across the Department have drafted functional and technical requirements for a new financial management system. A business case has also been completed which supports the acquisition of a modern, integrated, commercial off-the-shelf financial management system. The system requirements will be finalized early in FY 2000 due to efforts to minimize the impact of year-end and new fiscal year workload of the finance and budget community and will not impact major milestones for the project. **Assessment:** Nearly Met Goal

- *Develop annual performance-based budgets by using DOE's corporate Strategic Management System to link resource requirements to five-year plans, make independent project validations, and perform cross-cutting program evaluations.*

Results: This performance goal establishes the need to continue the implementation of the Government Performance and Results Act at the Department of Energy. Three years ago, DOE instituted an agency-wide Strategic Management System (SMS) that is fundamentally based on the principles of GPRA and continues to be the vehicle for the Department to integrate the GPRA requirements into our day-to-day management and decisionmaking activities. The SMS integrates the interrelated strategic planning, budget, and performance evaluation processes throughout the Department. Although we have made improvements on several fronts, a lot of work still remains. Congress, GAO and the IG have provided valuable feedback on our approach. We have begun work on the second strategic plan in conformance with the Office of Management and Budget recommendation that agencies develop strategic plans this year. Our guidance for the new strategic plan addresses many of the weaknesses, especially in providing improved linkages with program areas. We expect to produce this plan on time. We have made many improvements to other GPRA products including the Annual Performance Plan.

The Department and its programs perform many project validations and program evaluations. These evaluations are generally used for day-to-day management. Although we believe there is a need to perform planned systematic cross-cutting program evaluations, we have not instituted program evaluations due to limited resources.

This deficiency will not have a material impact on the Department's performance because of the presence of substantial evaluation by other parties; however, the goal of systematic program evaluation would benefit performance based management at the Department as a result of its cross-cutting view of performance. **Assessment:** Nearly Met Goal

Plan Of Action: Assess current Departmental efforts at program evaluation, document the findings, and plan a systematic approach to further evaluations by August 2000.

- *Conduct self assessments to measure organizational performance in the areas of Customer Satisfaction, Employee Satisfaction, and the achievement of Business Results using the Malcolm Baldrige, President's, or Energy Quality Award Criteria.*

Results: Of 28 Federal Departmental Elements, 22 performed a self-assessment using the Malcolm Baldrige Criteria for Performance Excellence. The scores ranged from a low of 198 to a high of 727 on a scale from 0 to 1000. World-class Baldrige winners typically score in the high 600 range. The median score was 432. In addition, 7 organizations (2 Federal, 5 Contractors) applied for the Energy Performance Excellence Award Program. Median score for the applicants was 445. The median score for Customer Satisfaction was 45 out of 125. The median score for Employee Satisfaction was 21 out of 50, and the median score for business results was 44 out of 125. These scores will be used as the baseline score from which improvement will be measured. These scores are representative of organizations which are in the early stages of developing sound systematical approaches to their management systems. **Assessment:** Met Goal

CM 3-2. Continuing Initiatives to Streamline and Re-engineer the Department. Continue to streamline and improve operations, further reduce overhead expenditures, and facilitate additional workforce reductions while aiding affected employees and communities. **Assessment:** Met Goal

Success will be measured by:

- *Realize annual savings from improved operations to achieve cumulative savings totaling $1.7 billion by the end of FY 2000: Achieve staffing reductions to achieve Departmental target of 10,613 by the end of FY 1999; Achieve $65 million in further cost avoidances in information technology; and Reduce support service contracting obligations below $610 million in FY 1999.*

Results: We have realized over $1.45 billion in cumulative savings to date. Staffing has been reduced to 10,275 as of September 25, 1999, which already exceeds the FY 2000 goal. Although we only saved approximately $60 million in information technology in FY 1999 vs. the $65 million goal, we have already exceeded the overall FY 2000 goal of $245 million ($285 million in savings through September 1999). Support service contracting obligations were $428

million in FY 1999, which was $182 million below the $610 million goal. **Assessment:** Met Goal

CM 3-3. Improving Human Resource Practices. Implement quality management principles, value diversity, and continue to improve human resources systems and practices. **Assessment:** Met Goal

Success will be measured by:

- *Improve workforce skills and reduce training costs by implementing the FY 1999 milestones in the DOE Corporate Education, Training, and Development Plan.*

Results: The Corporate Education, Training and Development Business Plan (Business Plan) was forwarded to the Deputy Secretary and was approved in August 1999. The Business Plan has been desktop-published and it is expected that the formal, published version will be distributed during November 1999.

All the FY 1999 milestones in the Business Plan have been met and following are some actions which assisted in improving Department-wide workforce skills and reducing overall Departmental training costs: (1) Secretarial Policy on Effective Management of Training Resources issued March 4, 1999, and DOE Order 360.1 ("Training") issued on September 21, 1999; (2) Draft DOE Policy Documents were completed by September 30, 1999, to address Training Centers of Excellence and Contractor Training Performance Objectives and Measures; (3) Final Report on Recommendation 93-3 was submitted to the Defense Nuclear Facilities Safety Board, and the development of the FY 2000 Federal Technical Capability Program Plan and the Federal Technical Capability Program Manual were completed by September 30, 1999; and (4) Guidance Documents were completed by September 30, 1999, to address developing Individual Development Plans, conducting Training Needs Assessments, developing organization Training Plans, and addressing Fellowships and Career Development.

In addition, the following FY 1999 elements of the Business Plan have been completed and have assisted in the reduction of duplicate training course development and Department-wide training cost savings: (1) Cross-cutting Training Forum was established and put into operation by September 30, 1999, to reduce development of duplicate training courses at an estimated savings of $200K; (2) Regional Training Councils and partnerships have been developed that have achieved a Government-wide training cost savings of $180,000 and an M&O contractor cost avoidance of $32,000 in FY 1999; (3) the Corporate Human Resource Information System Training Administration Module was developed and piloted by September 30, 1999; (4) the Technology-Supported Learning Plan was developed by September 30, 1999; and (5) the Draft Supervisory and Managerial Training Framework Document was completed by September 30, 1999, as well as the establishment of Federal and contractor training forums focused on training management improvement, efficiencies, and training cost savings (e.g., the Training and Resource Data Exchange Workshop, the DOE Federal Trainer's Special Interest Group, and the Department-wide Human Resources Development Forum). **Assessment:** Met Goal

- *Expand the use of Alternate Dispute Resolution by 20 percent over the FY 1998 use to mediate workplace disputes such as Equal Employment Opportunity complaints and grievances. (GC)*

Results: The Office of Dispute Resolution has worked with other relevant offices to develop a comprehensive referral package to encourage mediations and to expedite administration of mediations. As part of this package, all complainants with pending EEO cases receive a letter explaining the mediation option. The Director, Office of Dispute Resolution, has participated in several conferences of senior management to publicize the mediation program. There has been an increase in the number of offices that have participated in mediations; the acceptance rate (i.e., the number of managers who have agreed to participate when a complainant requested mediation) has increased and the program has received excellent "word of mouth" recommendations. It should be noted that there has been a systemwide increase in total EEO cases mediated—from 28 in FY 1998 to 77 in FY 1999. The Department has committed $50,000 for the Office of Dispute Resolution to use to hire mediators from outside the agency. This should help prevent any concerns that employees may have about a lack of impartiality, thus encouraging more participation in mediation. **Assessment:** Nearly Met Goal

Plan Of Action: We will continue our efforts to work with organizations to use the Alternate Dispute Resolution process to mediate workplace disputes.

- *Implement a DOE-wide employee accessible automated personnel system by December 1998.*

Results: In December 1998, the Director of Management and Administration and the CFO announced the implementation of the DOE Employee Self Service (ESS) system for DOE employees. With ESS, employees are able to view their own human resource information and their earnings, leave and benefits statement from their desktops by using the internet. Employees are able to view the results of personnel actions processed, such as awards, promotions, and within-grades, in the ESS system the day after the action is entered into the automated personnel system. Further enhancements were made to allow employees to update their education, emergency contacts, licenses and certifications, and home address. **Assessment:** Exceeded Goal

- *Continue hiring welfare to work recipients to achieve the Presidential goal of 55 by FY 2000, 40 of whom will be hired by the end of FY 1999.*

Results: The Department has already hired 78 former welfare recipients as of September 30, 1999, which exceeds the FY 2000 goal of 55.

Assessment: Exceeded Goal

CM 3-4. Demonstrating the Department's Commitment to Diversity by Becoming a Recognized Leader in the Federal Government. Create a model organization that fosters and embraces diversity by addressing under representation of minorities and women, and by committing to equity, inclusion, opportunity, accommodation, and non-discrimination in the workplace. **Assessment:** Nearly Met Goal

Success will be measured by:

- *Publish in the Code of Federal Regulations the DOE Mentor-Protégée Program.*

Results: The performance goal was nearly met; however, the proposed rule had numerous legal and departmental reviews, opinions, and rewrites which delayed the concurrence process. All Departmental concurrences have been obtained and the proposed rule is now pending signature by the Secretary before transmittal to the *Federal Register* for publication. We anticipate publication in the *Federal Register* in the next 60 days. **Assessment:** Nearly Met Goal

- *Commit to specific procurement strategies that will increase the participation of women-owned small businesses in the Federal marketplace through a Memorandum of Understanding with the Small Business Administration.*

Results: The Memorandum of Understanding outlining strategies for increasing the participation of woman-owned small businesses in DOE procurement opportunities was signed by the SBA Administrator on May 14, 1999, and Secretary Richardson on May 25, 1999. By executing this Memorandum of Understanding, both the Department and SBA agree to work together in performing their respective obligations under the Memorandum of Understanding. **Assessment:** Met Goal

- *Enhance America's science workforce by ensuring that minority-serving institutions are afforded and take advantage of the Federal research, development, education and equipment opportunities for which they are eligible and increasing their awards by 5 percent over FY 1998.*

Results: Information available to date indicate that the goal was below expectation. The Department did not achieve the anticipated increase over 1998 results due to reduced programmatic budgets, which resulted in fewer partnerships with minority educational institutions. **Assessment:** Below Expectation

Plan Of Action: In an effort to increase funding levels and increase the number of sustainable partnerships with minority educational institutions, Secretary Richardson has committed to establishing a Departmental Minority Educational Institutions Policy. This policy will serve as a framework for advancing research and development partnerships with minority educational institutions and setting aggressive goals for contract, subcontract, and assistance awards to these institutions.

CM 4-1. Using Prudent Contracting and Business Management Practices. Use prudent contracting and business management approaches that emphasize results, accountability, and competition; improve timeliness; minimize costs; and ensure customer satisfaction. **Assessment:** Exceeded Goal

Success will be measured by:

- *Conduct a follow-up assessment of the effectiveness of actions taken in response to the recommendations made in the Performance Based Incentive Report, as committed to in the FMFIA FY 1997 report.*

Results: An assessment was completed on March 31, 1999, and a determination made that the actions taken in response to the recommendations in the Performance Based Incentive Report were effective. **Assessment:** Met Goal

- *Issue a new contractor fee policy by December 1998, as committed to in the FMFIA FY 1997 report.*

Results: A new DOE contractor fee policy was developed and published in the *Federal Register* in March 1999. **Assessment:** Met Goal

- *Award 50 percent of all support service contracts in FY 1999 as performance-based service contracts.*

Results: 75 percent of DOE support service contracts were awarded as performance-based contracts during FY 1999. **Assessment:** Exceeded Goal

- *Award 50 percent of all management and operating (M&O) contracts, including three M&O contracts that will change to Federal Acquisition Regulation (FAR) contracts during FY 1999, using competitive procedures.*

Results: DOE awarded 60 percent of all Management and Operating contracts as competitive contracts during FY 1999 including the three M&O contracts. **Assessment:** Exceeded Goal

- *Convert all management and operating contracts awarded in FY 1999 to performance-based contracts.*

Results: All DOE Management and Operating contracts awarded in FY 1999 were performance-based type contracts. **Assessment:** Met Goal

- *Prepare and publish an annual accountability report that includes the Department-wide audited financial statement with an unqualified opinion to the Office of Management and Budget by March 1999.*

Results: Produced the FY 1998 Accountability Report (AR) and delivered it to OMB on March 1, 1999. While we produced an on-time, fully integrated, and high quality AR one full year ahead of schedule, the IG qualified their audit opinion on the financial statement due to issues surrounding the estimate of DOE's future environmental liabilities. Although DOE received a qualified audit opinion, Congress did award DOE's Accountability Report with the highest grade among other government agencies also receiving a qualification. During FY 1999 the CFO has worked closely with EM to correct deficiencies with the environmental liability estimate material weakness, and results of an IG "interim status" review indicated an improved control structure. **Assessment:** Nearly Met Goal

CM 4-2. Applying Business-Like Practices to Management of DOE Projects and Assets. Strengthen the management of projects, materials, facilities, land, infrastructure, and other assets, to ensure safe, sound, and cost- effective operations, appropriate maintenance of sites, and to ensure intended project results. **Assessment:** Below Expectation

Success will be measured by:

- *Develop a plan by March 1999 to review DOE and contractor litigation cases in state and federal courts for appropriateness of early resolution through mediation. Increase by 20 percent over FY 1998 the number of such cases mediated. Demonstrate estimated savings of 50 percent in litigation costs for those cases settled in mediation as compared to the costs had those cases gone through litigation.*

Results: The Department and its contractors have emphasized the use of mediation at as early a stage as possible, in order to achieve time and cost savings and to achieve better and more durable settlements.

Each legal office in the field now has an alternative dispute resolution (ADR) liaison who works closely with the Director of the Office of Dispute Resolution to suggest and prepare cases for mediation. The ADR liaisons receive ongoing training in support of this collateral duty: they participated in a 3-day mediation training course; they attended a professional conference; they have monthly conference calls to discuss legislative and policy issues as well as case selection and strategy. The Department's Litigation Tracking System is being redesigned to provide for better recording of ADR in contractor litigation.

While complete data has been difficult to collect, we have seen significant numbers of mediation, throughout the Department and with its contractors. In addition to significant cost savings, there have been savings in management time as well as the ability to reach better settlements, which enabled parties to maintain working relationships, rather than end as adversaries. Some examples are seven cases mediated by Lockheed Martin at Oak Ridge, of which four were settled at mediation, resulting in a savings of approximately $850,000 in attorney fees; a contract case mediated at Sandia with a savings of $150,000; a construction case mediated at the Idaho site with savings of approximately $1 million in outside counsel fees, plus $500,000 in internal costs; nine cases mediated at Lawrence Livermore and at Argonne; six cases mediated, one of which, a construction case, saved $50,000 to $100,000 in legal fees. The five EEO cases settled in mediation saved a total of approximately $384,000, and an intellectual property case which was settled saved approximately $300,000 to $500,000 in legal fees.

In most cases, the cost for mediation will not exceed $10,000. Therefore, although we were unable to measure cases mediated and cost savings in the anticipated format, it is clear that the goal was met. **Assessment:** Met Goal

- *Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of project management.*

Results: Five of seven milestones have been completed, one is on-going, and if successful, on-site reviews will close out the seventh area in September, 1999. After this mid-year progress was reported, the Office of Field Integration was disbanded as a result of Congressional Appropriations. Responsibility for project management has been transferred to the Office of CFO. **Assessment:** Below Expectation

Plan Of Action: The Office of CFO is reevaluating the Department's policies and practices related to managing its projects which have the potential of generating entirely new corrective action plans. There are new goals in the FY 2000 Performance Agreement which commit this office to improve project management. There will also be a new FMFIA issue in FY 2000 to address this ongoing problem.

- *Complete four Energy Systems Acquisitions Advisory Board (ESAAB) critical actions on required strategic and major systems.*

Results: There have been four Energy Systems Acquisitions Advisory Board actions at the Assistant Secretary level for various critical decisions on projects ranging from $122 million to $293 million.

Assessment: Met Goal

- *Verify progress against established project scope, schedule, and cost baselines on projects valued at $5 million or more.*

Results: The Department's field offices are verifying project scope, schedule, and cost baselines. Currently, operations offices are reporting they are attaining their annual project scope, schedule, and cost goals overall on an average of 90.5 percent. However, some offices are reporting that schedule baselines are being met an average of 50 percent or less due to delays caused by late vendor process equipment deliveries, and design specifications changes during detailed design.

Results from 33 independent external project reviews, undertaken this past year, indicate serious systemic issues needing correction. Among the most prevalent problems are inadequacies in technical scope, schedule planning and control, cost estimating, and lack of clarity on roles and responsibilities. Actions are underway to correct deficiencies in these projects. **Assessment:** Below Expectation

Plan Of Action: Corrective action plans are under development or initiated for the 33 projects reviewed. We have established a strong corporate project management capability in the Office of CFO responsible for driving change in the Department's project management system, for providing a corporate oversight role, and for supporting the Department's project managers.

CM 5-1. Ensuring the Department's Information Systems Are Based on Cost-Effective Technology Solutions. Utilize, under the auspices of the Chief Information Officer (CIO), an integrated Department-wide framework for planning, budgeting, evaluating, and implementing information management requirements to reduce costs and improve operations. **Assessment:** Met Goal

Success will be measured by:

- *Accomplish the milestones of the FMFIA corrective action plan for the Departmental challenge of unclassified computer security.*

Results: The CIO has reorganized the Office of the CIO to put more emphasis on Cyber Security, partnered with the Office of Counter Intelligence and the FBI's National Infrastructure Protection Center (NIPC) on cyber incident matters, and partnered with other agencies through the Federal CIO's Security Committee on a wide variety of cyber security issues. The CIO has also established an unclassified cyber security working group to develop strategy and policy and is presently formulating a strategy to reconfigure DOE's networks to provide improved protection. Action is underway to form a DOE-wide technical advisory board and a Cyber Security Policy Advisory Board. A draft computer security improvement program plan has been developed that is agile, uses a layered approach, establishes enclaves and clusters of commonality and balances protection with intrusion detection, assessment and warning. Additionally, this plan emphasizes training and awareness, prioritizes sites for enhancements and defines funding requirements. The CIO also initiated action that facilitated the combining of the classified and unclassified cyber programs under the CIO. **Assessment:** Met Goal

- *Continue to improve infrastructure to allow staff the capability of accessing and sharing information easily and seamlessly across the DOE complex.*

Results: The Department's Headquarters network infrastructure has been improved during FY 1999 to operate in a fault tolerant mode through implementation of redundant and enhanced communication links and enhanced technology protocols. Additionally, the Headquarters electronic mail infrastructure was improved through: (1) adoption of a common architecture, (2) development of an automated and synchronized mail directory process, and (3) strengthened and secured against denial of service attacks and virus contaminations spread through infected file attachments. These measures have increased the availability and effectiveness of this infrastructure to sustain continuous information delivery. Finally, Department-wide consensus was reached on the design, implementation and operation of a more protective and robust Corporate (business) network with scheduled implementation beginning the fourth quarter of fiscal year 1999 with planned completion by the second quarter of fiscal year 2000. **Assessment:** Met Goal

- *Continuously evolve the Department-wide information architecture with supporting standards to foster $100 million in cost avoidances by FY 2003.*

Results: The results are significantly better than performance goals. The Departmental Information Architecture and Standards has begun to positively impact cost savings and avoidances involving systems and infrastructure. Specific examples of technology implementations that have identified specific cost savings are CHRIS, BMIS-FM and Travel Manager to name but a few. These cost savings are attributed to work process improvements which cut time from processes and free staff to do other work and to more efficient and cost effective technology accross the complex. Other savings result from the elimination of satellite or duplicative systems and data stores associated with them, thus saving both operation and maintenance costs, and staffing support. Additionally any cost savings under the Telecommunications Integration System (TELIS) Contract can be attributed to information architecture as the primary vehicle guiding systems development and acquisition. It was made a compliance requirement for all TELIS services and support purchased under it. Implementations of consolidated data warehouses and common technologies (Email and Internet) also have produced cost savings and/or avoidances. Based on estimates of known technology implementations and systems implementations, aligned with the information architecture, it is estimated that the Department-wide Information Architecture has fostered, to date, approximately 50 percent of the target goal. The ongoing Departmental Information Architecture Project, to be completed in January 2000, will sponsor additional corporate systems solutions, resulting in additional targeted cost savings from restructured corporate business processes. We are on track to meet the overall goal of $100 million in cost savings by FY 2003.
Assessment: Exceeded Goal

- *Implement all FY 1999 milestones for year 2000 changes for mission-essential systems.*

Results: The Department is reporting that 420 of its 420 mission-critical systems are Year 2000 compliant. This is 100 percent compliance of the Department's mission-critical systems. In addition, 100 percent of the 545 health and safety-related systems in the Department's highest hazard facilities are Year 2000 compliant. In addition: 100 percent of the Department's non mission-critical systems are compliant; 100 percent of contingency plans are complete; 100 percent of independent validation and verification (IV&V) efforts for mission-critical systems are complete; and 100 percent of business continuity and zero day plans are complete. On November 22, 1999, the House Subcommittee on Government Management, Information, and Technology submitted their final Y2K Report Card. The Department of Energy received a grade of "A" for it's Y2K activities. This is a vast improvement over the grade of "F" that the Department received a year ago. The Department's efforts are also focused on managing changes to the Department's systems to ensure that all systems that have been re-mediated, reviewed, and tested and remain Year 2000 compliant should changes be required to these systems. All 42 business continuity and zero day plans are complete

and DOE will continue to fine-tune these plans to reflect final staffing decisions as well as the results of Year 2000 preparation drills within the Department and with the President's Information Coordination Center. The Department's Emergency Operations Center (EOC) in the Forrestal Building will operate as the Year 2000 Command Center for the collection, compilation, analysis and reporting of Departmental site and energy sector Year 2000 status information to the President's Information Coordination Center. **Assessment:** Met Goal

- *Develop the Corporate Management Information Program (CMIP) milestone plan and report to Congress.*

Results: Developed a comprehensive milestone plan that detailed the DOE Corporate Systems and infrastructure required to support them. The report provided detailed information over the five-year planning period on the systems to be developed or acquired, project milestones, cost schedules, performance measures, progress to date, and issues or concerns. It also included information on actions the CIO has taken to improve the CMIP management system, including CIO Quarterly reviews of the projects and the CMIP Semiannual Review Boards (consisting of the Director, Management and Administration, the CFO, and the CIO) which look at the overall program for potential changes in direction. The "U.S. Department of Energy's Corporate Management Information Program" semiannual status report was forwarded to Congress on October 28, 1999. This report updated the last report sent April 29, 1999. The commitment is now completed. **Assessment:** Exceeded Goal

CM 6-1. Promoting the Effective, Efficient, and Economical Operation of the Business Lines Through Audits, Investigations, Inspections, and Other Reviews. Promote the effective, efficient, and economical operation of the business lines through audits, investigations, inspections, and other reviews. **Assessment:** Met Goal

Success will be measured by:

- *Plan and, on a timely basis, conduct reviews based on assessment of risk and/or benefit to key Department programs.*

Results: For FY 1999, the Department met the goal of planning and conducting reviews based on assessment of risk and/or benefit to key Department programs. The OIG considers at least 23 Department locations—including all major contractor sites—to be high risk considering such factors as budget size, pending new projects, and problems with project management previously identified in audits and inspections. The high-risk locations account for $13 billion in annual obligations. For example, the OIG committed resources to issues associated with the Department's export licensing process for dual-use and munitions commodities, and the Department's tritium source selection, key programs of interest to the Secretary and Congress. **Assessment:** Met Goal

- *Focus investigations on allegations of serious violations of Federal law by: Obtaining judicial and/or administrative action on 30 percent of all cases in open status during the fiscal year; and Obtaining acceptance of 75 percent of the cases presented for prosecution.*

Results: For FY 1999, the OIG obtained judicial and/or administrative action on 28 percent of all cases in open status. The OIG obtained 74 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration. **Assessment:** Met Goal

- *Complete at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review.*

Results: The OIG completed 66 percent of audits planned for FY 1999 and replaced those audits not started with more significant audits that identify time-sensitive issues needing review. **Assessment:** Met Goal

- *Render, by designated due dates, an opinion annually on the Department's consolidated financial statements, system of internal controls, and compliance with laws and regulations.*

Results: The OIG completed required financial statement audits by the designated due dates in the law. **Assessment:** Met Goal

Mapping of Legal Requirements

Page

Government Management Reform Act
Report Sections
Overview 3
Financial Overview 45
Inspector General's Opinion 55
Financial Statements 77

Government Performance and Results Act
Report Sections
Overview 3
Detailed Performance Results 131

Federal Managers' Financial Integrity Act
Report Sections
Message From the Secretary 1
Overview 3
Message From the Chief Financial Officer 44
Results of the System Evaluation 50

Inspector General Act
Report Sections
Management's Response to Inspector General Audit Reports 42

Clinger-Cohn Act
Report Sections
Detailed Performance Results (CM5-1) 170

Reference Index

Page

Detailed Performance Results (GPRA Reporting) 131
- Energy Resources 132
- National Security 140
- Environmental Quality 151
- Science and Technology 155
- Corporate Management 163

DOE At a Glance 5

DOE Business Lines 8
- Energy Resources 8
- National Security 13
- Environmental Quality 21
- Science and Technology 27
- Corporate Management 33

Financial Overview 45
- Highlights of Balance Sheet 45
- Financial Performance Measures 47
  - Payment Performance 47
  - Functional Support Costs 48
  - Balances of Uncosted Obligations and Unobligated Appropriations 49
- Results of System Evaluation 50
  - Financial Management System 50
  - Western Area Power Administration 50

Financial Statements 77
- Principal Statements: 78
  - Balance Sheet 78
  - Statement of Net Costs 79
  - Statement of Changes in Net Position 80
  - Statement of Budgetary Resources 80
  - Statement of Financing 81
  - Statement of Custodial Activity 82
- Notes to the Financial Statements 83
- Consolidating Schedules 118
- Required Supplemental Information 123
  - Deferred Maintenance 124
  - Required Supplementary Stewardship Information 125
    - Research and Development 126
    - Intra-governmental Assets and Liabilities 130

FMFIA Reportable Items
- Management Control Attestation 1
- Financial System Attestation 44
- Summary of Departmental Challenges (FMFIA) 43
  - Security 17
  - Surplus Fissile Materials 19
  - Environmental Compliance 22

Permitting Issues at Waste Isolation Pilot Plant 24
Nuclear Waste Disposal 25
Safety and Health 34
Mission Critical Staffing 36
Contract Mangement 37
Project Management 38
Inadequate Audit Coverage 39

Inspector General's Audit Report 53
Memorandum From the Inspector General 55
Inspector General's Report on DOE's Financial Statements 57
Inspector General's Report on Internal Controls 61
Inspector General's Report on Compliance with Laws and Regulations 73

Management's Response to Inspector General Audit Reports 42

Map of DOE Major Facilities 6

Message From the Chief Financial Officer 44

Message From the Secretary 1

Year 2000 Status 41