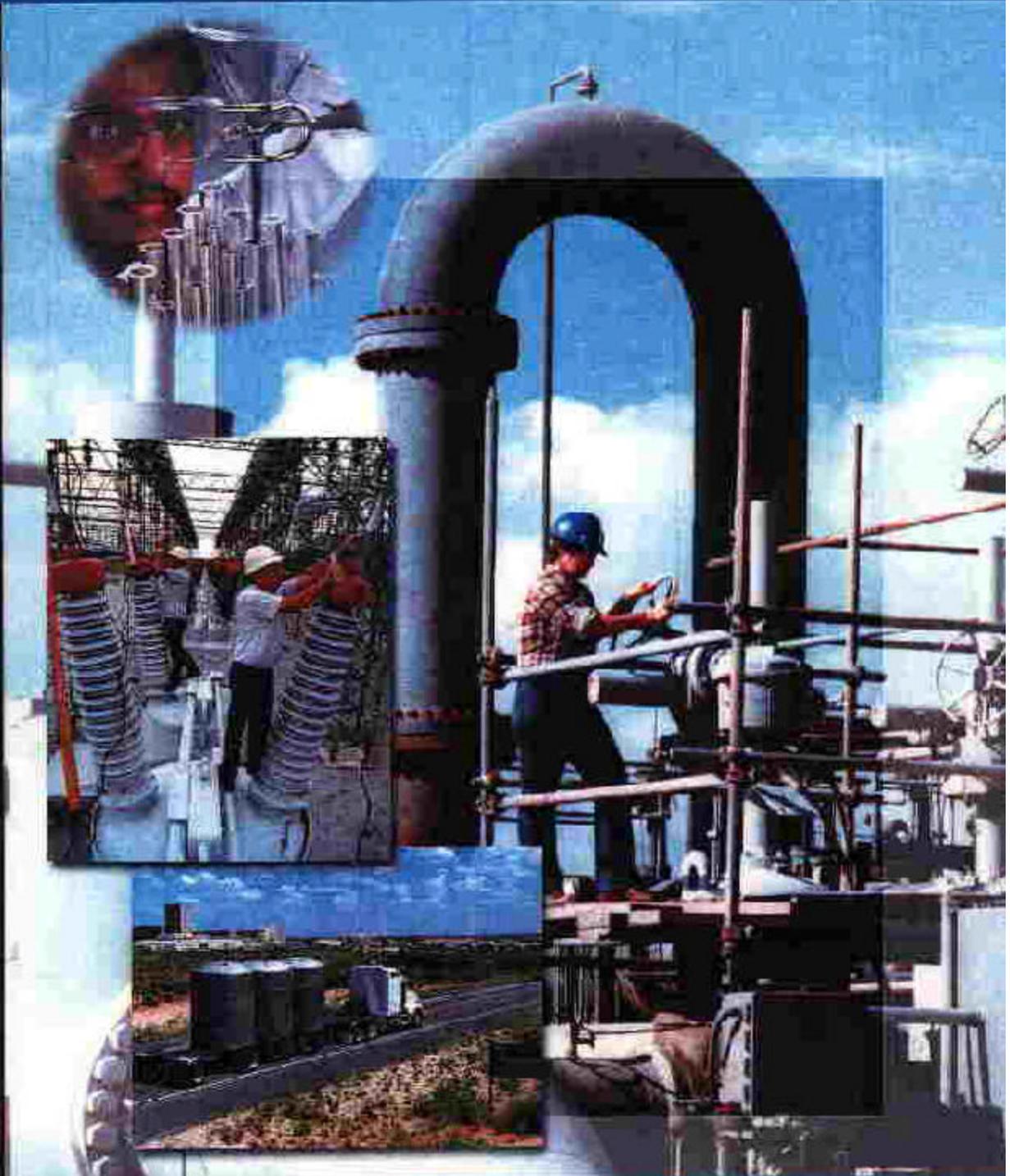


DOE/CR-0074

DEPARTMENT OF ENERGY

# Performance and Accountability Report



FISCAL YEAR 2000

# Contents

## *Message from the Secretary*

### **Overview**

Department of Energy at a Glance .....	5
Energy Resources .....	10
National Nuclear Security .....	15
Environmental Quality .....	23
Science .....	28
Corporate Management .....	33
Management's Response to Inspector General Audit Reports .....	41
Inspector General's Report on Management Challenges .....	42
Message from the Chief Financial Officer .....	43
Financial Highlights .....	44

### **Financial Statements and Audit Reports**

Consolidated Financial Statements .....	53
Required Supplementary Information .....	105
Audit Reports .....	113
Memorandum from the Inspector General .....	114
Independent Auditors' Report .....	116
Management's Response to Audit Report .....	129

### **Appendices**

Detailed Performance Results for Fiscal Years 1999 and 2000 .....	A1
Mapping of Legal Requirements .....	B1
Reference Index .....	C1

# Message From the Secretary

I am pleased to present the Department of Energy's Performance and Accountability Report. This Report summarizes the Department's challenges and achievements in Fiscal Year 2000, and demonstrates our strong commitment to stewardship and accountability in administering the programs and activities of the Department.

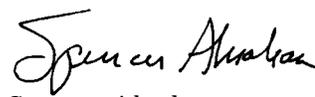


Our work at the Department of Energy serves the nation in four critical areas—national nuclear security, energy resources, science, and environmental quality. This Report describes our goals and performance in these areas. As public servants, the men and women who manage these programs are entrusted with implementing the Department's objectives and are accountable for the performance and achievements of the Department. This Report, which contains complete and reliable data on the Department's program and financial results, is a testament to their accomplishments.

As Secretary, one of my top goals will be to administer the programs of the Department as efficiently and effectively as possible. To this end, I will rely on the Department's systems of management controls to evaluate our effectiveness in achieving our goals, measure program performance, adhere to sound financial management practices, comply with federal law, and protect the Department's assets. The Department believes its management controls are working effectively; however, this report has identified several areas where improvements can and should be made. These areas are identified in the report as "Departmental Challenges," and the actions we are taking to address these challenges are described.

KPMG LLP has audited the Department's Fiscal Year 2000 consolidated financial statements included in this Report and has issued an unqualified audit opinion indicating that our statements present fairly the financial position of the Department. This audit opinion reflects the continuing dedication of the Department to good financial management and demonstrates that we have sound financial data upon which we base our critical decisions.

I want to assure you, I am fully committed to improving the management and effectiveness of the Department. The principal message of this Report is that, despite the difficulty of its challenges, the Department of Energy is making progress in accordance with its missions. In Fiscal Year 2001, I look forward to continuing to make improvements in the business of the Department.

  
Spencer Abraham



# Overview



# The Department of Energy at a Glance

The Department of Energy's mission is to foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the Nation's nuclear weapons, to clean up our own facilities, and to support continued United States leadership in science and technology.

## Then and Now

**T**he Department of Energy was created in 1977. In establishing the Department, Congress brought together for the first time not only most of the government's energy programs, but also defense responsibilities that included the development of nuclear weapons. With its formation, the Department undertook responsibility for long-term, high-risk research and development of energy technology, federal power marketing, energy conservation, the nuclear weapons program, energy regulatory programs, and a central energy data collection and analysis program.

Over the past 23 years, the Department has continued to meet the evolving needs of the Nation. Ever focused on a comprehensive and balanced approach, the Department serves the country by ensuring energy security, maintaining the safety and reliability of our nuclear weapons stockpile without underground testing, cleaning up the environment from the legacy of early nuclear activities, and developing innovations in science and technology.



*The Department is leading the national effort to develop renewable energy technologies and accelerate their acceptance and use. These wind power plants are using turbines developed with the Department's funding.*

## Fiscal Year 2000 was Eventful

**A New National Nuclear Security Administration:** In March, 2000, the new National Nuclear Security Administration (NNSA) was established as a semi-autonomous agency within the Department to administer our critical national security functions. The NNSA provides a unified focus to our national security programs and is structured to establish clear and direct lines of accountability and responsibility for the management and operation of the Nation's nuclear weapons, naval reactors and nuclear non-proliferation activities.

General John A. Gordon, USAF, Retired is the Department's first Under Secretary for Nuclear Security, and Administrator of the NNSA. In carrying out the responsibilities of the NNSA, General Gordon and those reporting to him ensure the maintenance of a safe, secure and reliable stockpile of nuclear weapons and associated materials and technologies for the Nation's defense; promote international nuclear safety and nonproliferation of nuclear materials and technologies; and program.

As with the establishment of any new Government enterprise, especially one with such a significant mission, there are logistical and organizational issues surrounding the creation of NNSA. We are dealing with these issues as we progress through the institutionalization of this new and important organization and establish responsibilities and authorities, formalize new working relationships, resolve cross-cutting funding issues, and work to ensure that programs are integrated and effective.

**Fires at our Facilities:** In the spring and summer of 2000, wildfires swept through the Western United States. One of the worst wildfires occurred in Northern New Mexico where tens of thousands of acres of the Sante Fe National Forest were destroyed. While the fire spread to the City of Los Alamos and the NNSA property at the Los Alamos National Laboratory, fortunately no one was killed nor were any major facilities destroyed. However, extensive damage to the Los Alamos National Laboratory property cost over \$340 million, with over 46 percent of the 43 square mile site burned. Forty-two small office buildings and storage facilities were destroyed, and miles of utility, communications, and alarm system lines were severed. The fire damaged another 95 buildings, while smoke and soot ruined equipment, computers, and sensitive scientific instruments. The City of Los Alamos was evacuated and the Laboratory was shut down during the two week long emergency.

When work at the Laboratory resumed, initial efforts were devoted to resettling employees who lost work stations and replacing essential equipment and work products. Due to the condition of the scorched land, major erosion control efforts were taken to mitigate the risk of uncontrollable flooding during the rainy season. Full recovery will take months, if not years; however, emergency response and risk mitigation efforts have been successful toward restoring Laboratory operations. Recovery and risk mitigation projects are expected to be completed with the help of substantial emergency appropriations.

Two other Department sites also suffered wildfires in the summer of 2000. Fires near the Hanford site in Richland, Washington burned 99 square miles and caused damage to federal property and the surrounding community. The Idaho National Engineering and Environmental Laboratory also was forced to fight wildfires.

**Mapping the Human Genome:** The Department of Energy is charged with pursuing a deeper understanding of the potential health risks posed by energy use and by energy-production technologies—with special interest focused on the effects of radiation. Recognizing the importance of understanding the effect of radiation on the human genome, the publicly funded Human Genome Project was begun to explore newly developing technologies for analyzing DNA. This project is a joint effort of the Department of Energy, the National Institutes of Health, and scientists in other countries.



*The Cerro Grande Fire, the largest wildfire in recent New Mexico history, devastated the City of Los Alamos, destroyed wildlife and its habitat, and caused extensive damage to the Department's facilities.*

In June 2000, the completion of the decoding of 95 percent of the human genetic structure in working draft form was achieved. This was reached by the international Human Genome Project in addition to a private company specializing in genetic research. The ultimate aim of the project is to complete the final decoding of the entire genome, improving our ability to prevent and treat disease. Genome project technology will also help us develop improved biomass-based energy sources, and tools to help clean up toxic waste. Because this project is publicly funded, its results are available for public use.

**U.S. Energy Markets:** Over the past year, the United States experienced considerable volatility in energy markets, with the entire country experiencing price increases for petroleum products and natural gas and some regions enduring more dramatic spikes in prices for specific fuels or electricity. In the Nation's Northeast, home heating oil prices skyrocketed due to short term weather-related shortages in supplies. Most recently, California has experienced serious shortages of electricity causing rolling blackouts.

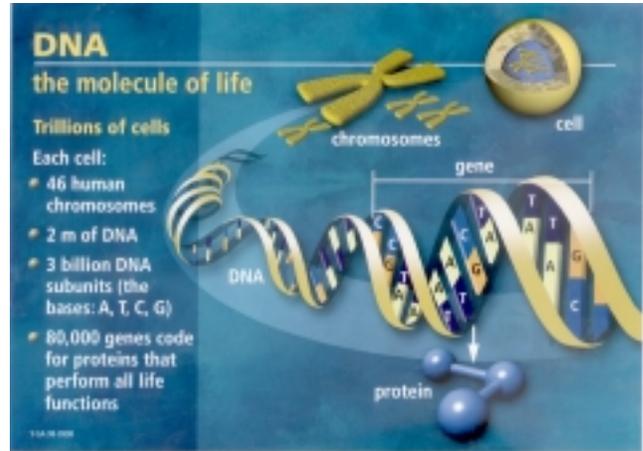
Contributing to these energy price increases is the country's dramatic economic growth and resultant increase in the demand for energy. This increased demand occurred after many years of declining energy prices, which discouraged new exploration and production of all forms of energy. Although market forces will generate increased energy supplies over time, the Department has taken actions to minimize the short term effects of these price increases.

In the Northeast, a heating oil reserve was established during the summer of 2000 to enable the Federal government to respond to future regional shortages of fuel oil. Former President Clinton directed the release of oil from the Department's Strategic Petroleum Reserve in exchange for larger amounts of oil to be delivered back to the Reserve during fiscal year (FY) 2001. Additionally, the Department established the Office of Energy Emergencies to improve federal coordination and response to all types of energy emergencies.

The Department is also developing longer-term solutions through its support for new technologies and promotion of open international markets. However, the recent tight supply and demand situation in the Nation's energy markets is evidence of the need for developing a new national energy policy with increased focus on maintaining reliable energy markets. This issue is discussed as a Departmental Challenge later in this report.

## Summary of Departmental Challenges

Departmental challenges are identified in this report in accordance with the Federal Managers' Financial Integrity Act. The objective of this Act 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, 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



Completion of the DNA decoding effort is expected before 2003 and will result in the discovery of the 80,000 to 100,000 human genes, enabling biologists to study them in detail.

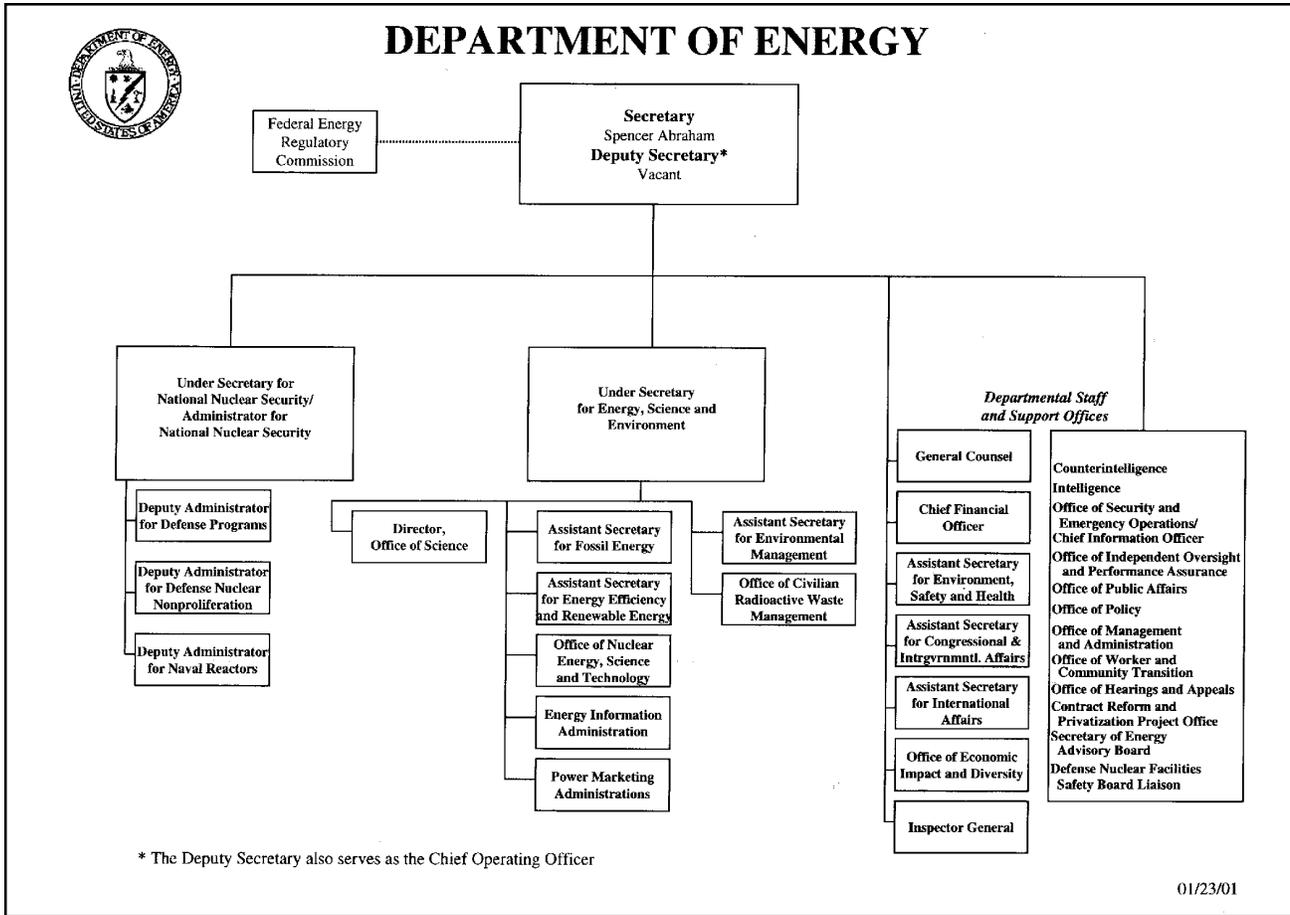
controls provides reasonable assurance that those objectives were achieved except for the problems identified as Departmental challenges in this report. Additional information relating to each of these Departmental Challenges is provided in the applicable business line.

### Departmental Challenges: Summary

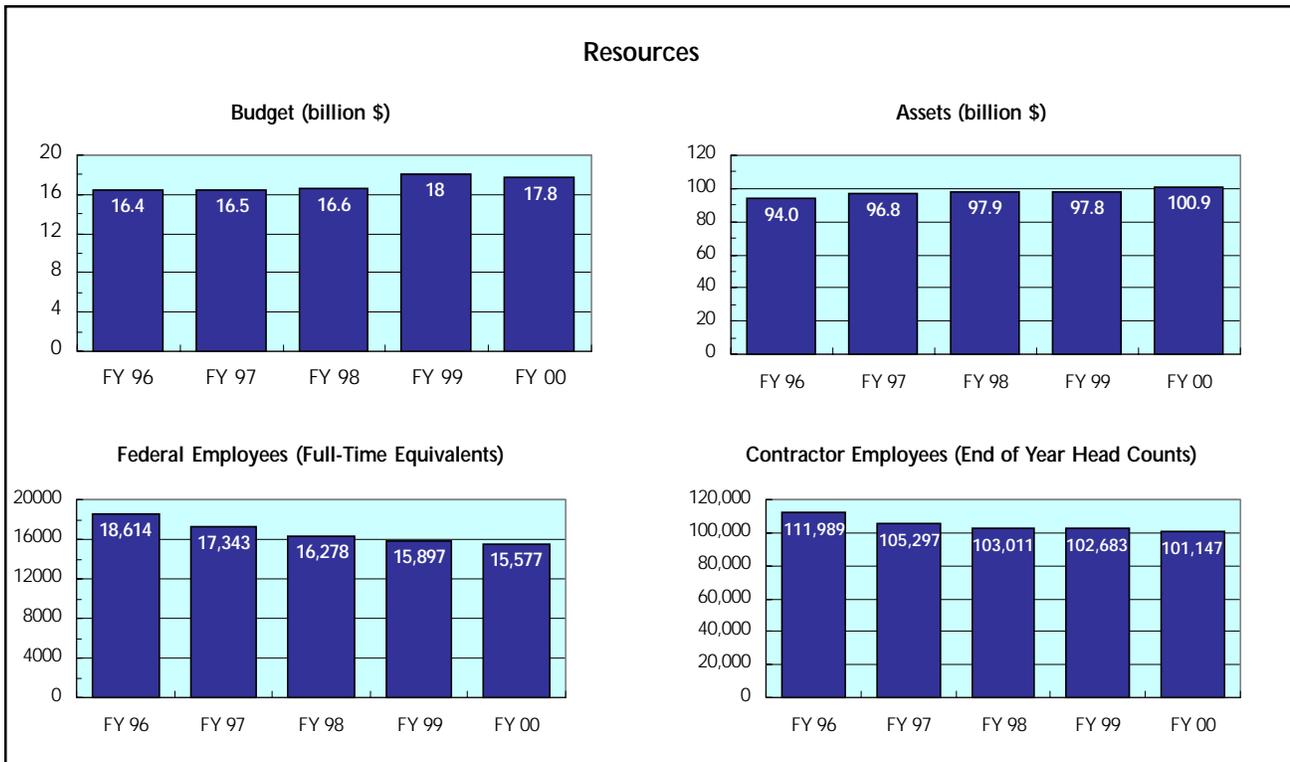
Departmental Challenges	Page Reference
Energy Markets	13
Security	18
Surplus Fissile Materials	19
Environmental Compliance	24
Nuclear Waste Disposal	27
Safety and Health	34
Contract Management	36
Human Capital Management	37
Information Technology Mgt.	37
Managing Physical Assets	38
Project Management	39
Inadequate Audit Coverage	40

### Statistical Status of Departmental Challenges

Closed	1
New	3
Beginning of FY 2000	10
End of FY 2000	12



The Department's organization consists of headquarters and field organizations, national laboratories, nuclear weapons production plants, power marketing administrations and special purpose offices.



## The Department's Organization and Resources

Organizationally, the Department is structured to accomplish our businesses: energy resources, national nuclear security, environmental quality, and science. These business activities are supported by Department-level staff and support offices performing corporate management functions.

The Department is accomplishing its mission through unique scientific and technical assets, which include outstanding national laboratories, facilities and employees.

## Report Composition

The Reports Consolidation Act of 2000 permits federal agencies to consolidate various reports in order to provide financial, performance and related information in a more meaningful and useful format. In accordance with that Act, the information contained in this report is a consolidation of reporting requirements. We believe that consolidating this information provides the reader with a better overall picture of the Department of Energy.

This report meets the following legislated reporting requirements:

- ❑ Annual report on the Department's activities as required by the Department of Energy Organization Act of 1977;
- ❑ Management actions taken in response to Inspector General audits as required by Amendments to the Inspector General Act of 1978;
- ❑ Status of the Department's management controls and the most serious problems identified as required by the Federal Managers' Financial Integrity Act of 1982;
- ❑ Performance results achieved against all goals established for the year as required by the Government Performance and Results Act of 1993;
- ❑ Audited financial statements, including an overview of performance results, as required by the Government Management Reform Act of 1994;
- ❑ Assessment of the Department's financial systems for adherence to government-wide requirements as required by the Federal Financial Management Improvement Act of 1996.

The remainder of this Overview section presents information on the Department's business lines: Energy Resources, National Nuclear Security, Environmental Quality, Science, and Corporate Management. Information presented includes a brief explanation of each business line, summarized results of significant FY 2000 performance commitments, and Departmental Challenges, if any, that exist in the area of the business line's activities.

# Energy Resources

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

**E**nergy is the vital force powering business, manufacturing and the movement of goods and services throughout the country. Our economic well-being depends on reliable, affordable supplies of clean energy. Energy is also a global commodity. With growing worldwide populations, rising living standards, and economies in transition to market-based systems, the demand for energy is increasing in an ever more globalized energy market.

The Department's goal is to promote the development and deployment of energy systems and practices that will provide current and future generations with energy that is clean, efficient, affordable, and reliable. To meet the Nation's energy needs, the Department is committed to the following policy principles: reliance on competitive markets; support for energy science and technology development; promotion of government/industry/consumer partnerships; use of targeted incentives and regulations; and facilitation of international cooperation.

The Department pursues its energy objectives through a variety of approaches, including market reforms that increase competition while assuring reliability, the development of improved energy technologies and standards, energy related information, voluntary programs and the maintenance of emergency reserves. In addition, the Department operates Power Marketing Administrations to market electricity generated by Federal hydropower projects.

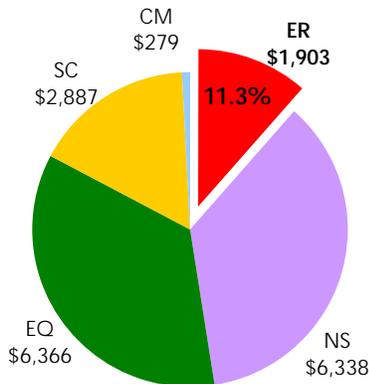
In our Energy Resources business line, we are working to accomplish several objectives discussed below.

**Reduce the vulnerability of the U.S. economy to disruptions in energy supplies.**

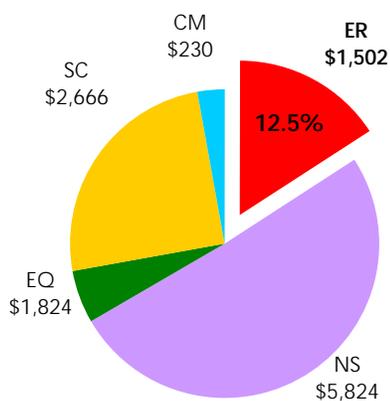
One of the Department's targets to boost the Nation's production of domestic oil during 2000 was to complete the demonstration and transfer of 7 advanced technologies, adding 92 million barrels of oil field reserves, increasing the number of economic

## BUSINESS LINE RESOURCES AND COSTS

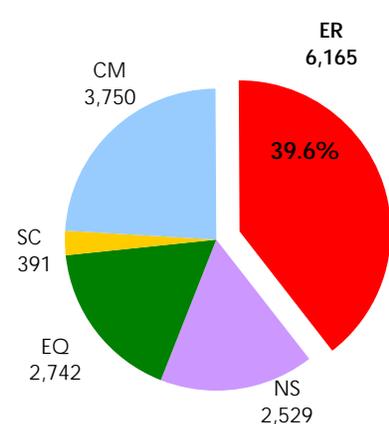
Net Budget Authority  
(Dollars in Millions)  
Total \$17,773



Operational Net Costs  
(Dollars in Millions)  
Total Business Line Net Costs \$12,046



Number of Federal Employees  
(Full-time equivalents-FTEs)  
Total Federal Employees 15,577



■ ER = Energy Resources     
 ■ EQ = Environmental Quality     
 ■ CM = Corporate Management  
■ NS = National Nuclear Security     
 ■ SC = Science

wells and reducing abandonment rates. The seven projects are estimated to produce 184 million barrels of incremental oil, which is equivalent to about \$3.6 billion at \$20 per barrel — far greater than the cost of these projects. Significant reduction of the number of abandoned wells is also anticipated, largely due to technology improvement and improved economic conditions. The Department met its goal in this area. However, at the request of industry partners, the completion date of four of the projects has been extended - at no cost to the Department. The field projects will continue to completion, per original design and implementation plans. These projects are expected to realize the indicated benefits and ultimately meet the established goals.

Another goal for FY 2000 was to launch two projects that will lead to 100 percent penetration of alternative fuel vehicles in selected niche applications such as a local taxi fleet or the buses for a particular school. We have exceeded this goal as evidenced by the fact that several Clean Cities partners have already reached 100 percent, such as American Livery Company in Orange County, CA (105 taxis); Yellow-Checker-Star in Las Vegas, NV (200 taxis); Massport Terminal Shuttle, Boston, MA (32 Shuttles); and Santa Fe Transit in Santa Fe, NM (28 buses).

To help achieve this objective, we also completed a seven-year, \$328 million modernization of the Strategic Petroleum Reserve, the Nation's first line of defense against an interruption in oil supplies. This initiative added another 25 years of useful life to

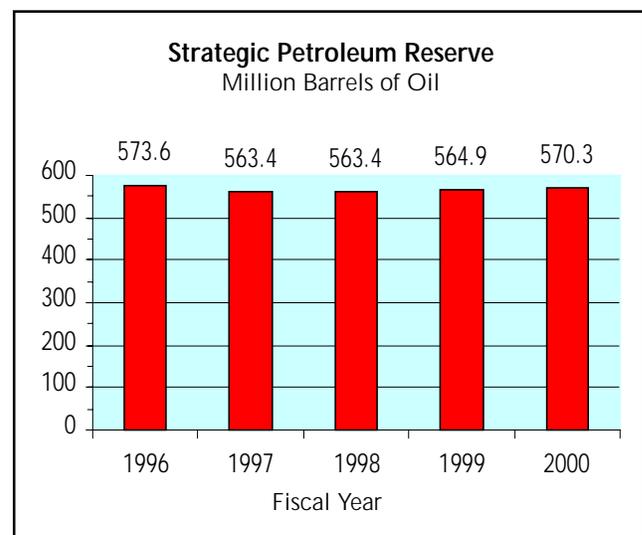


*The Department's four Power Marketing Administrations market electricity primarily from Federal hydropower projects.*

the Strategic Petroleum Reserve. The modernization project was completed ahead of schedule and nearly \$42 million below its original cost estimate. The Strategic Petroleum Reserve, established in 1975, holds about 570 million barrels of crude oil and has the storage capacity for another 130 million barrels. The refurbishment resulted in improvements that will reduce annual operating costs by \$12 million to \$15 million. The Department has also met its goal to be able to drawdown 4.18 million barrels per day for a 90 day period in the event of a national need for the Strategic Petroleum Reserve oil.

In February 1999, the Department of Energy and the Department of the Interior initiated a plan to increase the Strategic Petroleum Reserve inventory with crude oil royalties for production from leases of Federal land in the Gulf of Mexico. Under this plan, various leaseholders are directed to pay a portion of their royalties in crude oil instead of cash payments to the United States Treasury (royalty-in-kind). The Department of Energy contracts with commercial entities to receive this oil at offshore production facilities and transfer it to the Strategic Petroleum Reserve, either directly or in exchange for other crude oil delivered. The goal of the royalty-in-kind plan is to replace the 28 million barrels of oil that Congress directed the Department to sell in 1996 and 1997. During FY 2000, we completed contracting for 28 million barrels of Federal royalty oil from the Department of the Interior.

In July 2000, the President directed the Department to establish a heating oil component of the Strategic Petroleum Reserve in the Northeast to help protect Americans against possible winter fuel shortages.



The Department's plan to implement the heating oil reserve involved the commercial exchange of crude oil from the Strategic Petroleum Reserve for both the two million barrels of heating oil and leased storage tank capacity in the Northeast. Although not a previously established performance goal, all two million barrels of heating oil were in place by October 2000, well in advance of the winter heating season.

Other actions included meeting our goals for passing the North American Electric Reliability Council performance standard for each month of the fiscal year at our four Power Marketing Administrations.

We believe that the Department has successfully attained the FY 2000 goals it established for this objective.

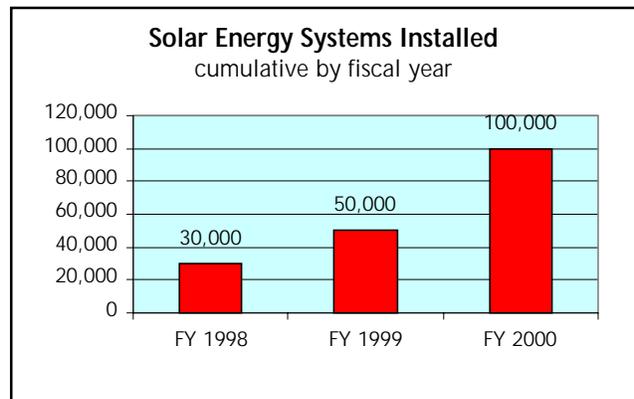
**Ensure a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.**

The Department is working to develop renewable energy technologies such as solar energy systems. In FY 2000, we facilitated the installation of well over the targeted 20,000 systems, bringing the total number of installed systems to over 100,000. The end objective is to install one million solar energy systems on U.S. buildings by FY 2010.

We are also working to reduce emissions from existing fossil fuel plants and to develop clean high efficiency plants for the future. During FY 2000, we nearly completed our goal for validation testing for critical components of two advanced turbines that can produce electricity with over 60 percent



Crude oil from the Strategic Petroleum Reserve is being exchanged for heating oil to fill the government's Northeast heating oil reserve.



Solar energy installation on a residence in Colorado employing photovoltaics.

efficiency and ultra-low emissions of major pollutants. Full testing was completed for one of the two designs and 85 percent for the other. In addition, we met our goal for completing the first large scale (600MW) test of non-catalytic reduction, a technology that will allow coal-fired power plants to reduce emissions of major pollutants. This project was carried out in partnership with American Electric Power, the Ohio Coal Development Office and Electric Power Research Institute.

In addition, we are supporting research to improve existing nuclear power plants and taking actions to

maintain nuclear power as a viable option for the future. In FY 2000, we met our goal for implementing the Nuclear Plant Optimization Program to develop new technologies for managing the effects of plant aging while improving plant reliability, availability and productivity. The Department also met its goals for continuing research projects underway and approving and initiating new projects that will help maintain nuclear energy as a viable option for the future.

With the projects completed and the new initiatives underway, we believe the Department has met our FY 2000 goals toward ensuring a competitive electric generation industry that can produce adequate, affordable supplies with reduced impact on the environment.

### ***Increase the efficiency and productivity of energy use, while limiting environmental impacts.***

Activities to increase the efficiency and productivity of energy use in an environmentally friendly manner encompass a wide variety of efforts including the development of new energy efficient vehicles, improving efficiency in energy intensive industries, and designing buildings that are more energy efficient.

During FY 2000, the Department exceeded its goals for working with domestic automakers to develop more fuel-efficient vehicles. DaimlerChrysler, Ford, and General Motors all introduced advanced concept vehicles that get up to three times the gas mileage of today's typical family sedan. In addition, the Department has exceeded its FY 2000 goals toward improving the efficiency of energy intensive

### ***Departmental Challenge: Energy Markets***

The United States experienced considerable volatility in energy markets over the past year. Every region of the country experienced price increases for petroleum products and natural gas, and several regions endured more dramatic short-term supply problems and spikes in prices for specific fuels or electricity. The Northeast experienced skyrocketing home heating oil prices. More recently, serious shortages of electricity in California have forced rolling blackouts and brought two of the country's largest utilities to the edge of bankruptcy.

Many factors contributed to this situation, but one of the most important is the dramatic economic growth experienced by the United States that has increased the demand for energy. This increased demand occurred after many years of declining energy prices, which had discouraged new exploration and

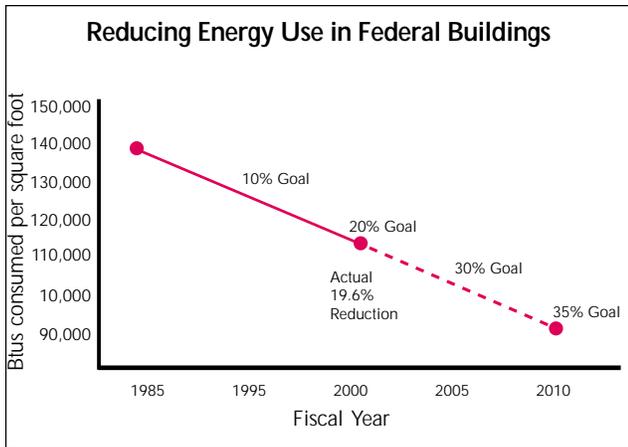
production of all forms of energy. Although market forces, given sufficient time, will respond to higher prices by adding new energy production and generating capacity, the Department has taken steps to improve some aspects of the Nation's energy markets. Recognizing the need for restructuring of the electricity sector, the Department has strongly supported legislative action and hosted regional electric reliability summits to discuss ways to improve delivery of electricity. Additionally, through its research and development programs, the Department has invested in new technologies to improve energy efficiency, lower the costs of oil and gas exploration, and find new sources of supply.

The Department has also taken steps to help mitigate the immediate effects of regional short-term energy shortages by providing assistance to local authorities as they work to resolve underlying problems. To address the electricity shortage in California, the

Department issued emergency orders directing out-of-state electricity generators and natural gas distributors to sell available supplies to California and similar directives to Federal power producers to help increase supplies to that area. To respond to short-term shortages of fuel oil in the Northeast, a home heating oil reserve was established during the summer of 2000 to reduce the risk of disruptions like those that occurred during the prior winter.

Despite these efforts, the underlying issue of increasing national energy requirements calls for the development of a comprehensive, long-term national energy strategy. Recognizing this, the President established an Energy Policy Development Group to recommend to him a national policy that will help the private sector and, as appropriate, government at all levels, to ensure that there are adequate energy resources to meet the needs of U.S. citizens. The Secretary of Energy is a member of the Group, which is headed by

the Vice President. Following the development of an assessment of the difficulties being encountered in current energy markets, the Group will develop a report recommending a national policy designed to help the private sector, and local, State, and Federal governments, if necessary, promote dependable, affordable, and environmentally sound production and distribution of energy for the future. The report to the President will be developed during FY 2001. As the Federal agency responsible for energy policy at the national level, the Department of Energy will actively pursue implementation of the new national energy policy when it is approved by the President.



*As the largest energy consumer in the world, the U.S. government's cost-and-energy savings opportunity is enormous. The Federal Energy Management Program, a part of the Department, helps federal agencies reduce costs and increase energy efficiency.*

industries by initiating 13 solicitations with industry in support of roadmaps developed in the Industries of the Future program and establishing partnerships with 50 Industries of the Future plants for improved efficiencies in motors, steam, compressed air, and combined heat and power.

The Department also exceeded its target to weatherize 68,000 low income homes, bringing the total to nearly 5 million homes. The Weatherization Program also helps reduce our dependence on foreign oil by saving 15 million barrels of oil annually. In addition, the Department exceeded its goal for reducing energy use in Federal buildings by 20 percent since 1985, one year ahead of the schedule required by the Energy Policy Act of 1992. This achievement has saved 127.3 trillion Btu's of energy, enough to supply the needs of over one and a quarter million households for an entire year. Since 1985, greenhouse gas emissions from federal buildings have been reduced by almost 2.4 million metric tons — equivalent to removing 1.7 million automobiles from

the road for an entire year. These efforts have also saved over \$19 billion in federal government building energy costs since 1985.

With the successful completion of these actions, along with other initiatives, the Department has substantially achieved its FY 2000 goals toward increasing the efficiency and productivity of energy use, while limiting environmental impacts.

**Support U.S. energy, environmental, and economic interests in global markets.**

The Department supports international cooperation in technology development, emergency preparedness, and policy coordination through the International Atomic Energy Agency, various international agreements, and initiatives.

During FY 2000, the Department has worked with the Environmental Protection Agency and with other nations to develop guidelines for reduction of greenhouse emissions. In this arena, we have met our goals toward developing flexibility mechanisms to promote reduction of greenhouse gases. We have also nearly met our goal for obtaining meaningful commitments from developing countries for reducing greenhouse gas emissions, but need to continue to work with some of these countries for firm commitments. The Department exceeded our goal for leading U.S. Government technology and climate change strategy development by chairing and expanding the Annex II Countries Climate Change Technology Initiative which promotes objectives of the United Nations Framework Convention on Climate Change and by completing related activities.

Through these and other related initiatives, the Department has achieved its FY 2000 goals for supporting U.S. energy, environmental, and economic interests in global markets.

# National Nuclear Security

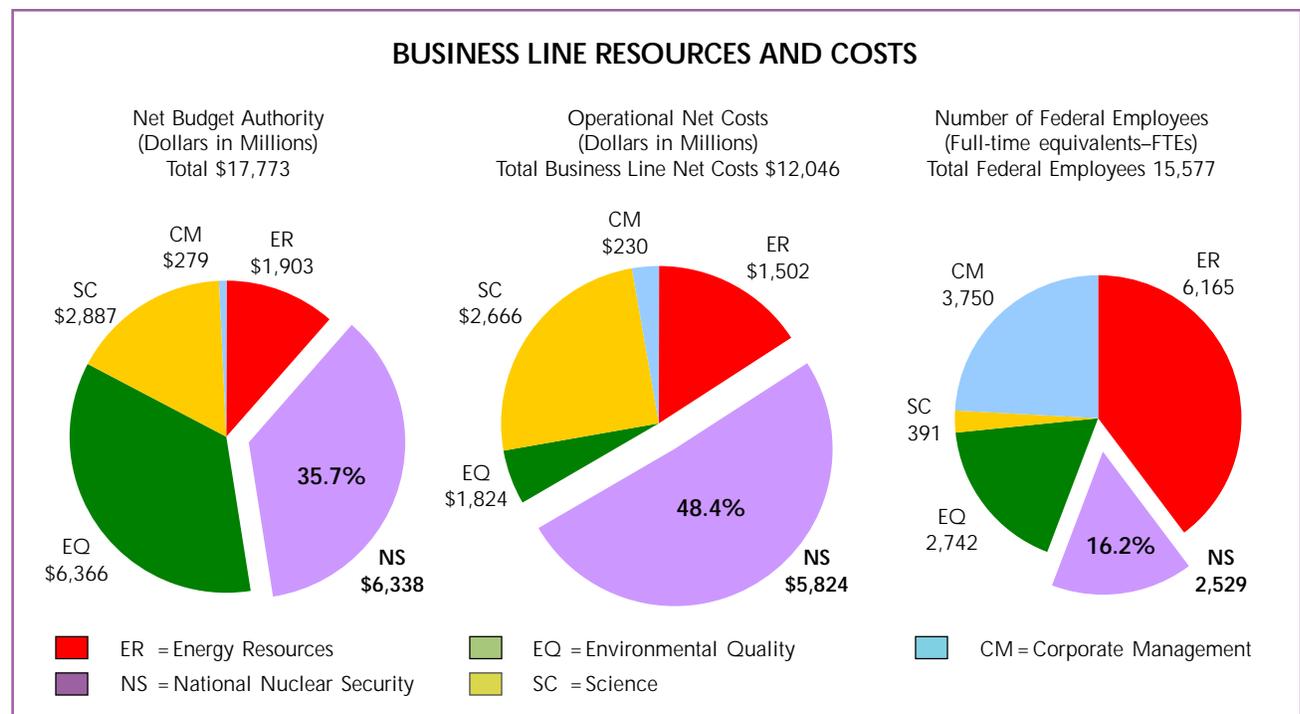
The Department of Energy supports national security, promotes international nuclear safety and reduces global danger from weapons of mass destruction.

The Department and its predecessor agencies have long played a critical role in guarding our Nation's security and supporting our Nation's defense. The Department's national nuclear security programs were consolidated into the National Nuclear Security Administration (NNSA) in March 2000. The NNSA is comprised of the Offices of Defense Programs, Defense Nuclear Nonproliferation, and Naval Reactors. Responsibilities of the NNSA include maintenance of a safe, secure, and reliable stockpile of nuclear weapons and associated materials capabilities and technologies; promotion of international nuclear safety and nonproliferation; and management of the naval nuclear propulsion program. Four staff offices outside of the NNSA retain policy, oversight, and some national security responsibilities: the Office of Security and Emergency Operations, the Office of Intelligence, the Office of Counterintelligence, and the Office of Independent Oversight and Performance Assurance. These programs in coordination with the Department of Defense and other agencies

with a national nuclear security mission help ensure that we live in a safe and secure world.

With the end of the Cold War, the Department faces a new and complex set of challenges in carrying out its national nuclear security mission. The fragmentation of the former Soviet Union has led to concerns about the accountability, control and disposition of nuclear materials and information. Nuclear proliferation coupled with the knowledge that at least 20 countries are known to be or are suspected of developing weapons of mass destruction pose a significant threat to national security. The nuclear deterrent is critical to meeting the Nation's security challenges and sustaining domestic and international security. However, the nuclear deterrent is represented by a smaller, aging weapons stockpile, which must be maintained without underground testing. Our stockpile stewardship program, which is being carried out at the production sites and weapons laboratories, is working today to maintain a safe, secure, reliable stockpile through advances in

## BUSINESS LINE RESOURCES AND COSTS



science and technology in the absence of underground testing. Also critical to meeting the Nation's security challenges are international cooperative efforts with the former Soviet Union to minimize the threat of proliferation of excess fissile materials and the safety risks of aging nuclear power plants.

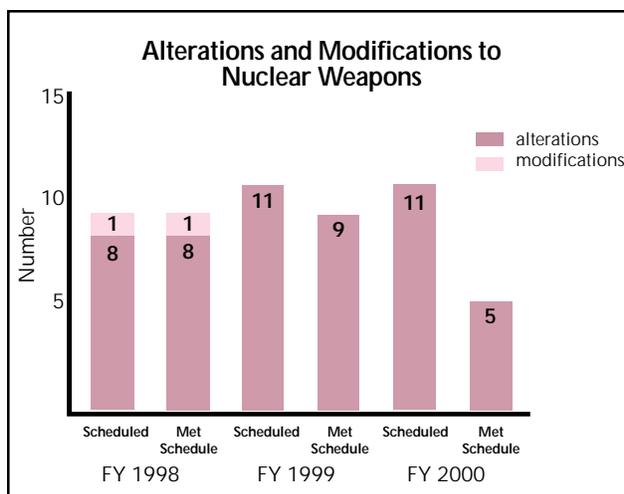
In our National Nuclear Security business line, we are working to accomplish several objectives discussed below.

**Maintain Confidence in the Safety, Reliability, and Performance of the Nuclear Weapons Stockpile Without Nuclear Testing.**

In pursuit of the Comprehensive Test Ban Treaty, the President directed the establishment of an annual review and certification process of the safety, reliability, and performance of the nuclear weapons stockpile in the absence of testing. In FY 2000, the fifth annual certification process was carried out. The NNSA's active and inactive weapons systems were reviewed by DOE's national weapons laboratories and joint Project Officers Groups. Final reports on the systems were provided to the Secretaries of Energy and Defense in July 2000. Final certification was provided to the President in January 2001.

The NNSA's efforts in maintaining the nuclear stockpile include 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 conducted when surveillance activities indicate the need for updating weapons to meet higher safety standards, replace faulty components, meet changed military requirements, or extend the life of the weapon. In FY 2000, there were no requirements for modification but eleven weapons alterations were underway. The NNSA met the annual schedule for five of the eleven weapon alterations, falling below expectations of its FY 2000 goal to meet all alteration and modification schedules developed jointly with Department of Defense. For the remaining six alterations, revised schedules have been developed with the Department of Defense that will meet their operational needs.

Tritium, a radioactive isotope of hydrogen, is necessary for the proper function of all U.S. nuclear weapons. Since tritium decays at a rate of about five and one-half percent per year, it must be replaced in weapons to ensure their reliability. The U.S. has not produced new tritium for the past eleven years and



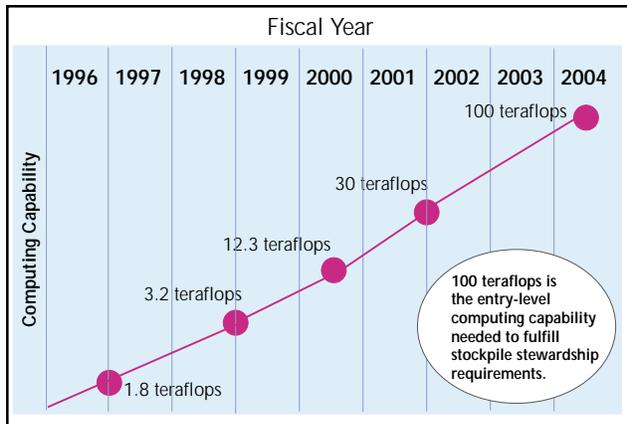
The Department jointly develops schedules for modifying and altering nuclear weapons systems with the Department of Defense. Revised schedules are developed when initial goals are not achieved.

has used recycled tritium from dismantled weapons to meet supply requirements. The current supply of tritium is dwindling and will be sufficient to meet requirements only until FY 2005. To meet future tritium requirements, the Department's strategy includes the irradiation of tritium producing burnable absorber rods in the Watts Bar and Sequoyah light water reactors operated by the Tennessee Valley Authority. In addition the construction of a new Tritium Extraction Facility at the Savannah River Site is now underway. Among the FY 2000 milestones met were the completion of site excavation for the Tritium Extraction Facility and the award of a contract for the commercial, long-term fabrication of tritium-producing rods for irradiation. The Tennessee Valley Authority is on track to submit license amendments to the Nuclear Regulatory Commission in the Spring, 2001.

Overall, we have nearly met the FY 2000 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.

**Replace Nuclear Testing with a Stockpile Stewardship Program.**

In response to the moratorium on nuclear testing declared in 1992 by former President George Bush, the Department has been working on replacing underground testing of its nuclear weapons with a

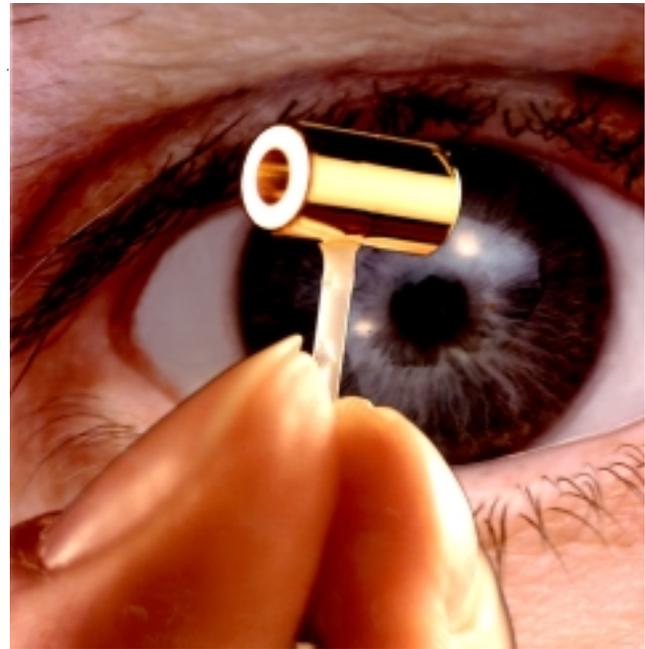


The ASCI goal is to achieve the 100-teraflops (trillion-floating-point-operations-per-second) threshold in 2004.

science-based program of stockpile stewardship to maintain the safety, security, and reliability of the U.S. nuclear deterrent.

The Accelerated Strategic Computing Initiative (ASCI) is a program being developed to help maintain our existing aging stockpile through advanced computer simulation and modeling. Each of the three weapons laboratories are using ASCI machines to solve and understand issues with the stockpile. In FY 2000, the NNSA exceeded its goal of demonstrating a computer code capable of performing a three-dimensional analysis of the dynamic behavior of a nuclear weapon primary, or trigger, using an ASCI computer. Demonstrating the ability to computationally visualize and analyze what happens to the primary is the first critical step in simulating an entire nuclear weapon's explosion and is proof of key advances in our science-based methods to secure the safety and reliability of our nuclear weapons without underground testing. In addition, a contract was signed with Compaq for a 30 teraflop machine.

Another thrust of our efforts in the Stockpile Stewardship Program is to develop new experimental capabilities for understanding weapons science. The National Ignition Facility (NIF), an experimental physics facility meeting this purpose, is now under construction at the Lawrence Livermore National Laboratory in California. The NNSA met its FY 2000 goal to continue construction of the facility and re-baseline future construction, total costs, and schedules by June 2000. The re-baselining was necessary due to problems discovered in FY 1999. During FY 2000, excellent progress was made on constructing the conventional facilities and procurement of laser glass and large optical components.



A NIF hohlraum, a cylinder of gold within which rests a BB-sized plastic sphere containing fusion fuel—the NIF target. Laser beams enter the two open ends of the hohlraum, heating the hohlraum walls and creating x-rays that compress the fusion fuel and produce a fusion reaction. “Hohlraum” means hell room in German, referring to the extreme heat and temperature generated inside the pellet when the fusion reaction occurs at temperatures in excess of 15 million degrees, exceeding those at the center of the sun.

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 2000 to conduct further subsets of a subcritical experiment begun in FY 1999 and one additional subcritical experiment at the Nevada Test Site. The subcritical experiments provided valuable scientific information about the behavior of nuclear materials during the implosion of a nuclear weapon.

We met our FY 2000 goals for replacing nuclear testing with a Stockpile Stewardship Program.

### ***Ensure the Vitality of the Department's National Security Enterprise.***

Maintaining the NNSA's national security enterprise is a multifaceted endeavor. It involves ensuring facilities required for achievement of the Stockpile Stewardship Program remain operational, downsizing and 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.

During FY 2000, the NNSA fell below its expectation to ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational. Essential to the Stockpile Stewardship Program is the NNSA's ability to recapture the capability to fabricate and assemble plutonium pit components. Plutonium pits are needed to support future stockpile requirements. Two nuclear production facilities located at the Department's Los Alamos National Laboratory, TA-55 and the Chemistry and Metallurgy Research building, must remain operational in order for the NNSA to provide the capability to produce plutonium pits. In FY 1999, a project to upgrade the Chemistry and Metallurgy Research building was re-baselined to focus resources on those upgrades necessary to ensure operation of the facility for the next ten years. Seven subprojects have been completed since re-baselining the project in September 1999; however, the Cerro Grande fire in

May 2000 and other work stoppages delayed completion of some of the remaining subprojects. In addition, it will be necessary to replace the capabilities provided by the Chemistry and Metallurgy Research facility within the next ten years. However, pre-conceptual planning of the replacement capability was placed on hold in February 2000, awaiting additional funding. Although TA-55 remained operational during FY 2000, operations were severely restricted due to a March 2000 processing accident and resulting corrective actions and significant disruptions caused by the fire. Resumption of the pit manufacturing at TA-55 occurred toward the end of FY 2000. Despite delays encountered in FY 2000, the NNSA does not anticipate a significant impact on the overall project completion.

Meeting national nuclear security requirements in this post Cold-War era has required the NNSA to reevaluate its nuclear weapons complex. Downsizing

### ***Departmental Challenge: Security***

Recent security and counterintelligence related incidents within the Department highlighted program shortfalls and discrepancies. Although aggressive and positive actions have been taken to strengthen security and counterintelligence activities, the perception remains that security at the Department is below standards. Congressional actions, other high level reviews, and media attention have all added to this perception.

**Security:** Over the past several decades, security has not been given the necessary priority and attention within the Department and its laboratories. The areas of weakness include cyber security, physical security, personnel security, and information security programs. In response to these weaknesses, the

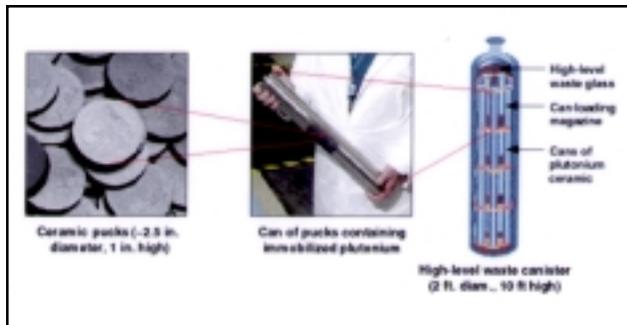
Secretary of Energy issued a ten-point security reform package in May 1999. This plan gives the Department the tools and authority to detect security infractions, correct institutional problems, and protect America's nuclear secrets. The plan involved the creation of the Office of Security and Emergency Operations, which became fully operational during FY 2000. In addition, as of the end of FY 2000, all other actions in the Secretary's reform package have been completed. Positive results yielded by implementation of this plan included program consolidation, an integrated safeguards and security budget and establishment of a performance measurement system that tracks the effectiveness of security related programs.

**Counterintelligence:** In response to weaknesses in the Department's Counterintelligence Program, in February

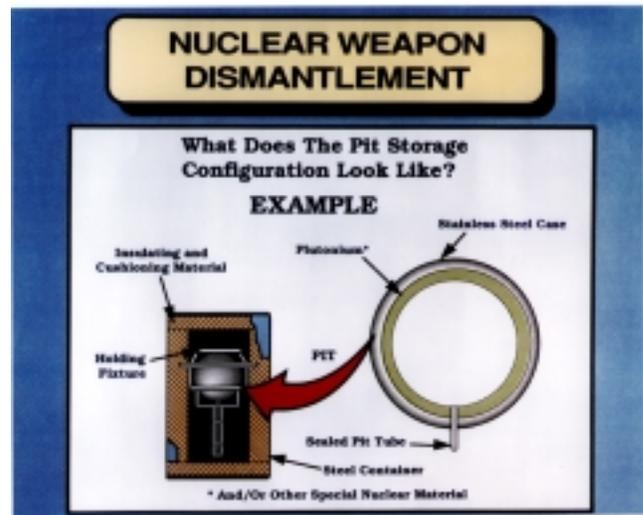
1999 the Secretary approved a Counterintelligence Implementation Plan to put into effect reforms required by Presidential Decision Directive 61. The Plan includes 46 concrete recommendations to develop effective monitoring of foreign visitors to the Department's facilities, to staff field counterintelligence elements by experienced counterintelligence professionals, to develop a counterintelligence polygraph program to screen current and potential employees in the DOE high-risk programs, to enhance counterintelligence professional and counterintelligence awareness training, and to develop a robust counterintelligence analysis and investigative capability to assess the foreign intelligence threat to the Department and effectively detect and deter hostile intelligence activities. By the end of FY 2000, 42 of the 46 recommendations had been successfully completed and it is

expected that the remaining recommendations will be implemented by mid FY 2001.

In FY 1999, the Department identified security as a Departmental Challenge. Although all critical milestones identified in the Secretary's ten-point security reform package and 91% of the recommendations included in the Counterintelligence Implementation Plan have been completed, we continue to consider this area as a Departmental Challenge until recently initiated security programs and enhancements mature, milestones identified in the Department's current plan are fully implemented, and remaining counterintelligence actions are finalized.



Development of methodology to dispose of surplus plutonium by immobilizing the material in ceramic pucks. Plutonium would be encapsulated inside a ceramic waste form. The resulting material would be sealed inside cans, the cans placed in a large stainless steel canister, and the canister filled with molten glass.



Following removal from a nuclear weapon, the component containing plutonium, commonly referred as the "pit" is currently being stored at the Pantex Plant on an interim basis.

### 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.

Various phases of the Department's plan to dispose of surplus fissile materials to reduce the proliferation threat and handling costs have been implemented. During FY 2000 the Department had planned to make available four metric tons of surplus highly enriched uranium (HEU) to the United

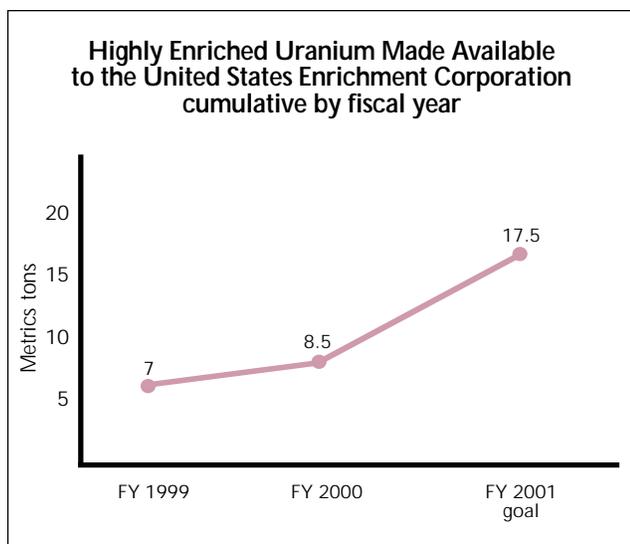
States Enrichment Corporation (USEC) for downblending to low enriched uranium and subsequent sale. The Department did not meet its goal and shipped 1.5 metric tons of highly enriched uranium to USEC. The delay in shipment was caused by a safety stand-down at the Y-12 plant in Oak Ridge, Tennessee where the HEU is stored. Planned deliveries for FY 2001 will compensate for the inability to ship the full four metric tons of HEU in FY 2000 and the Department believes it is on track to make available to USEC for downblending and subsequent sale a total of 50 metric tons of surplus HEU by FY 2005, as planned. The Department is also finalizing an agreement with the Tennessee Valley Authority for the disposition of off-specification highly enriched uranium for downblending and subsequent use in its reactors. Research and development in the area of alternative low enriched uranium fuels will lessen the need for highly enriched

uranium and other surplus nuclear materials which reduces the threat of global proliferation of nuclear weapons.

Regarding surplus plutonium, the Department is continuing to pursue a hybrid strategy that calls for the disposition of surplus plutonium through immobilization of some plutonium in ceramic form and burning of some as mixed oxide fuel in existing, domestic commercial reactors. During FY 2000 we met our goal to issue the Record of Decision on a site for three plutonium disposition facilities. Following release of the final Surplus Plutonium Disposition Environmental Impact Statement in November 1999, the Department issued a Record of Decision in January 2000 naming Savannah River as the site for three key plutonium disposition facilities – pit disassembly and conversion, immobilization and mixed oxide fuel fabrication.

In FY 2000, the Department met its goal to implement a bilateral agreement with Russia for the disposition of surplus plutonium. Specifically, the U.S. and Russia signed an agreement for disposing of 68 metric tons of weapon-grade plutonium. This agreement has enabled the U.S. and Russia to begin preliminary design of the industrial-scale plutonium conversion and mixed oxide fuel fabrication facilities in Russia.

With the implementation of various phases of the Department's plan for disposing of surplus fissile materials, our goal to reduce the nuclear danger and threat of global proliferation is being attained. The Department will continue to address this issue until we are satisfied all concerns have been resolved.



*The Department's plan to dispose of surplus fissile materials to reduce the proliferation threat includes the transfer of highly enriched uranium to the United States Enrichment Corporation for downblending to low enriched uranium and subsequent sale.*

and modernization activities at several NNSA sites will ensure that the U.S. maintains an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise. During FY 2000, the NNSA nearly met its expectation to meet its established schedules for downsizing and modernizing our production facilities as planned under the Stockpile Management Restructuring Initiative. This initiative includes the tritium facilities at the Savannah River Site; enriched uranium operations at the Y-12 plant in Oak Ridge; weapons assembly/disassembly and high explosive facilities at the Pantex Plant; and non-nuclear production facilities for electronic, electro-optical devices, plastic and machined parts at the Kansas City Plant. The Kansas City and Pantex Plant projects are both on schedule and within cost. The Savannah River and Y-12 projects did not meet their established schedules, and both projects are anticipating cost overruns.

Another aspect of our efforts to ensure the vitality of our national security enterprise is to maintain readiness for nuclear or other emergencies. In FY 2000, the NNSA successfully met its goal to maintain the capability to resume underground nuclear testing, consistent with Presidential direction. Maintaining the capability to resume underground testing requires the NNSA to maintain test facilities and equipment and nuclear testing skills of personnel. High-explosive and subcritical

experiments conducted at the Nevada Test Site and specially designed test readiness exercises maintain test readiness skills. During FY 2000, thirty-five high-explosive experiments and five sub-critical experiments were conducted at the Nevada Test Site.

Although not a performance goal, in FY 2000, NNSA recompeted contracts at the Pantex, Y-12 and Kansas City plants. The decision to recompet rather than extend the contracts was made to improve performance based aspects and to focus on problem areas or priority areas for improvement.

Overall, we nearly met our FY 2000 goal to ensure the vitality of the Department's national security enterprise. While we met our goal to maintain readiness for nuclear or other emergencies, the NNSA fell below its expectations to ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational.

#### ***Reduce Nuclear Weapons Stockpile and the Proliferation Threat Caused by the Possible Diversion of Nuclear Materials.***

The NNSA 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.

In an effort to reduce the nuclear weapons stockpile, the NNSA must safely and securely dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile. The NNSA met its FY 2000 goal to adhere to approved schedules for dismantlements. One hundred percent of the FY 2000 dismantlement quantity was completed without safety or security concerns. Disassemblies conducted during FY 2000 covered the W56 Minuteman II Warhead, the W79 Artillery-Fired Atomic Projectile Warhead and Quality Assurance/Miscellaneous dismantlements.

The Department is taking aggressive action to reduce our nuclear weapons stockpile and the nonproliferation threat. Overall, we believe our FY 2000 actions were nearly successful in achieving our goals.

### *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. Since the end of the Cold War, an important component of our nonproliferation programs has been our work with states of the former Soviet Union to minimize the risks of proliferation. During FY 2000, the Department met its goal to continue to install material protection, control and accountancy upgrades in Russia. We have completed many security upgrades at Russian reactor sites and in the Russian infrastructure that support the manufacture, transportation, and storage of weapons-usable nuclear materials. In cooperation with Russian officials, physical security and accountancy upgrades are underway on approximately 763 metric tons of weapons-usable material and comprehensive material protection, control and accountancy upgrades were completed on about 137 metric tons of weapons-usable material.

During FY 2000 the Department exceeded its goal to further the Nuclear Cities Initiative by promoting cooperation with the closed cities in the Russian nuclear weapons complex to improve the prospects for defense conversion and employment of former weapons scientists. For example, significant progress has been made in Sarov in creating an Industrial Park where former weapons scientists can be employed in commercial endeavors. A business partnership for medical technologies has been established and more than 200 weapons workers are currently employed. At Sneshzhinsk, an Open Computing Center and a Nonproliferation Analysis Center have been funded. In addition, over 200 micro- and small-business loans have been made by the European Bank for Reconstruction and Development under a partnership with the Nuclear Cities Initiative.

The Department also met its goal to cooperate with Russian Federation Customs to block nuclear smuggling at Russian border posts by providing nuclear detection equipment. The Department and the Russian Customs have agreed upon six sites to equip with monitoring equipment and Russian Customs has proposed seventeen additional sites.

Also essential to nonproliferation efforts are advancements of nonproliferation technology in the United States. During FY 2000, the Department met its goal in this area. We developed improved technologies and systems for early detection, identification and response to weapons of mass destruction proliferation and illicit materials trafficking. As examples, a radiation detection system was developed, delivered and installed for the U.S. Customs Service, a small satellite to demonstrate temperature measurement from space for the passive detection and characterization of proliferant activities was launched, and a first generation handheld detector for enhanced detection of chemical agents was successfully tested.

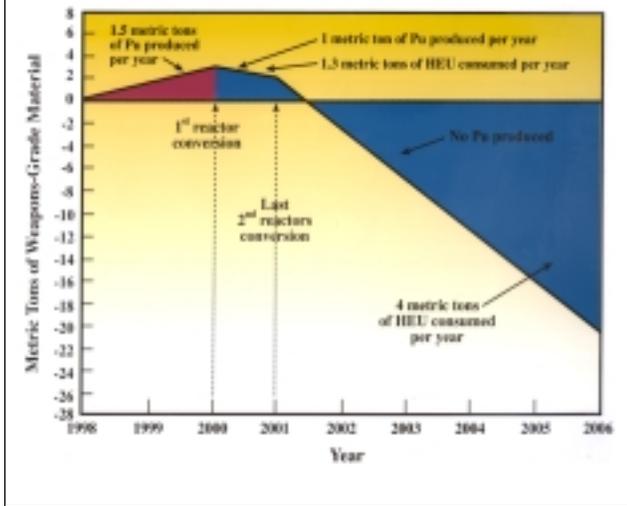
We believe we have been successful in achieving our FY 2000 goals in this area.

### *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 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 2000, the Department met its goal to ensure the safety, performance reliability, and service-life of operating reactors. 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 120 million miles steamed without a reactor incident. In addition, development of the next generation reactor for the Navy's New Attack Submarine progressed ahead of schedule. Development work has been completed on most reactor plant components. Confirmatory life testing and shock testing have been completed on the control drive mechanisms and is on schedule for the new concept steam generator. Planned initial development efforts on a new reactor plant for the next generation aircraft carrier were completed. Preliminary design work is nearing completion on the major propulsion plant components and detailed design is beginning.

The goals supporting this strategic objective were met in FY 2000.

**Net Change of Weapons-Grade Nuclear Material After Core Conversion**



*Improve International Nuclear Safety.*

In our endeavor to advance nonproliferation cooperation worldwide, the Department assisted countries in reducing the risks from Soviet-designed nuclear power plants and implementing a self-sustaining nuclear safety improvement program capable of reaching internationally accepted safety practices. Meeting our goals in FY 2000, three Safety Parameter Display Systems were installed to improve operator response to emergencies in Russia and at South Ukraine. In addition, a Ukrainian Center for Nuclear Fuel and Reactor Core Design has been established and information has been obtained that will be used to design and test reactor fuel.

Overall, we believe we were successful in achieving our FY 2000 goals for this objective.

*Three Russian plutonium production reactors, more than 30 years old and not meeting newer plant safety standards, remain in operation, producing weapons-grade plutonium. A collaborative United States and Russian core conversion project changes the type of fuel used in these reactors to a type that will not produce weapons-grade plutonium. The new fuel type will allow the converted reactors to provide critically needed heat and will also burn highly enriched uranium, which will reduce the stockpile of weapons-grade materials. Core conversion will also improve nuclear safety at the Russian production reactors.*

# Environmental Quality

The Department 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.

One of the greatest challenges facing the Department is the monumental task of cleaning up contaminated sites and disposing of radioactive waste. In previous years, the Nation's production of nuclear weapons generated large amounts of waste, which pose unique problems, including unprecedented volumes of contaminated soil, radiological hazards and contaminated structures. The Department is committed to honoring the Government's obligation to protect human health and the environment by cleaning up sites across the country that supported the nuclear weapons production activities. As we pursue these activities, we are also taking steps to minimize the future generation of waste.

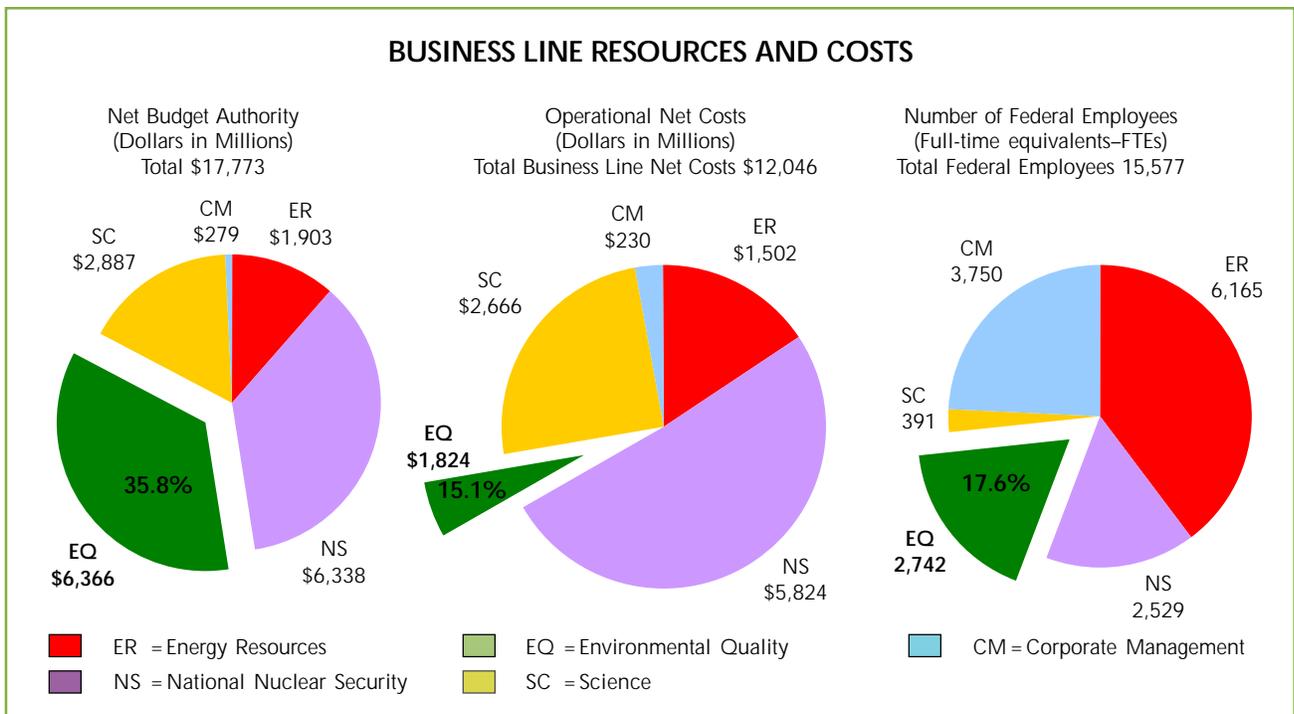
In addition to cleaning up the environmental legacy of prior nuclear weapons production activities, the Department is also addressing the need to permanently dispose of defense-related high-level radioactive wastes as well as spent nuclear fuel from civilian nuclear power plants and nuclear-powered naval

vessels that is currently being stored at sites across the United States.

In our Environmental Quality business line, we are working to accomplish several objectives discussed below.

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

Reducing the risks to workers, the public, and the environment is our first priority. A primary focus of this effort is to remove radioactive waste from current locations and maintain it in a safe storage condition until final disposal can be achieved. To this end, our fiscal year 2000 target was to place 35.1 metric tons of heavy metal spent nuclear fuel in dry storage, which represents about 2 percent of the total amount to be transferred to storage. Unfortunately, delays in the receipt of storage canisters, coupled with unanticipated safety issues, have delayed the transfer of the Three-Mile Island spent nuclear fuel



presently located in Idaho. These delays reduced the amount we were actually able to place in dry storage to 2.7 metric tons. However, even with this delay, we expect to meet our commitment to the State of Idaho to complete transfer of all Three-Mile Island spent nuclear fuel by June 2001. In the interim, we have taken steps to mitigate the effects of the delay by increasing the work schedule to round-the-clock operations; applying additional resources as allowed by a reprogramming request approved by Congress; improving canister availability; and increasing our inventory of spare parts to reduce down time.

In addition to transferring heavy metal spent nuclear fuel to dry storage, we are also working to stabilize and store plutonium waste and thereby eliminate the serious risk posed by inventories of this radioactive

material. The plutonium waste we are dealing with is in a variety of forms. Our goal for FY 2000 was to stabilize 400 containers of metals and oxides, 41,000 kilograms of residue, and 130 units of other nuclear material in other forms. This would complete stabilization of about 10 percent of the containers of plutonium metals/oxides, 70 percent of the kilograms of plutonium residues, and 3 percent of the other nuclear material. During the year, we stabilized 574 containers of plutonium metals/oxides and 224 units of other nuclear material, exceeding our goals. However, we were not able to accomplish our goal related to plutonium residue, instead stabilizing 29,460 kilograms during the year. We were not able to meet the goal due to a work stoppage required to inventory the waste and then the shutdown of several facilities due to safety issues. We are developing plans to address the delays.

**Departmental Challenge:  
Environmental Compliance**

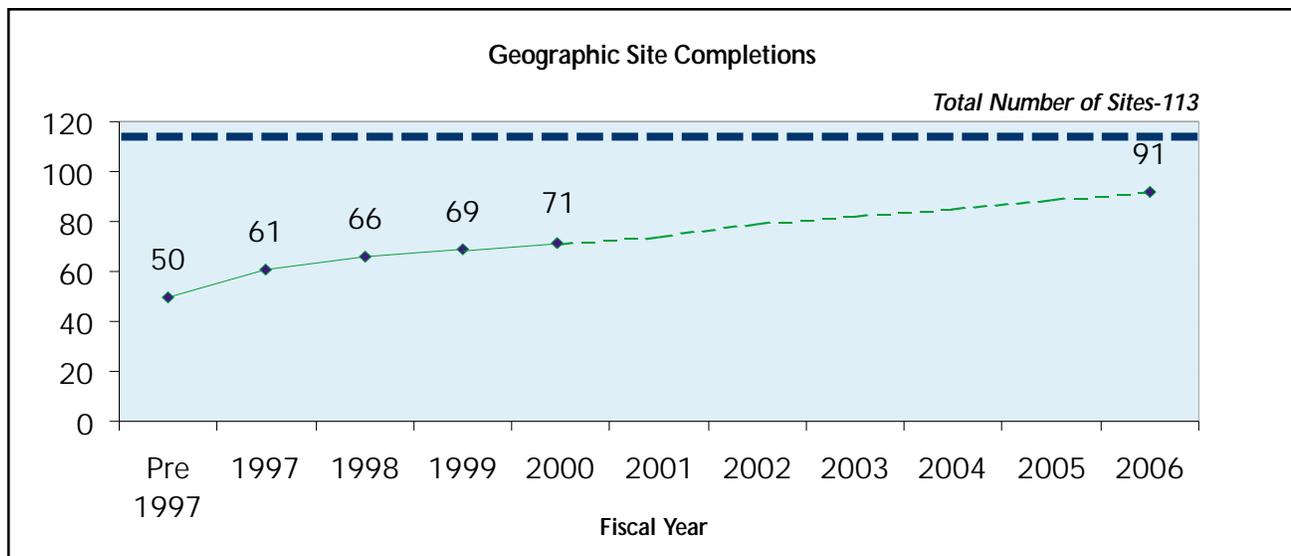
The Department faces significant long-term environmental compliance and waste management problems at its facilities due to past operations that left a legacy of unacceptable risk to the environment. These circumstances dictate that continued high priority be given to evaluating and correcting

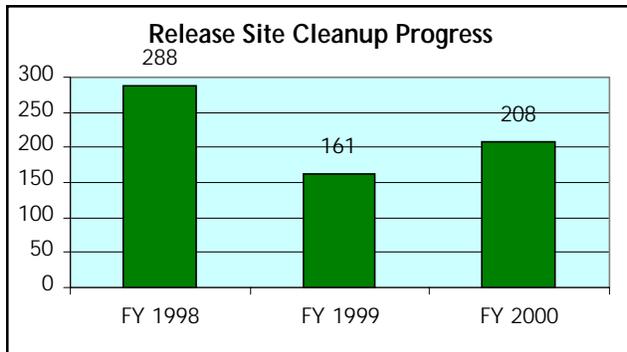
the impacts of past practices and characterizing and minimizing the possible adverse impacts of present and future activities. The Department is implementing an aggressive plan to accelerate the clean up of its contaminated sites. The focus of the plan is to clean up as many sites as possible by FY 2006.

Cleaning up our sites and protecting the environment is one of the Department's highest priorities. However, our progress in FY 2000 was only partially successful. We intend to address these issues more effectively in the future in order to meet environmental compliance requirements.

**Clean up as many as possible of the Department's 44 remaining contaminated geographic sites by 2006.**

When the Department began its clean up effort, there were 113 sites that needed remediation. Through our ongoing efforts, the Department has met its FY 2000 goal to complete remediation at 2 sites, increasing the total to 71 completed sites. We are working aggressively to complete the cleanup of 20 more sites by FY 2006.



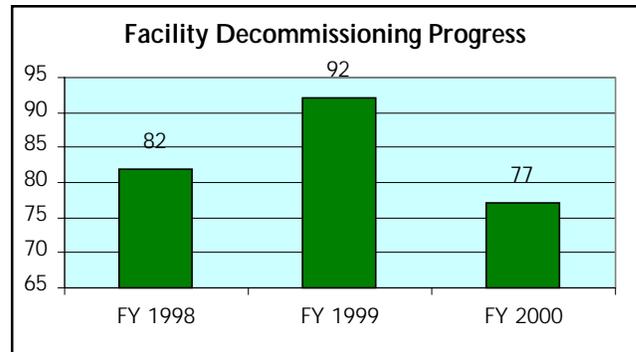


Release site cleanups represent the completion of physical cleanup activities.

Interim steps toward final cleanup of geographic sites is the cleanup of portions designated as release sites and facilities. Cleaning up these areas ultimately leads to the completion of the entire geographic site. Our goal in FY 2000 was to complete the cleanup of 252 release sites, bringing the number of completed release site cleanups to 4,730 out of a total of approximately 9,700. During FY 2000 we completed 208 release site cleanups, somewhat less than our goal. However, the shortfall was the unanticipated result of actions necessary and unknown at the time the goal was developed. The 72 release sites that were thought to be complete actually will require additional verification prior to completion. Another FY 2000 goal was to complete 82 facility decommissionings bringing the number completed to 640 out of a total of approximately 3,300 facilities. During FY 2000 we completed 77 decommissionings, nearly meeting our goal.

As part of our effort to cleanup our contaminated sites, we are working to develop and deploy innovative cleanup technologies that reduce costs, resolve currently intractable problems, and/or are more protective of workers and the environment. During FY 2000 we had goals to deploy 60 innovative technologies and make 30 alternative technology systems ready for implementation with cost and engineering performance data. We exceeded our goal through the deployment of 202 innovative technologies and met our goal with 30 full-scale demonstrations of alternative technology systems.

Our successful FY 2000 accomplishments demonstrate our commitment to cleaning up our contaminated sites.



Facilities decommissioned represent the number of completed final safe dismantling and removal of contamination and structures.

**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.**

In March 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 generated by prior nuclear weapons activities. The opening of the WIPP facility represented a significant achievement by the Department in its efforts to clean up the Nation's nuclear waste. However, the final permit for disposal of hazardous mixed transuranic waste issued by the State of New Mexico in October, 1999, placed new restrictions on the waste being shipped there. As a result, shipments to WIPP were temporarily halted in order to implement the new provisions of the permit.

As planned, the restrictions of the new permit were met and shipments of waste to WIPP resumed in



Delivery of waste to WIPP, a research and development facility for demonstrating safe nuclear waste disposal.

March 2000. Our FY 2000 goals for waste disposal were to ship three types of waste to WIPP: transuranic waste, mixed low-level waste, and low-level waste. Our specific goal for transuranic waste was to ship 1,200 cubic meters, bringing the total to 1,550 cubic meters, which is about 1 percent of the volume requiring disposal by 2034. However, the four-month halt in shipments of transuranic waste caused by the new restrictions put in place by the State of New Mexico permit, reduced the amount we were actually able to ship to WIPP to 369 cubic meters, considerably below our goal.

In the area of mixed low-level waste our specific goal was to ship 10,000 cubic meters of mixed low-level waste, bringing the total to 35,500 cubic meters, which is about 15 percent of the volume requiring disposal by FY 2070. During FY 2000 we shipped approximately 11,000 cubic meters of mixed low-level waste, exceeding our goal. We also had a goal to ship 40,000 cubic meters of low-level waste, bringing the total to 116,000 cubic meters, which is about 7 percent of the total volume requiring disposal by FY 2070. During FY 2000 we shipped over 66,400 cubic meters of low-level waste, exceeding our goal by two-thirds.

Our success in operating WIPP is a very significant accomplishment towards our long-term goal for waste disposal. Although the four-month halt in shipments put us behind in the disposal of transuranic waste, we have exceeded our goals for disposal of other types of waste.

### **Prevent future pollution.**

We are committed to ensuring that we do not compound our future cleanup work by creating pollution from our ongoing activities. To this end, we are incorporating pollution prevention, including waste minimization, recycling, and reuse of materials, into all the Department's activities. One of our FY 2000 goals was to reduce the Department's annual routine waste generated by 50 percent based on 1993 generation rates by December 1999. In FY 2000, we exceeded that goal and reduced the generation of radioactive and hazardous wastes from our routine operations by more than 60 percent relative to 1993 levels. Another goal was to conduct practices to reduce waste from our site cleanup and stabilization activities by 10 percent through December 1999. In FY 2000, we also exceeded that goal by reducing that waste by 17 percent. Lastly, we had a FY 2000 goal to prepare plans outlining specific strategies for meeting our pollution preven-

tion objectives at 30 DOE sites. This goal was not met due to delays in developing the approach to be utilized. This aggressive target for site plans was not met due to unexpected difficulties in integrating pollution prevention and energy efficiency plans at the site level.

We place great importance on pollution prevention, recycling, and waste minimization as they are key to meeting our future national objectives while preserving our natural resources. Overall we believe our FY 2000 actions are on track to meeting this objective.

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

In accordance with the Nuclear Waste Policy Act, 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. Meeting our goal for FY 2000, we completed the public hearing process on the Draft Environmental Impact Statement issued in FY 1999. Our next step is to finalize the Environmental Impact Statement, and, if the site is determined to be suitable, recommend the site to the President. If the Yucca Mountain site is approved by the President and Congress, an application for a license will be submitted to the Nuclear Regulatory Commission in FY 2003. Disposal operations are anticipated to begin in FY 2010.



*The Department is conducting studies at Yucca Mountain to determine its suitability as a geologic repository for the nation's commercial and defense spent nuclear fuel and high-level radioactive waste.*

### ***Departmental Challenge: Nuclear Waste Disposal***

Litigation, funding shortfalls, and the need for scientific studies well beyond the levels envisioned when the Nuclear Waste Policy Act was initially passed in 1982, have necessitated several schedule changes, including the delay in the commencement of repository operations until

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 uncondi-

tional obligation to initiate waste acceptance by January, 1998. However, lacking a repository or storage facility constructed under the Nuclear Waste Policy Act, the Department is unable to comply with the Court's direction. As a result, several utilities and State regulatory agencies have brought suit against the Department. At

the end of FY 2000, 14 utilities had filed lawsuits, alleging damages totaling \$5.82 billion. The Department is working to negotiate a settlement with a number of the utilities involved in these legal proceedings.

Although we continue to encounter legal difficulties concurrent with our effort to characterize the suitability of Yucca Mountain as a permanent repository, our FY 2000 activities have been successful and, given adequate funding, we believe we are on target to accomplishing our long-term objective.

#### ***Maximize the beneficial reuse of land and effectively control risks from residual contamination.***

The Department is working very closely with stakeholders to develop comprehensive land use plans for

many sites following their cleanup. These land use plans address future alternative uses, environmental requirements, and implementation schedules for land use. As part of this effort, the Department met its FY 2000 goals to produce a draft study on long-term stewardship issues and to coordinate with the National Academy of Sciences and National Research Council on the release of their public report on long-term institutional management of the Department's waste sites.

The FY 2000 goals for this objective were met.

# Science

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

Over the last half-century, our Nation's economic prosperity, quality of life, and security stemmed from strong public commitments to scientific research. Most experts agree that publicly-funded science is expected to take on even greater importance in the new century. Public investments fill important gaps in scientific knowledge that are outside marketplace forces, and they build the scientific foundations for the technology breakthroughs of the future.

As the third largest government sponsor of basic research, the Department pushes the envelope of fundamental knowledge, attempting to unravel some of nature's most complex and stubborn scientific mysteries. The 20<sup>th</sup> century brought many scientific advancements that 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.

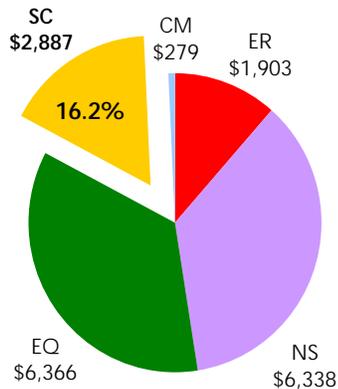
In our Science business line, we are working to accomplish several objectives discussed below.

### *Develop the Science that Underlies the Department's Long-Term Mission.*

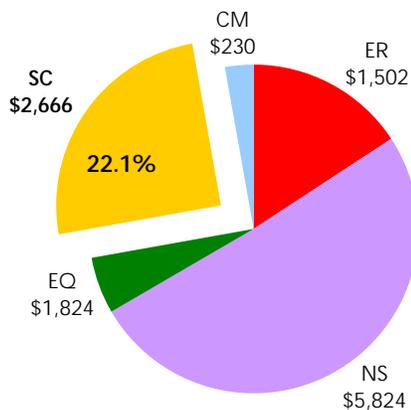
Conducting relevant, high quality research is critical to developing the science that responds to the Department's mission. Performance targets for FY 2000 included completing the sequencing of 50 million subunits of human DNA and providing the information to publicly accessible databases. The Department's human genome program is part of a coordinated international effort to complete a high

## BUSINESS LINE RESOURCES AND COSTS

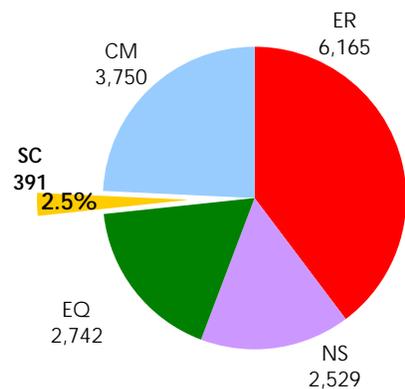
Net Budget Authority  
(Dollars in Millions)  
Total \$17,773



Operational Net Costs  
(Dollars in Millions)  
Total Business Line Net Costs \$12,046



Number of Federal Employees  
(Full-time equivalents-FTEs)  
Total Federal Employees 15,577

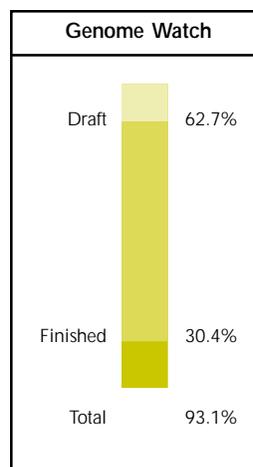


- ER = Energy Resources
- EQ = Environmental Quality
- NS = National Nuclear Security
- SC = Science
- CM = Corporate Management

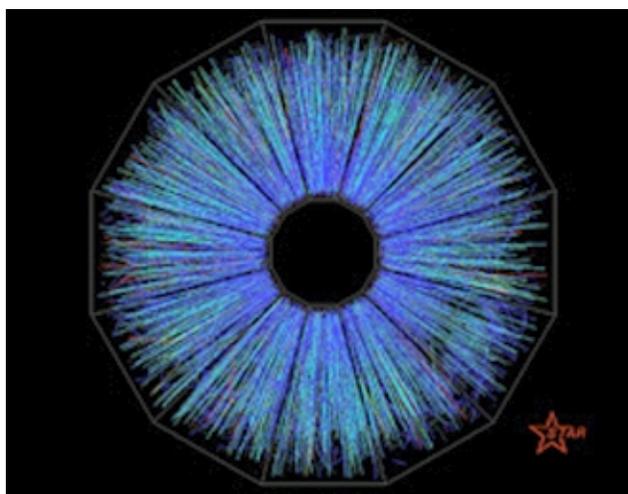
quality draft and final sequence of the human genome. The draft will provide scientists and medical researchers information to begin unraveling the mysteries of life and developing new drugs and medical treatments several years before the final sequence is available. The Department has exceeded its FY 2000 targets; 243 million subunits of “high quality draft” were produced at the Department’s Joint Genome Institute and 24 million subunits were sequenced to “Bermuda Standards”, the accepted international high quality standard. In all, 93.1 percent of the human genome has been sequenced. Of that 93.1 percent, 62.7 percent is in draft and the remaining 30.4 percent is complete. It is the Department’s goal to complete the sequencing of its share of the human genome chromosomes 5, 16 and 19 by the end of FY 2003.

The Department continues to provide international science leadership with respect to the physical sciences as well as the stewardship of the human and physical infrastructure that enables world-class science through its widely recognized state-of-the-art research and development facilities. It is also internationally competitive in the areas of the earth and environmental sciences, mathematics and computing, engineering and in the life sciences. Because of this, the United States is the world leader in many fields as well as their corresponding sub-fields. In addition, the Department maintains and operates scientific user facilities to serve thousands of researchers from universities, national laboratories, and industry. It is the Department’s goal to operate these facilities such that unscheduled downtime is less than 10 percent of the total scheduled possible operating time on average. These major scientific facilities enable the acquisition of new knowledge that often cannot be obtained by any other means. During FY 2000, many thousands of scientists conducted experiments at user facilities, and thousands of other researchers collaborated with these users to analyze the data from the experiments and publish the new scientific findings in peer-reviewed journals. The Department operated its facilities within the goal of 10 percent during FY 2000.

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. One such example is the Relativistic Heavy Ion Collider. The Relativistic Heavy Ion Collider will let scientists explore some of the universe’s most basic ingredients. Scientists will explore how nature’s smallest particles act, interact, appear and disappear.



The main physics mission of the Relativistic Heavy Ion Collider is to collide heavy ions at high speeds, creating the conditions similar to the beginning of the universe. Physicists from around the world are interested in the collisions, as information can be applied in nuclear physics, particle physics, astrophysics, condensed matter physics, and cosmology. Our goal was to see “Big Bang” evidence in FY 2000. The construction of the Relativistic Heavy Ion Collider was completed on schedule in FY 1999 and commissioning of the superconducting collider proceeded during the summer. During the first quarter of FY 2000 the Collider was shut down to implement some repairs and improvements. Commissioning resumed in February 2000 and on June 12, 2000, the first collisions were observed by accelerating gold beams. The planned goal of reaching 10 percent of the design collision rate was achieved in September 2000. Two papers have been



*A collision image produced by the STAR detector at the Relativistic Heavy Ion Collider in June 2000.*

submitted for publication on data collected during the experiments and one has been published. The full physics capability for the experimental program should be available by the FY 2001 running period.

*Plasma physicists are working to recreate the conditions of the sun and stars for the production of fusion energy on earth. As a potential source of energy, fusion has many advantages including an abundant fuel supply, no risk of nuclear accident, no air pollution, no high-level nuclear waste, and no generation of weapons materials.*

The Department is constantly searching for and using the best scientific talent from all sources to perform its research. In FY 2000 the Department committed to continue funding opportunities in general plasma science. During FY 2000, we awarded \$4 million to more than 30 scientists in basic and applied plasma physics efforts. In addition, three new Junior Faculty in Plasma Physics Development awards were made based on proposals submitted in response to our announcement of opportunity.

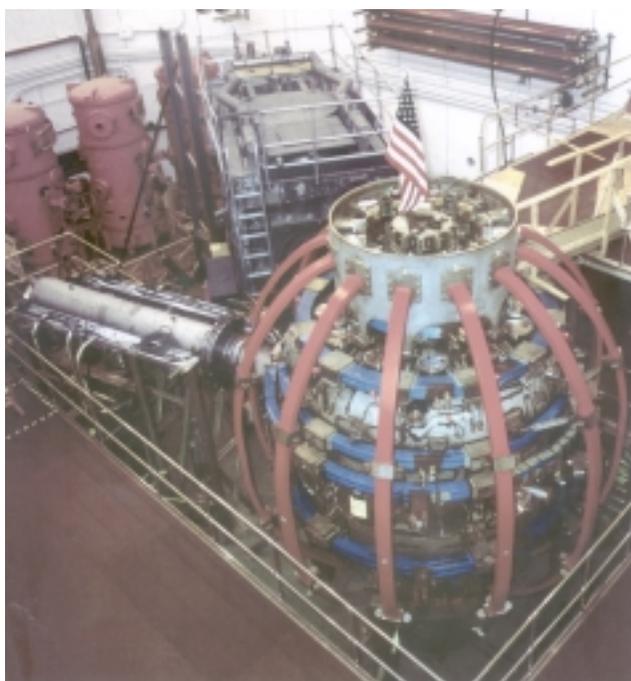
We are also working to develop the science that supports the Department's participation in energy and other National policy debates. The Department is committed to the development of better information for assessing regional climate change. Our FY 2000 goal was to continue the development of a next-generation climate model that will reduce the grid size from 300-500 kilometers to less than 200 kilometers. The Department met this goal by testing and employing Version 1 of the Parallel Climate Model. This is a state of the art model developed specifically for climate variability and climate change studies on multi-decade to multi-century timescales, including the study of climate changes that may result from increasing concentrations of greenhouse gases. Simulations from the model were a primary source of projections for the recently completed draft Intergovernmental Panel on Climate Change Third Scientific Assessment.

In addition, during FY 2000 the Department met its goal and completed the genetic sequencing of 10 microbes with significant potential for waste cleanup and energy production. During October 2000, the Department determined the DNA sequence of an additional 15 microbes. The possible uses of this information are staggering. Microbes, incredibly, make

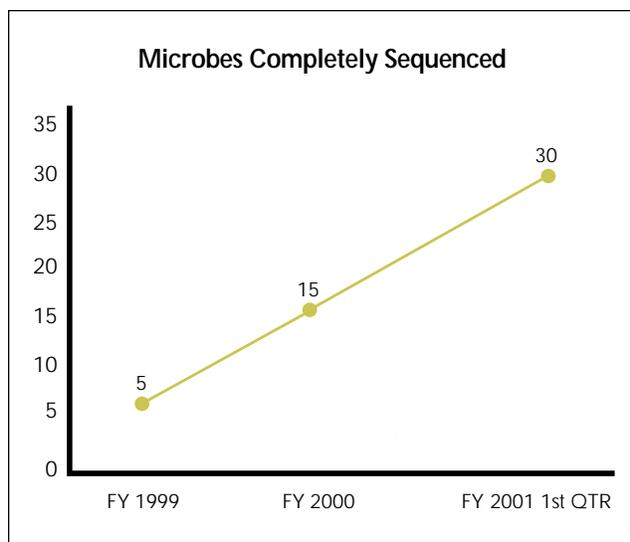
up around 60 percent of the earth's biomass. They have survived on the planet for over 3.7 billion years and have been found in every conceivable environment. This means that microbes long ago "solved" many problems for which scientists have been actively seeking answers. Through the study of a diverse group of microbes, solutions are nearer for challenges in environmental cleanup, medicine, agriculture, industrial processes, energy production and use, and nonproliferation of biological weapons.

Microbes offer great promise as "natural" tools to help cleanup environmental contamination. The Department has determined the complete DNA sequence of the microbe *Deinococcus radiodurans*, the most radiation-resistant organism known. This organism, dubbed Conan the Bacterium in the popular press, is being reengineered so that it can degrade toluene, a common pollutant at the Department's waste sites.

In support of new emerging sciences that are important to the future of the Department and the Nation, we are operating a novel magnetic fusion confinement device, the National Spherical Torus Experiment. This experiment will be used to study innovative plasma configurations that may have the advantage of a significant reduction in the power requirements to heat and confine the plasma. For FY



*The National Spherical Torus Experiment located at Princeton Plasma Physics Laboratory, Princeton NJ.*



2000 the Department committed to operate the device with .5 mega-ampere plasma currents approaching .5 second pulse lengths and 1 mega-ampere currents for shorter pulses and met the goal ahead of schedule. Scientists hope that the new technology made possible by the National Spherical Torus Experiment will significantly increase our understanding of the behavior of plasmas in magnetic fields.

Our successes in FY 2000 demonstrate our long-term commitment to the development of science that contributes to the Department's mission.

### **Deliver Leading-Edge Technologies that Are Critical to the Department's Mission and the Nation.**

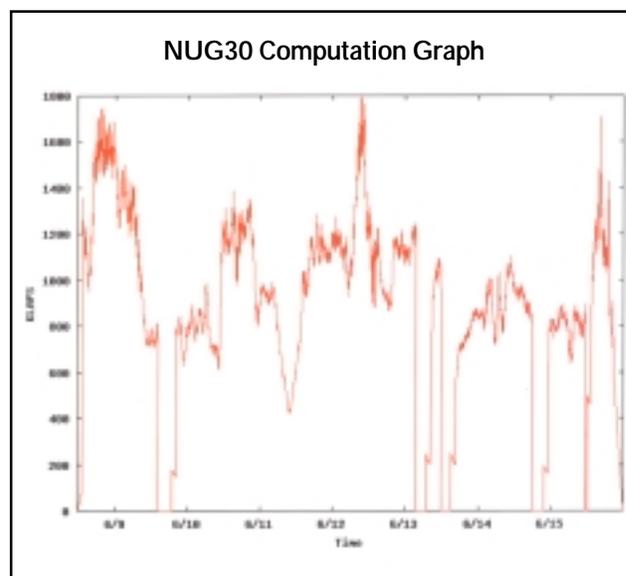
By developing technologies, the Department is striving to provide leadership and the means to promote achievement in the areas of national nuclear security, environment and energy.

The Department supplies quality stable and radioactive isotopes for industrial, research and medical applications. The Department's Isotope Production and Distribution Program is the nation's primary provider of a diverse range of short-lived radioisotopes needed for medical applications and important research. These isotopes, which are used almost exclusively by researchers at universities and hospitals, are not purchased in the quantities that would permit private industry to take over production. During FY 2000, our isotope programs supplied over 600 shipments to domestic and overseas customers. The goal of a 95 percent on-time delivery record was met. In addition, we have exceeded our goal of implementing the Advanced Nuclear Medicine Initiative by providing 9 awards to organizations

with projects showing strong potential for breakthroughs using nuclear medicine.

The Department is constantly developing advanced computing capabilities, computational algorithms, models, methods, and libraries, and advanced visualization and data management systems to enable new computing applications to science. During FY 2000 the Department made a number of important calculations on a number of significant problems. For example, researchers from the Department developed an algorithm that allowed 1,000 computers in 13 locations to compute for one week to solve a 32 year old mathematics problem. Almost 1 million linear assignment problems were solved each second during the run. The method used to crack this problem holds promise in such real world applications as the layout of departments in hospitals or manufacturing facilities and the design of aircraft cockpit panels and computer chips.

We are also pursuing technology research partnerships with industry, academia and other governmental agencies. In support of this, during FY 2000 we exceeded our goal of providing funding to 80 Small Business Innovation Research proposals under Phase II. These proposals have satisfied proof of concept under Phase I. In addition, we met our goal for selecting 200 Small Business Innovation Research proposals for Phase I funding. These businesses will receive grants up to \$100,000 each for research. The



*This graph shows the number, in thousands, of linear assignment problems solved per second during the NUG30 computation. Almost one million linear assignment problems were solved each second during the week-long run.*

projects selected cover a broad spectrum of energy-related research and development in the areas of fossil, nuclear, and renewable energy; energy efficiency; basic energy sciences including materials and chemical sciences; scientific computing; biological and environmental research; high energy and nuclear physics; fusion; environmental management; and nonproliferation and national security.

Overall, we believe our FY 2000 accomplishments have successfully achieved the intended results.

***Improve the Management of the Department'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. For FY 2000, the Department committed to continue on course for construction of the Spallation Neutron Source, meeting agreed upon cost and timetables. Cost and schedule baselines have been established and successfully reviewed by an external independent assessment team. A groundbreaking ceremony was held in December of 1999 and construction work is continuing. The project should be completed by mid-2006. When completed, the Spallation Neutron Source will be an accelerator-based neutron source designed to meet the needs within both the scientific and industrial communities. Earlier neutron sources demonstrated the utility of neutrons for research and understanding as well as developing new materials. The Spallation Neutron Source will provide next generation capabilities in these areas.

In addition, in support of research related to climate change the Department committed to continue conducting atmospheric radiation measurement at its Southern Great Plains site under the atmospheric radiation measurement program. We also planned to obtain data from the North Slope of the Alaska station and make operational a station in the Tropical Western Pacific on Christmas Island. The Department completed all the operations planned for FY 2000 at the Southern Great Plains site. By conducting five intensive operations periods we were able to collect critical data to support the atmospheric radiation measurement program. Scientists in this program focus on obtaining field measurements and developing models to help resolve the uncertainties about global climate change. Specifically, scientists collect and analyze data obtained over extended periods of time from large arrays of



*A Balloon-Borne Sounding System, an instrument used to provide measurements under the atmospheric radiation program.*

instruments to study the effects and interactions of sunlight, radiant energy, and clouds on temperatures, weather, and climate. The Department is also obtaining data from the North Alaska site, and two of the three facilities at the Tropical Pacific site are operational.

The Department has also been devising new ways to use, disseminate, and share scientific and technical information across the Department. For FY 2000, the Department committed to increase the viability and use of energy-related scientific and technical information through electronic Web-based products resulting in 15 percent more customer usage compared to FY 1999. During FY 2000, access to scientific and technical information increased by 113 percent. This increase was due to the introduction of two Web based information products, PubSCIENCE and The PrePRINT Network. We also noted increased usage to existing products. Increased usage of the Department's information products is an excellent indicator that viability is being significantly enhanced through development of broad based systems that make information available to a wide variety of segments.

Our FY 2000 efforts to improve management of our research enterprise have been successful.

# Corporate Management

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, 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 functions, we are working to accomplish several objectives discussed below.

*Ensure the safety and health of the Department's workforce and members of the public, and the protection of the environment in all Departmental activities.*

One of the Department's most important priorities in maintaining a safe and healthy environment is to

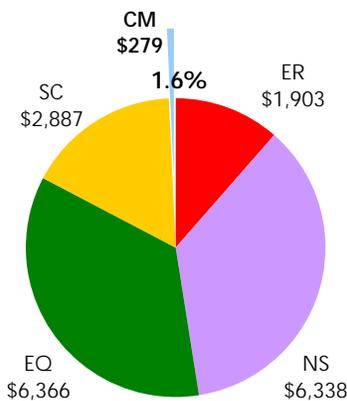
prevent fatalities, minimize serious accidents, and minimize environmental releases at all of its sites. Worker safety and health continued to improve during FY 2000 as the Department met its goal by having no work-related fatalities and continued to reduce the number of serious accidents and environmental releases over the past four years.

Maintaining adequate worker and public protection in an environment of aging facilities, resource constraints, and uncertain future requirements continues to be challenging for the Department. As a result we are committed to address the following Departmental Challenge and to protect 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 which arise.

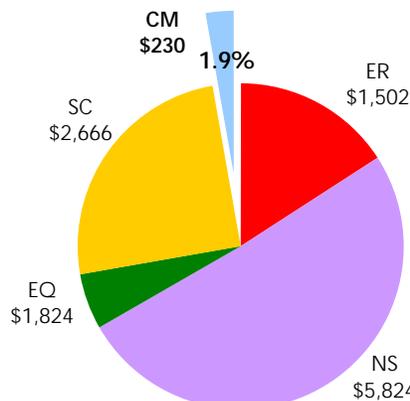
Management considers that the Department has achieved our specific FY 2000 goals designed to address past problems and progressed in completing significant milestones towards our long-term objective.

## CORPORATE MANAGEMENT RESOURCES AND COSTS

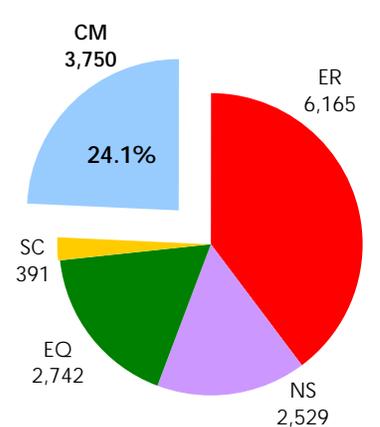
Net Budget Authority  
(Dollars in Millions)  
Total \$17,773



Operational Net Costs  
(Dollars in Millions)  
Total Business Line Net Costs \$12,046



Number of Federal Employees  
(Full-time equivalents-FTEs)  
Total Federal Employees 15,577



ER = Energy Resources  
NS = National Nuclear Security

EQ = Environmental Quality  
SC = Science

CM = Corporate Management

### 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 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 by implementing a variety of initiatives, including implementation of Integrated Safety Management (ISM). The Department nearly met its goal to implement ISM at all sites, as two remaining sites have plans to fully implement ISM by April 2001. The Department has demonstrated its commitment to the principles of ISM by establishing safety and health programs that aim to 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. Past safety issues related to the implementation of safety and health policies and training at sites such as the Paducah Gaseous Diffusion Plant and the Y-12 Plant highlight the continued importance of implementing a comprehensive safety and health strategy across the complex.

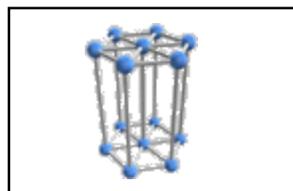
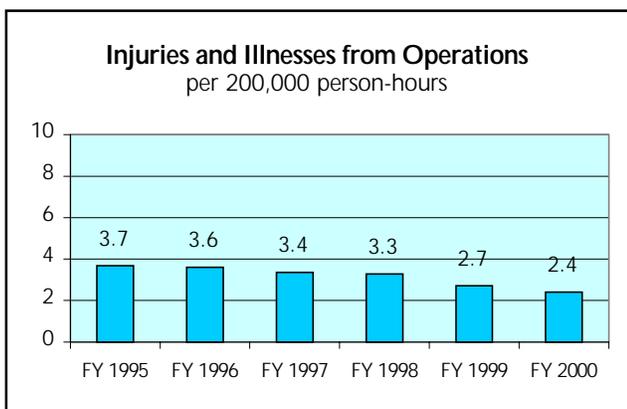
Through FY 2000, the Department has completed several actions which are key in executing our long-term safety and health strategy. To date, we have completed the Nuclear Safety Standards Upgrade Project; implemented ISM at nearly all the Department's sites; and, continued positive trends in ensuring worker safety and health and limiting environmental releases. Additionally, we completed 11 safety management evaluations in

FY 2000 which support the Department's ability to monitor the implementation of current safety standards. Further, through FY 2000, 80 of the 106 vulnerabilities identified with our storage of spent nuclear fuel have been corrected.

The Department's plan to correct these deficiencies includes fully implementing ISM at all sites; addressing all issues raised by the Spent Fuel Working Group; inserting a clause into contracts that puts a contractor's entire performance-based fee at risk for unacceptable safety performance; and, completing actions to resolve any site specific issues which may arise.

In keeping with its goal, the Department has also worked to provide medical screening to all Departmental workers formerly exposed to beryllium during their employment at the Department's facilities. In April 2000, the Department announced an expanded Administration proposal to compensate more than 3,000 current and former workers with a broad range of work-related illnesses throughout the Department's nuclear weapons complex.

In October 2000, the President signed the compensation program into law, providing lump sum financial benefits to current and former workers with illnesses caused from breathing particles of beryllium, workers with cancers caused by workplace radiation exposure, and specific groups of workers at the Department's Paducah, Kentucky, Portsmouth, Ohio, and Oak Ridge, Tennessee sites. The enactment of this program into law also establishes a workers' advocacy office within the Department to help workers with illnesses not specifically addressed in the legislation with obtaining state worker compensation benefits. The FY 2000 goal was to provide medical screening examinations to all Departmental workers formerly exposed to beryllium. During FY 2000, the Department met its goal by providing 4,500 medical screening examinations. The completion of these medical screenings has reached over 17,000 workers since the inception of the program.



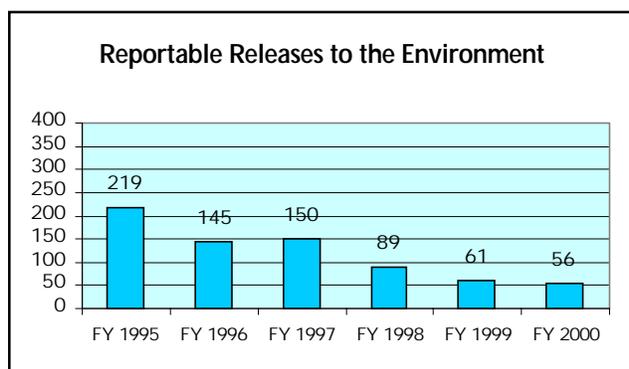
Atomic structure of beryllium. Beryllium is a silver-gray metallic element that occurs naturally in about 30 minerals.

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

The end of the Cold War transformed the Department from a secretive, weapons-producing agency into a cutting edge, results-driven leader in science, technology, and environmental management. This dramatic change has focused the Department's efforts towards fostering strong partnerships with neighboring communities, regulators, and other stakeholders to determine priorities and develop solutions. During FY 2000, the Department continued to meet its goals to increase public involvement in crosscutting environmental quality issues by conducting monthly stakeholder meetings, totaling approximately 115 meetings, with representatives from state and local governments, Native American Tribes, and individuals having an interest in environmental activities at particular sites.

The Department is also striving to increase openness by releasing to the public information not warranting protection, while continuing to protect sensitive nuclear security information in the interest of national security. In FY 2000, the Department's goal was to implement all declassification actions that were recommended by a classification policy review and other internal reviews. During FY 2000 the Department met its goal by implementing all 21 changes to classification guides as recommended by these reviews. Changes to the classification guides are the main mechanism to keep the Department and nuclear community up to date with current policy for making classification decisions.

Management believes the actions it has taken have been successful in meeting the FY 2000 goals to be a good neighbor and public partner.



*Cover sheet utilized with the handling of classified information.*

*Use efficient and effective corporate management systems and approaches to guide decision making, streamline and improve operations, align resources and reduce costs.*

The Department has embarked on a major initiative to develop a new Business Management System, with special emphasis on financial management. Implementation of a new business management system is a dynamic process. In September 2000, the Department signed a contract with IBM Global Services for integration, implementation, and operational services of the new system. This newly signed contract required our FY 2000 actions to deviate from our original planned performance target for a pilot implementation, but will not impact major milestones for the project. During FY 2000 the Department completed the identification of functional and technical system requirements for the financial management component of the system, proposed a new business structure and initiated the purchase and installation of the software and hardware.

Another focus of our efforts is improving our human resource utilization across the various disciplines

within the Department. The Department continued to work during FY 2000 to align our resources to achieve our missions in the most effective and efficient manner.

We believe the Department is making strides toward operating efficient and effective corporate management systems that maximize Departmental resources and results.

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

The Department's goal of converting to a new performance-based contracting approach is becoming common practice as evidenced by our FY 2000 goals and actions. The Department's goal for FY 2000 was to convert all management and operating contracts awarded during the year to performance-based contracts. All management and operating contracts awarded during the year were performance based, as planned. This converts all 32 of our management and operating contracts to performance-based management contracts. The Department's FY 2000 goal for converting support services contracts was to convert one contract at each major site using the government-wide standards. Contracting efforts have met our goal by awarding performance-based support service contracts at each of the 17 major sites.

There is increasing emphasis on government's accountability to the American people for program results and financial management. Reflecting that emphasis, the Department successfully prepared an Accountability Report that integrates information on program performance, management controls, and financial results for fiscal year 1999. The report was submitted to OMB prior to the March 1, 2000, statutory due date.

We believe we have continued to make progress in our contract reform activities, and will continue to work towards successfully achieving our goals related to our business management practices.

*Implement information systems so employees can perform their jobs efficiently and effectively.*

The Department is striving to ensure its information systems are based on cost effective technology by utilizing an integrated framework for planning, budgeting, evaluating, and implementing information management requirements to reduce costs and

**Departmental Challenge:  
Contract Management**

The Department's programs are largely accomplished through contractors which, under the Department's oversight, manage and operate its scientific, production, and other facilities. These contracts represent the largest share of the Department's annual budget. Over the last 6 years the Department has made steady progress in addressing a variety of issues relating to the management of these contracts. Additionally, the Department has also been in the forefront of government-wide efforts to re-engineer purchasing practices. Notwithstanding this progress, the significance of contract management to the overall accomplishment of the Department's missions requires a sustained focus on continuous

improvement, particularly in the application of performance-based management concepts. Most, if not all, of the procurement challenges related to contract management, as previously defined by the Department's Contract Reform effort have been accomplished. The major remaining challenges relate to implementation issues and improved contract administration. To address these challenges the Department plans to forge a closer link between program management and the process of developing and administering contract performance objectives, as well as, create an organizational unit devoted to contract administration matters.



The Department's Fiscal Year 1999 Accountability Report.

### ***Departmental Challenge: Human Capital Management***

The Department of Energy is highly dependent on its Federal workforce for its mission accomplishment. Since 1995, the Department has experienced a 26 percent downsizing of this workforce. Combined with other factors such as lengthy moratoria on hiring, the relative age of the workforce and a variety of incentives to leave Federal service, the decline in staffing has left the Department with a significant challenge: reinvesting in its human capital to ensure that there are enough of the right-skilled people necessary to successfully meet its missions.

In FY 1999 the Department reported a Departmental Challenge of Mission Critical Staffing that was primarily a funding issue for several program offices with many having to absorb staffing cuts in the field. There were also secondary issues related to skill-mix, workforce alignment, and personnel action processing. FY 2000 brought with it the realization that up to 30 percent of the Department's current critical workforce will be eligible for retirement within the next five years. This situation has caused a focus on Headquarters recruiting and hiring practices and processes. FY 2000 also brought with it the challenge to implement the National Nuclear Security

Implementation Plan and need for another look at the alignment, missions, and critical skills needs of the Department. The Department's workforce challenges over the past years have been met with focused initiatives, some of the largest include the Strategic Alignment Initiative and the Workforce for the 21st Century Initiative. However, the current situation will worsen over the next five years absent a coordinated effort to revitalize the workforce. The magnitude of these issues has caused us to broaden our characterization of this Departmental Challenge to the larger arena of human capital management. The major facet of this

Departmental challenge and most significant action for FY 2001 will be to utilize the best of the efforts to respond to program specific workforce issues over the past years, and develop a comprehensive and integrated human capital investment strategy for the Department. This strategy will encompass processes for identifying forecasted skill needs; succession planning; complex-wide recruitment and hiring; and career development and compensation plans targeted to attract and retain employees with critical skills that the Department needs.

### ***Departmental Challenge: Information Technology Management***

The Department has experienced problems in fully implementing the Clinger-Cohen Act of 1996 and in meeting the requirements of Office Management and Budget Circular A-130. In summary, these requirements establish Federal Agency Chief Information Officers (CIO's) with a broad set of responsibilities for maximizing mission accomplishment through improved and more cost-effective use of information technology. A significant barrier to implementing these responsibilities results from the limited control and influence by the Department's CIO in the program budgeting process. Specific problems

resulting from lack of full implementation of these statutory and regulatory requirements have been identified in a number of recent Inspector General and General Accounting Office reviews and reports.

The Department is aggressively working to correct the specific problems identified and has developed a strategy for coming into full compliance with the mandates and positioning the Department to achieve maximum efficiency in its use of information technology resources. A key component of the strategy includes developing a management structure and assignment of responsibilities to assure that management attention is given to informa-

tion technology activities at both the corporate level and within the individually funded program offices and field structure. Chief Information Officers in the program offices have been designated and have been given the responsibility to work collaboratively with each other and with the Department's CIO on all activities related to information technology improvements. Major activities underway include the development of a comprehensive information technology investment portfolio and a capital planning process that supports program, corporate and OMB management processes. In addition, the Departmental CIO will assume a stronger lead in the

Department's budget formulation and approval process for information systems, as well as establishing a stronger partnership with the Chief Financial Officer, the Procurement Executive, and the Office of Management and Budget. These actions, coupled with specific policy and project improvements already initiated, will position the Department to assure that the significant information technology resources entrusted to the Department fully support mission responsibilities while achieving maximum efficiency.

### ***Departmental Challenge: Managing Physical Assets***

Aging and deterioration of the Department's facilities have resulted in a complex that averages almost 50 years of age, well beyond its expected useful life. The condition of the Department's facilities is impacting the production mission, the performance of world class science, and the achievement of weapons complex clean-up commitments. In addition, poor infrastructure conditions are resulting in increased safety and health risks. Without replacement and enhanced maintenance, the Department's ability to perform certain critical functions is jeopardized.

During FY 2000, in recognition of this situation, the Department's Lead Program Secretarial

Officers have undertaken efforts to evaluate the condition of the infrastructure at their sites, define needs to meet mission requirements, and develop comprehensive plans for each of their facilities. Specifically, an Infrastructure Modernization Initiative for the laboratory complex, of which only 50 percent of its facilities are considered to be in "adequate" condition, has been initiated and Stewardship Committees have been established at each multi-program laboratory. The Department has also undertaken an intensive, phased assessment of its Defense facilities. Phase I has been completed and findings reveal that conditions are deteriorating faster than had been originally anticipated. Over the past five years, a majority of the Department's Defense facilities have deteriorated

from an "excellent or good" category to "adequate or fail." A majority of these facilities are still occupied and are critical for the Stockpile Stewardship program. The next phase of the Defense facilities assessment is now underway. This step will establish a facilities management process to ensure that the facilities of the complex are recapitalized and then adequately maintained to support the Stockpile Stewardship Program. In addition, initial plans for an infrastructure restoration initiative have been completed that focus on sites with long-term multi-program missions and also require environmental cleanup.

An additional finding of the assessment is that the Department's maintenance

budgets and required reinvestments have been significantly underfunded for years which has directly resulted in the observed deterioration. Funding levels for facilities must be raised several hundred million dollars annually to adequately maintain the complex. As a result of this assessment, the Department has developed a prioritized list of facilities needing immediate attention. This prioritized list establishes the initial basis for budget requests in FY 2002 and beyond.

### ***Departmental Challenge: Project Management***

The use of business-like practices extends to the management of the Department'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. The National Ignition Facility project has encountered major cost overruns and schedule delays due to oversight failures, the in-tank precipitation process project was suspended due to its inability to work safely and efficiently as designed, and the Office of River Protection project was terminated due to concerns about the contractor's performance and rapidly escalating cost estimates. Issues such as these have led to Congressional concerns about the Department's construction project management structure and practices.

To identify the root causes of project management deficiencies, Department wide policies and procedures have been assessed by an expert panel formed under the National Research Council (NRC) of the National Academy of Sciences. The NRC concluded that the Department's prior efforts to address project management issues were not successful and that further improvements are needed. The Department has taken actions to address these problems and is working to implement the NRC's recommendations, as well as corrective actions identified by other internal and external reviews. A recent January 2001 progress report issued by the NRC, commended the Department for taking positive steps towards improving project management and recognized that more time will be needed to achieve intended goals. The Office of the Chief Financial Officer is spearheading this effort through the newly formed Office of Engineering and Construction Management which has been

given the responsibility for driving change in the Department's project management systems and for providing corporate oversight and support for managers.

The Department has acted aggressively to implement project management reforms including: developing a new tracking and control system; establishing a "watch list" which subjects specific projects to specific corporate reporting requirements, corrective action plans and periodic reviews by the Deputy Secretary, issuing Departmental policies on program and project management; and developing a strategy for establishing a project managers career development program. Also in response to the NRC's findings, the NNSA Deputy Administrator for Defense Programs has established a new project management organization and launched a three-year defense project management improvement campaign designed to address the deficiencies identified.

Additionally, the former Secretary of Energy issued a "Six-Point Plan" to resolve issues surrounding design delays impacting schedules and project baselines at the National Ignition Facility.

The Department's plan to resolve outstanding project management issues is expected to continue through FY 2002 and includes: addressing all recommendations of the NRC; strengthening line management accountability for project management; and completing the campaign to reform Defense Programs' project management activities. Concurrent with these activities will be additional project reviews and benchmarking efforts to further identify needed improvements to our project management practices.

improve operations. Our goals in FY 2000 were to continue our ongoing efforts addressing the Department's need for business management information systems for financial, human resources and procurement; architecture planning; and infrastructure and telecommunications improvements. During FY 2000 the Department nearly met its goal to complete all FY 2000 milestones in the Corporate Management Information Program plan. The program is comprised of 9 projects to support the reform of common and cross-cutting business processes and the modernization of their associated support systems.

Although we are making progress in our efforts to maintain cost effective information technologies, we must take additional steps to ensure our ultimate objective is met.

*Improve performance through evaluations, reviews, audits, and inspections.*

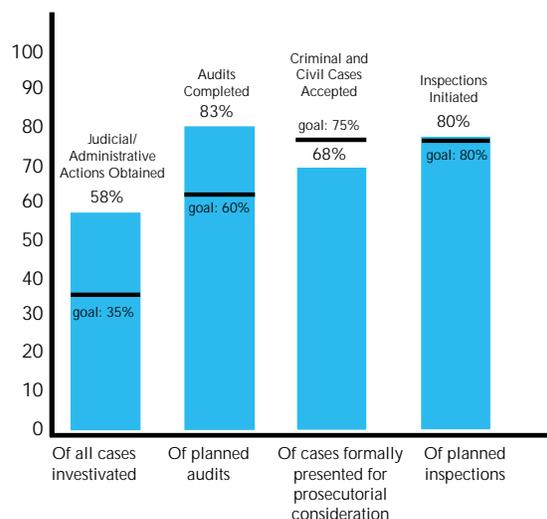
The Department's Office of the Inspector General plays an important part in the Department by promoting effective, efficient and economical operations through audits, investigations, inspections and other reviews. During FY 2000, the Office of the Inspector General met its goal to complete the audit of the Department's consolidated financial statements and render an opinion by the designated due dates established in the law. This audit enables the Department, Congress, and other customers to use and assess the fairness of the Department's financial statements in a timely manner. While the Office of the Inspector General met or exceeded most of its performance goals for FY 2000, actual performance did fall below expectation for obtaining at least 75 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration. To improve performance, the Office of the Inspector General will continue to expand liaison and cooperative work with the Department of Justice and focus investigative resources on cases with the greatest potential for positive impact on the Department.

**Departmental Challenge:  
Inadequate Audit Coverage**

The Department obligates approximately \$12 billion of its almost \$18 billion annual budget to its major contractors. Various organizations have audit responsibilities for these contractors including the Defense Contract Audit Agency (DCAA), the Office of Inspector General, and the contractors' own internal auditors. Limitations in each of these audit organizations, including decreased staffing levels and increased mandatory audit requirements, have reduced the number of audits performed, and as a result, have lessened the assurance that the Department's contractors are being reimbursed only for costs which are reasonable and allowable.

During FY 2001, the Office of the Inspector General plans to conduct a review, working in cooperation with the Department's Office of Procurement and Assistance Management, to determine if all outside resources, particularly the DCAA, are being used to the maximum extent; perform a consolidated analysis of contractor internal audit staffing levels and needs; and reevaluate its own staffing needs to consider all requirements for financial statements, information security reviews, and other mandated audits. Once these reviews are completed, the Office of the Inspector General will determine the steps necessary to increase audit coverage of the Department's major management contractors.

**FY 2000 Inspector General Performance**



# 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 developed and implemented. This audit resolution and follow-up process is an integral part of the Department's efforts to deliver its priorities more effectively and at the least cost. Actions taken by management 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 that information for the entire fiscal year in this section.

During FY 2000, the Department took final action on 40 IG reports with agreed upon corrective actions that were open after one year and had taken final action on an additional 10 IG operational, financial, and preaward audit reports. At the end of the period, 100 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 following table 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.

Also during this period, the Department made decisions on three IG contract audit reports, disallowing \$219,238 in questioned costs. Final action

Audit Reports	Number of Reports	Agreed-Upon Funds Put to Better Use
Pending final action at the beginning of the period	95	\$122,394,811
With actions agreed upon during the period	55	\$134,247,035
<b>Total pending final action</b>	<b>150</b>	<b>\$256,641,846</b>
Achieving final action during the period	50	\$80,988,000
Requiring final action at the end of the period	100	\$175,653,846

was taken on three reports, netting \$119,341 in recoveries. At the end of the fiscal year, there were four 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 2000, the Department received 39 audit start notifications and were issued 40 draft and 32 final GAO audit reports. Of the 32 final reports, 8 required tracking of corrective actions and 24 did not because the reports did not include actions to be taken by the Department. In addition, we completed agreed upon corrective actions on 12 audit reports. At the end of FY 2000, there were six GAO reports with agreed upon corrective actions open after one year.

# Inspector General's Report on Management Challenges

In response to an October 2000 request from the Chairmen of several committees of the U.S. Congress, the Office of Inspector General (IG) identified ten issue areas that, in its judgment, represent the most significant challenges facing the Department. The IG's analysis (*Management Challenges at the Department of Energy*, DOE/IG-0491, November 2000) focused on those challenges that warrant increased emphasis or appear to have reached a heightened level of urgency. The discussion gives particular emphasis to issues of concern relative to the newly formed NNSA. In addition to concerns related to NNSA's creation, the IG believes the most serious challenges facing the Department today can be categorized as follows:

- Contract Administration;
- Energy Technology;
- Environmental Remediation (including radioactive waste storage);
- Human Capital;
- Information Technology;
- Infrastructure;
- Property Controls and Asset Inventories;
- Safety and Health; and
- Security.

To its credit, the Department has taken a number of positive actions to address some of its long-standing problems, including several previously reported by the IG as management challenges in prior evaluations requested by Congress. For example, the Department has better integrated its multi-billion dollar research and development program by establishing comprehensive, cross-cutting research and development portfolios. Also, the Department's enhanced emphasis on complex-wide security is evidenced by the recent formation of the Office of Security and Emergency Operations and by the implementation of many new security policies. Similarly, the Department has acted aggressively to implement project management reforms, including a new tracking and control system and a senior level "watch list" for troubled projects. Corporate oversight for project management is now vested in the Office of the Chief Financial Officer, where a new Office of Engineering and Construction Management was established.

The IG looks forward to working with the Department's senior staff in a continuing effort to improve Department programs and operations, particularly as they relate to the management challenge issues.

## Message from the Chief Financial Officer

I am pleased to present the Department of Energy's consolidated financial statements for FY 2000. These statements were prepared in accordance with generally accepted accounting principles applicable to federal entities. These statements have been audited by KPMG LLP for the Inspector General, and I am proud to report that the Department has again received an unqualified opinion attesting that the financial statements are fairly presented.



The Department also has carried out 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, one area merits further attention and improvement. The Department's financial management system needs to be upgraded to provide our management and staff with the kind of data necessary to manage our programs and contractors more effectively.

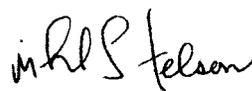
To meet further business systems needs, we have made progress in our effort to replace the current financial information system with a new Business Management Information System. In FY 2000, final technical requirements were completed and a contractor was hired to support the design, implementation, maintenance, and operation of the new system, which we plan to implement in FY 2003.

An area of concern identified last year was the Western Area Power Administration's (Western) new accounting system. This system was implemented in FY 1999 and initially experienced operational problems. Corrective actions implemented by Western during FY 2000 brought the system into conformance by the end of the fiscal year. However, this remains an area of concern, and we will continue to monitor Western's efforts to remedy remaining implementation issues.

The Department's programs are vitally important to the American taxpayer in critical areas such as national security, energy, science and technology, and environmental quality. The Department's national laboratories are extremely valuable assets to our country – not only for their work directly in support of the Department's missions, or for their role in supporting American science through the Department's scientific user facilities, but also for their direct intellectual contribution to science, and hence American society. Unfortunately, all of these contributions are not sufficiently well understood.

As financial managers, we have the responsibility to provide timely and accurate financial information to support the programmatic decision-making process to ensure that taxpayers' funds are used effectively and efficiently. Similarly, we also have the responsibility to create an environment where our contractors can meet these responsibilities in low cost, high value ways, without micromanagement. This is not simple to do, and it requires constant awareness and rethinking. As one consequence of this process, we are trying to eliminate any unnecessary impediments to the maximum use of our laboratories by other government agencies. And, we want to increase their use by the private sector wherever appropriate.

In the future, we will need to respond to new requirements which will require ever greater diligence to ensure that the Department's programs effectively support our program goals, while also ensuring that our financial responsibilities to American taxpayers, the Congress, and the President are met.

  
Michael L. Telson

# Financial Highlights

The following financial highlights 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 position of the Department. The following table highly summarizes these statements and provides a quick overview of significant balances:

	(Dollars in Billions)	
	9/30/00	9/30/99
<b>Assets</b>		
<b>Fund Balance with Treasury</b>	\$11.5	\$11.5
Primarily appropriated funds to pay current liabilities and finance authorized purchase commitments.		
<b>Investments</b>	13.0	10.7
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.		
<b>Accounts Receivable</b>	5.0	5.0
<i>Intragovernmental</i> —Primarily for reimbursable work performed for other Federal agencies.		
<i>Governmental</i> —Primarily for Nuclear Waste Fund and Uranium Enrichment Decontamination and Decommissioning Fund fees.		
<b>Inventory Materials</b>	38.0	37.6
Crude oil at the Strategic Petroleum Reserve, Nuclear Materials, and Other Inventory		
<b>General Property, Plant and Equipment</b>	18.5	18.5
Includes over 126 million square feet of buildings located on over 2.6 million acres of land.		
<b>Regulatory Assets</b>	12.3	13.0
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.		
<b>Other Assets</b>	2.6	1.5
<b>Total Assets</b>	\$100.9	\$97.8

<b>Liabilities</b>	(Dollars in Billions)	
	9/30/00	9/30/99
<b>Environmental Liabilities</b>	\$234.3	\$230.7
Represents the Department's obligation to correct the environmental damage incurred throughout the DOE complex while researching, producing, and testing nuclear weapons.		
<b>Debt and Appropriated Capital Owed to Treasury</b>	17.1	17.6
Represents amounts which the Department has obligations to pay for borrowing from Treasury, refinanced appropriations, and non-federal projects.		
<b>Accounts Payable</b>	3.4	3.1
<u>Intragovernmental</u> —Includes liability for accrued expenses and interest.		
<u>Governmental</u> —Includes contract holdbacks and accrued expenses.		
<b>Pensions and Other Actuarial Liabilities</b>	7.2	6.7
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.		
<b>Other Liabilities, Including Deferred Revenues and Contingencies</b>	21.8	17.9
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.		
<b>Total Liabilities</b>	\$283.8	\$276.0
<b>Beginning Net Position</b>	(\$178.2)	(\$132.3)
<b>Net Costs of Programs</b>	(23.1)	(32.1)
	<u>2000</u>	<u>1999</u>
<b>Energy Resources</b>	1.5	1.7
<b>National Security</b>	5.8	5.4
<b>Environmental Quality</b>	1.8	0.5
<b>Science and Technology</b>	2.7	2.6
<b>Corporate Management and Other Programs</b>	<u>0.2</u>	<u>0.2</u>
<b>Total Business Line Costs</b>	12.0	10.4
<b>Costs Not Assigned to Programs</b>	11.1	21.7
<b>Financing Sources</b>	18.2	17.4
Represents appropriations used, taxes, imputed financing, and transfers.		
<b>Other Adjustments/Changes to Results of Operations</b>	.2	(31.2)
Represents prior period adjustments, change in Nuclear Waste Fund deferred revenues, and decreases in unexpended appropriations.		
<b>ENDING NET POSITION</b>	(\$182.9)	(\$178.2)
<b>TOTAL LIABILITIES AND NET POSITION</b>	\$100.9	\$97.8

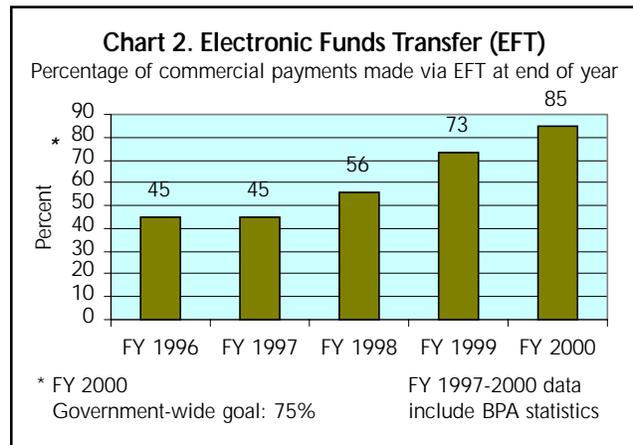
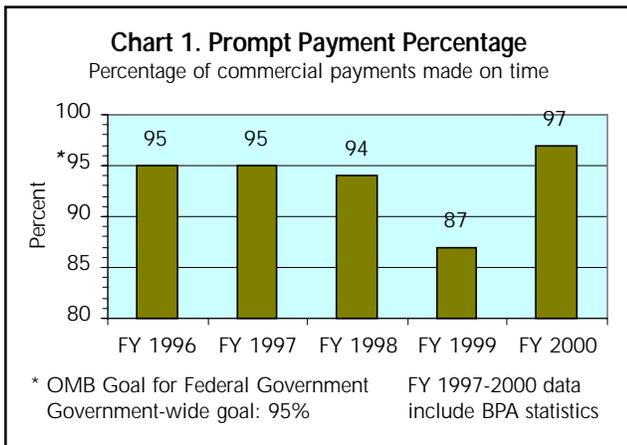
Detailed explanations of these and other balances on the statements are included in the Notes to the Consolidated Financial Statement.

# Financial Performance Measures

## Payment Performance

**Prompt Payment.** The Department's FY 2000 on-time prompt payment percentage is 97 percent. Chart 1 displays a strong rebound from the 87 percent on-time rate we experienced in FY 1999. The FY 1999 decline was due primarily to problems experienced with the new accounting system installed at the Western Area Power Administration. Corrective actions were successful in again boosting the Department up above the 95 percent government-wide goal.

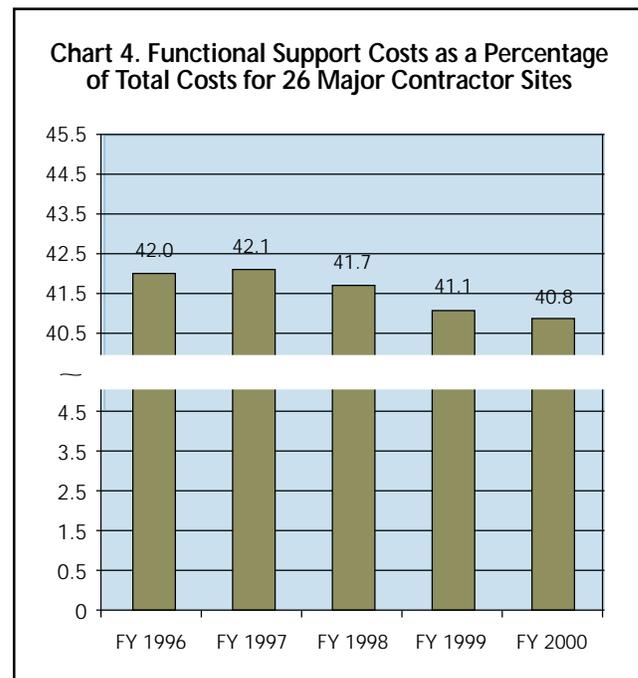
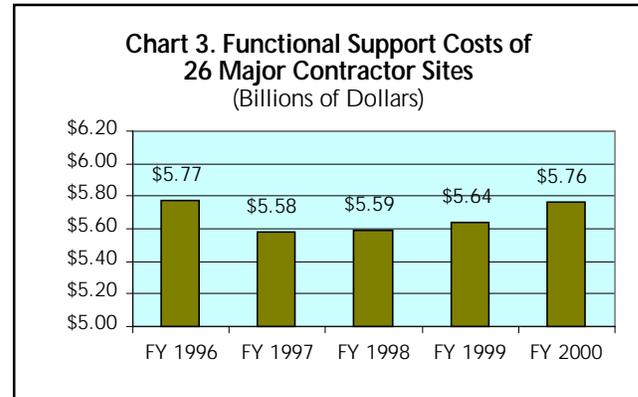
**Electronic Funds Transfer.** The Debt Collection Improvement Act of 1996 requires the use of Electronic Funds Transfer (EFT) for all Federal payments made after January 1, 1999, with limited exceptions. The Department's percentage of commercial payments made by EFT in FY 2000 is 85 percent. This well exceeds the Department of the Treasury Financial Management Service FY 2000 goal of 75 percent. Chart 2 exhibits the Department's progress in implementing the Government-wide mandate to fully utilize EFT for payments.



## Reducing Functional Support Costs

Over the past several years the Department has made 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.

This reporting system accumulates data on functional support costs for FY 1995 through FY 2000. In FY 2000, three additional sites were added and other improvements were made in the system, resulting in more accurate identification of cost. In order to maintain consistency, the data reported previously were adjusted to be consistent with the FY 2000 improvements. Charts 3 and 4 display a 5-year trend as the Department focuses to control and monitor its functional support costs.

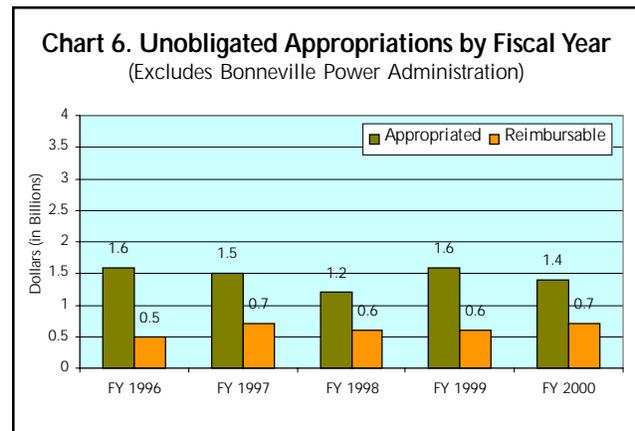
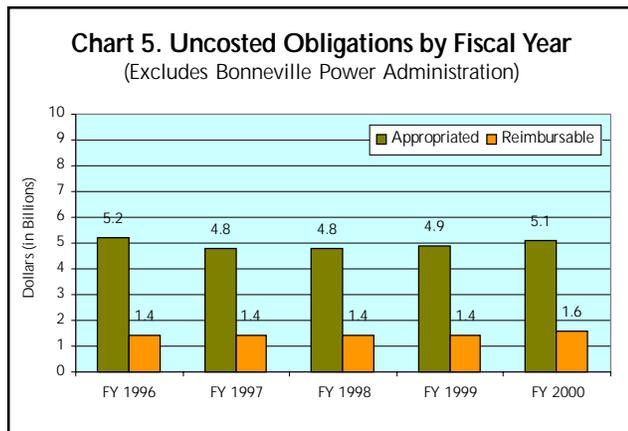


## Balances of Uncosted Obligations and Unobligated Appropriations

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.

In FY 1993, uncosted balances for the Department had reached \$10.8 billion. Since that time, 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 notable, in FY 1996, the Department developed and has continued to refine a

comprehensive methodology for analyzing uncosted balances. Thus 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 1996, 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.)



# 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 that the Department's system generally conforms with Federal financial system requirements. However, one item merits further attention as discussed below. Also, in FY 1999 the Department reported a nonconformance related to the new financial management system at the Western Area Power Administration (Western). Due to the substantive corrective actions taken, that system is no longer considered to be in nonconformance with government-wide requirements. Our corrective actions are summarized below.

## Upgrade of Financial System

The Department's existing financial system is 20 years old, and while currently meeting requirements, we are proactively pursuing a new, up-to-date system to meet current and future financial needs. Due to its age, our current system consists of outdated, inflexible technology that is expensive and difficult to maintain. Our new system will take advantage of the improved capabilities of new technology. Certain manual processes can become automated and labor intensive management data requests can be met more efficiently. A modern, responsive business management information system will aid the Department's management and staff in their efforts to do more with less.

Major efforts, initiated in FY 1999, were continued 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 has made significant strides toward obtaining a complete new financial information system, the Business Management Information System (BMIS). The final technical and functional

requirements, an acquisition strategy and a communications plan for the new system were completed in FY 2000. Also, the Department signed a contract with IBM Global Services for integration services, hardware, software, training and documentation to support the design, implementation, maintenance and operation of the new system. The contract effort is proceeding on schedule, a project office to oversee all aspects of the implementation has been staffed with permanent employees, and an organization structure integrating IBM staff and DOE staff into teams with specific assignments has been established. Full implementation of BMIS is planned for FY 2003.

## Prior Nonconformance—Western's Financial System

Early in FY 1999, Western 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 did not conform to Government-wide requirements. Areas of concern included management reporting, funds control, documentation, internal controls, and user training.

During FY 2000, Western performed extensive systems reviews to assure data integrity and reporting accuracy. Western added to the system reporting capabilities, enhanced budget execution and reporting capabilities, updated systems documentation, completed reconciliations, verified conversion data, provided additional user training and enhanced system security. The FY 2000 audit of Western's financial statements confirmed that system improvements have been made. While Western continues to address system user training and related issues, Western's financial system is no longer considered a nonconformance.



**Financial Statements  
and  
Audit Report**



# Consolidated Financial Statements

The Department'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 Department's books and records 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.

These statements should be read with the understanding that the Department is a component of the United States 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, 2000 and 1999**

	<i>(in millions)</i>	
	2000	1999
<b>ASSETS</b>		
Intragovernmental		
Fund Balance with Treasury	\$11,474	\$11,534
Investments	12,748	10,460
Accounts Receivable, Net	540	505
Regulatory Assets	5,228	5,228
Other Assets	6	6
Investments	263	263
Accounts Receivable, Net	4,474	4,517
Inventory, Net		
Strategic Petroleum and Northeast Home Heating Oil Reserves	15,307	15,143
Nuclear Materials	22,013	21,911
Other Inventory	481	508
General Property, Plant, and Equipment, Net	18,556	18,501
Regulatory Assets	7,105	7,706
Other Assets	2,735	1,491
Total Assets	<u>\$100,930</u>	<u>\$97,773</u>
<b>LIABILITIES</b>		
Intragovernmental		
Accounts Payable	\$133	\$89
Debt	8,628	8,789
Appropriated Capital Owed to Treasury	1,943	2,069
Deferred Revenues	26	29
Other Liabilities	273	201
Accounts Payable	3,281	3,054
Debt	6,488	6,778
Deferred Revenues	14,523	13,343
Environmental Liabilities	234,267	230,640
Pension and Other Actuarial Liabilities	7,166	6,782
Other Liabilities	4,993	3,733
Contingencies	2,030	502
Total Liabilities	<u>\$283,751</u>	<u>\$276,009</u>
<b>NET POSITION</b>		
Unexpended Appropriations	\$6,179	\$6,169
Cumulative Results of Operations	(189,000)	(184,405)
Total Net Position	<u>(\$182,821)</u>	<u>(\$178,236)</u>
Total Liabilities and Net Position	<u>\$100,930</u>	<u>\$97,773</u>

The accompanying notes are an integral part of these statements.

**Consolidated Statements of Net Cost**  
**For the Years Ended September 30, 2000 and 1999**

	<i>(in millions)</i>	
	2000	1999
Costs		
Energy Resources		
Program Costs	\$5,317	\$4,938
Earned Revenues	(3,815)	(3,238)
Net Cost of Energy Resources Programs	<u>\$1,502</u>	<u>\$1,700</u>
NNSA and Other National Security Activities		
Program Costs	\$5,824	\$5,391
Earned Revenues	-	(6)
Net Cost of NNSA and Other National Security Activities	<u>\$5,824</u>	<u>\$5,385</u>
Environmental Quality		
Program Costs	\$2,283	\$750
Earned Revenues	(459)	(303)
Net Cost of Environmental Quality Programs	<u>\$1,824</u>	<u>\$447</u>
Science		
Program Costs	\$2,673	\$2,633
Earned Revenues	(7)	(9)
Net Cost of Science Programs	<u>\$2,666</u>	<u>\$2,624</u>
Other Programs		
Program Costs	\$2,414	\$2,372
Earned Revenues	(2,184)	(2,159)
Net Cost of Other Programs	<u>\$230</u>	<u>\$213</u>
Costs Not Assigned to Programs	<u>\$11,136</u>	<u>\$21,722</u>
Net Cost of Operations	<u><u>\$23,182</u></u>	<u><u>\$32,091</u></u>

The accompanying notes are an integral part of these statements.

## Consolidated Statements of Changes in Net Position

### For the Years Ended September 30, 2000 and 1999

	<i>(in millions)</i>	
	2000	1999
Net Cost of Operations	(\$23,182)	(\$32,091)
Financing Sources (Other Than Exchange Revenues)		
Appropriations Used	17,575	17,266
Other Non-Exchange Revenues	10	-
Imputed Financing	72	75
Transfers-in	568	102
Transfers-out	(47)	(91)
Net Results of Operations	(\$5,004)	(\$14,739)
Prior Period Adjustments	109	(30,342)
Net Change in Cumulative Results of Operations	(\$4,895)	(\$45,081)
Unrealized Holding Gain (Loss) on Investments	300	(1,247)
Increase (Decrease) in Unexpended Appropriations	10	420
Change in Net Position	(\$4,585)	(\$45,908)
Net Position - Beginning of Period	(178,236)	(132,328)
Net Position - End of Period	(\$182,821)	(\$178,236)

## Consolidated Statements of Budgetary Resources

### For the Years Ended September 30, 2000 and 1999

	<i>(in millions)</i>	
	2000	1999
<b>BUDGETARY RESOURCES</b>		
Budgetary Authority	\$19,956	\$19,684
Unobligated Balances - Beginning of Period, Net of Transfers	3,476	2,718
Spending Authority from Offsetting Collections	5,873	4,806
Actual Recoveries of Prior Year Obligations	61	21
Authority Not Available	(2,303)	(1,615)
Total Budgetary Resources	\$27,063	\$25,613
<b>STATUS OF BUDGETARY RESOURCES</b>		
Obligations Incurred	\$23,840	\$22,471
Unobligated Balances Available	2,470	2,077
Unobligated Balances Not Available	753	1,065
Total, Status of Budgetary Resources	\$27,063	\$25,613
<b>OUTLAYS</b>		
Obligations Incurred	\$23,840	\$22,471
Less Spending Authority from Offsetting Collections and Actual Recoveries of Prior Year Obligations	(5,934)	(4,827)
Obligated Balance, Net - Beginning of Period	7,901	8,075
Less Obligated balance, Net - End of Period	(8,320)	(7,901)
Total Outlays	\$17,487	\$17,818

The accompanying notes are an integral part of these statements.

**Consolidated Statements of Financing**  
**For the Years Ended September 30, 2000 and 1999**

	<i>(in millions)</i>	
	2000	1999
<b>OBLIGATIONS AND NONBUDGETARY RESOURCES</b>		
Obligations Incurred	\$23,840	\$22,471
Less Spending Authority from Offsetting Collections and Adjustments		
Earned Reimbursements		
Collected	(5,505)	(4,997)
Receivable from Federal Sources	(103)	-
Change in Unfilled Orders (Decreases) Increases	(252)	(62)
Recoveries of Prior-Year Obligations	(61)	(20)
Financing Imputed for Cost Subsidies	72	75
Transfers - In, Net	521	11
Exchange Revenues Not In the Budget	(791)	(990)
Other	(3)	(3)
Total Obligations as Adjusted, and Nonbudgetary Resources	<u>\$17,718</u>	<u>\$16,485</u>
<b>RESOURCES THAT DO NOT FUND NET COST OF OPERATIONS</b>		
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	(\$123)	\$22
Costs Capitalized on the Balance Sheet		
General Property, Plant, and Equipment	(1,670)	(1,859)
Purchases of Inventory	(993)	(587)
Financing Sources That Fund Costs of Prior Periods	(5,928)	(5,526)
Other	(108)	489
Total Resources that Do Not Fund Net Cost of Operations	<u>(\$8,822)</u>	<u>(\$7,461)</u>
<b>COSTS THAT DO NOT REQUIRE RESOURCES</b>		
Depreciation and Amortization	\$1,088	\$1,377
Revaluation of Assets and Liabilities	206	(141)
Loss on Disposition of Assets	11	1
Other	388	349
Total Costs that Do Not Require Resources	<u>\$1,693</u>	<u>\$1,586</u>
<b>FINANCING SOURCES YET TO BE PROVIDED</b>	<u>\$12,593</u>	<u>\$21,481</u>
<b>NET COST OF OPERATIONS</b>	<u><u>\$23,182</u></u>	<u><u>\$32,091</u></u>

The accompanying notes are an integral part of these statements.

**Consolidated Statements of Custodial Activities**  
**For the Years Ended September 30, 2000 and 1999**

	<i>(in millions)</i>	
	2000	1999
<b>SOURCES OF COLLECTIONS</b>		
Cash Collections		
Interest	\$28	\$23
Penalties and Fines	37	38
Other	379	552
Net Collections	\$444	\$613
Accrual Adjustment	(38)	(22)
Total Revenue	\$406	\$591
<b>DISPOSITION OF REVENUE</b>		
Transferred to Others		
Department of the Treasury	(419)	(537)
Others	9	(48)
Increase (Decrease) in Amounts to be Transferred	4	57
Retained by DOE	-	(63)
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 U.S. Department of Energy (the Department). The statements were prepared from the books and records of the Department in accordance with generally accepted accounting principles applicable to federal entities.

### B. Description of Reporting Entity

The Department is a cabinet level agency of the Executive Branch of the U.S. Government. The Department's headquarters organizations are located in Washington, D.C., and Germantown, Maryland, and consist of an executive management structure that includes: the Secretary, the Deputy Secretary, the Under Secretary for Energy, Science and Environment; the Under Secretary for National Nuclear Security/Administrator for National Nuclear Security; Secretarial staff organizations; and program organizations that provide technical direction and support for the Department's principal programmatic missions. The Department 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.

The Department has a complex field structure comprised of operations offices, field offices, power marketing administrations (Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, and Western Area Power Administration), laboratories, and other facilities. The majority of the Department's environmental cleanup, energy research and development, and testing and production activities are carried out by major contractors. These contractors operate, maintain, or support the Department'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 the Department. In most cases, their charts of accounts and accounting systems are integrated with the Department's accounting system through a home office-branch office type of arrangement. Additionally, the Department 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 contractor 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

The Department 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. Fund Balance with Treasury

Funds with the Department of the Treasury (Treasury) primarily represent appropriated and revolving funds that are available to pay current liabilities and finance authorized purchase commitments. (See Note 2).

### F. Investments

Investments in Treasury securities for the Department's 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*, with unrealized holding gains and losses reported as a component of net position. All other investments are reported at cost net of amor-

tized premiums or discounts, as it is the Department'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 non-intragovernmental (non-Federal) receivables are stated net of an allowance for uncollectable 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. Inventories**

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 the Department's needs. These nuclear materials are recorded at their net realizable value. (See Note 6). Certain surplus plutonium carried at zero value (see Note 13 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. (See Note 6). When an operational use is found for surplus or excess stockpile materials or other inventories whose value was previously reduced to net realizable value, the inventories are classified as operating materials and their carrying value is increased to historical cost.

### **I. General 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. The Department's capitalization threshold is \$25,000 except for the power marketing administrations which use thresholds ranging from \$5,000 to \$10,000. (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 the Department's environmental legacy wastes are not capitalized. (See Note 24).

Depreciation expense is generally computed using the straight line method. The units of production method

is 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 and Facilities 25 - 50 years  
ADP Software 3 - 7 years  
Equipment 5 - 40 years

### **J. Liabilities**

Liabilities represent amounts of monies or other resources likely to be paid by the Department as a result of a transaction or event that has already occurred. However, no liability can be paid by the Department absent an authorized appropriation. Liabilities for which an appropriation has not been enacted are, therefore, classified as not covered by budgetary resources (see Note 17), and there is no certainty that the appropriations will be enacted. Also, liabilities of the Department arising from other than contracts can be abrogated by the Government, acting in its sovereign capacity.

### **K. 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.

### **L. Retirement Plans**

#### *Federal Employees*

There are two primary retirement systems for Federal employees. Employees hired prior to January 1, 1984, may participate in the Civil Service Retirement System (CSRS). 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 the Department automatically contributes 1 percent of pay and matches any em-

ployee contribution up to an additional 4 percent of pay. For most employees hired since December 31, 1983, the Department also contributes the employer's matching share for Social Security. The Department 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. The Department 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 of the Department's contractors maintain a defined benefit pension plan under which they promise to pay employees specified benefits, such as a percentage of the final average pay for each year of service. The Department's cost 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. The Department reports assets and liabilities of these pension plans as if it was the plan sponsor. (See Note 14).

#### **M. Comparative Data**

Certain FY 1999 amounts have been reclassified to conform to the FY 2000 presentation.

#### **N. Program Expenses**

Program expenses are summarized in the *Statements of Net Costs* by business line, which represents the four major elements of the Department's mission. A detailed breakdown of the expenses for each business line is presented in Notes 18 - 22.

#### **O. Use of Estimates**

The Department 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 2000			FY 1999		
	Agency Funds	Custodial Funds	Total	Agency Funds	Custodial Funds	Total
Trust funds	\$ -	\$ 5	\$ 5	\$ -	\$ 6	\$ 6
Revolving funds	874	1	875	691	480	1,171
Appropriated funds	9,780	11	9,791	9,533	10	9,543
Special funds	188	265	453	193	265	458
Deposit funds	20	330	350	-	356	356
<b>Total fund balance with Treasury</b>	<b>\$ 10,862</b>	<b>\$ 612</b>	<b>\$ 11,474</b>	<b>\$ 10,417</b>	<b>\$ 1,117</b>	<b>\$ 11,534</b>

**3. Investments** *(in millions)*

	Cost	Amortized Premium (Discount)	Investments, Net	Market Value
<i>Fiscal Year 2000</i>				
<i>Intragovernmental Non-Marketable</i>				
Nuclear Waste Fund	\$ 9,524	\$ 305	\$ 9,829	\$ 9,777
Net unrealized holding losses			(52)	
Uranium Enrichment D&D Fund	2,200	(19)	2,181	2,160
U.S. Enrichment Corporation	478	10	488	488
Petroleum Pricing Violation Escrow Fund	298	4	302	303
Subtotal	\$ 12,500	\$ 300	\$ 12,748	\$ 12,728
<i>Non-intragovernmental Marketable Securities</i>				
Du Pont pension receipts	41	-	41	41
Petroleum Pricing Violation Escrow Fund	222	-	222	215
Subtotal	\$ 263	\$ -	\$ 263	\$ 256
<b>Total FY 2000 investments</b>	<b>\$ 12,763</b>	<b>\$ 300</b>	<b>\$ 13,011</b>	<b>\$ 12,984</b>
<i>Fiscal Year 1999</i>				
<i>Intragovernmental Non-Marketable</i>				
Nuclear Waste Fund	\$ 8,776	\$ 58	\$ 8,834	\$ 8,481
Net unrealized holding losses			(353)	
Uranium Enrichment D&D Fund	1,734	(19)	1,715	1,685
Petroleum Pricing Violation Escrow Fund	261	3	264	264
Subtotal	\$ 10,771	\$ 42	\$ 10,460	\$ 10,430
<i>Non-intragovernmental Marketable Securities</i>				
Du Pont pension receipts	50	-	50	50
Petroleum Pricing Violation Escrow Fund	213	-	213	213
Subtotal	\$ 263	\$ -	\$ 263	\$ 263
<b>Total FY 1999 investments</b>	<b>\$ 11,034</b>	<b>\$ 42</b>	<b>\$ 10,723</b>	<b>\$ 10,693</b>

Pursuant to statutory authorizations, the Department invests monies in Treasury securities and commercial certificates of deposit which are secured by the Federal Deposit Insurance Corporation. The Department'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. The Department also has non-Federal securities resulting from an over funded pension plan of a former contractor.

Upon privatization of the United States Enrichment Corporation on July 28, 1998, OMB and Treasury designated the Department as successor to USEC for purposes of disposition of balances remaining in the United States Enrichment Corporation Fund. Funds in excess of those needed to pay current program costs are invested in Treasury securities (see Note 11).

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

#### 4. Accounts Receivable

(in millions)

	FY 2000			FY 1999		
	Receivable	Allowance	Net	Receivable	Allowance	Net
Intragovernmental	\$ 540	\$ -	\$ 540	\$ 505	\$ -	\$ 505
Non-intragovernmental						
Nuclear Waste Fund	\$ 2,697	-	\$ 2,697	\$ 2,557	-	\$ 2,557
Uranium Enrichment D&D Fund	1,255	-	1,255	1,389	-	1,389
Power marketing administrations	354	-	354	345	-	345
Petroleum Pricing Violation Escrow Fund	2,132	\$ (2,108)	24	2,256	(2,180)	76
Credit programs	61	(26)	35	62	(26)	36
Other	177	(68)	109	182	(68)	114
Subtotal	\$ 6,676	\$ (2,202)	\$ 4,474	\$ 6,791	\$ (2,274)	\$ 4,517
<b>Total accounts receivable</b>	<b>\$ 7,216</b>	<b>\$ (2,202)</b>	<b>\$ 5,014</b>	<b>\$ 7,296</b>	<b>\$ (2,274)</b>	<b>\$ 5,022</b>

Intragovernmental 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, as well as interest related to earned revenues on investments held in Treasury securities.

Non-intragovernmental 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, and other miscellaneous receivables.

The Petroleum Pricing Violation Escrow Fund represents receivables owed as a result of agreements or court orders with individuals or firms that violated petroleum pricing and allocation 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 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. The allowance account as of September 30, 2000, and

1999, includes interest receivables of \$1,570 million and \$1,631 million, respectively.

## 5. Regulatory Assets (in millions)

	FY 2000	FY 1999
<i>Intragovernmental</i>		
Appropriation refinancing asset	\$ 5,228	\$ 5,228
<i>Non-intragovernmental</i>		
Operating regulatory assets	\$ 2,488	\$ 2,784
Non-operating regulatory assets	3,967	4,209
Conservation and fish and wildlife projects	650	713
Subtotal	\$ 7,105	\$ 7,706
<b>Total regulatory assets</b>	<b>\$ 12,333</b>	<b>\$ 12,934</b>

The Department's power marketing administrations record certain amounts as assets in accordance with SFAS No. 71, *Accounting for the Effects of Certain Types of Regulation*. 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, the Northeast Home Heating Oil 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. As of September 30, 2000, and 1999, the Reserve contained 570 million and 565 million barrels of crude oil respectively with an historical cost of \$15,278 million and \$15,143 million. 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. Included in the Strategic Petroleum Reserve is crude oil held for future Department of Defense (DOD) use. The FY 1993 Defense Appropriations Act authorized the Department to acquire, transport, store and prepare for ultimate drawdown of crude oil for DOD. The crude oil purchased with DOD funding is commingled with the Department's stock and is valued at its historical cost of \$106 million. (See Note 12).

The Northeast Home Heating Oil Reserve was established in FY 2000 pursuant to the Energy Policy and Conservation Act. Contracts were awarded to establish this reserve consisting of 2 million barrel storage of petroleum distillate in the New England, New York, and New Jersey geographic area. As of September 30, 2000, the reserve contained 1.4 million barrels valued at historical cost of \$29 million. The remaining 600,000 barrels were placed in the reserve in October 2000.

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. Certain surplus plutonium carried at zero value (see Note 13 for a discussion of disposition plans) has been instrumental to the U.S. Government in negotiations with Russia concerning the future of 34 metric tons of Russia's weapons grade plutonium. On September 1, 2000, the U.S. Government signed

the United States-Russian Federation Agreement for irreversibly transforming excess weapons plutonium into forms unusable for weapons. This accomplishment advances the critical task of reducing stockpiles of excess weapons plutonium and contributes to key arms control and non-proliferation objectives.

The nuclear materials inventory includes numerous items for which future use and disposition decisions have not been made. Decisions for most of these items will be made through analysis of the economic benefits and costs, and the environmental impacts of the various use and disposition alternatives. The carrying value of these items is not significant to the nuclear materials stockpile inventory balance. The Department will recognize disposition liabilities and record the material at net realizable value when disposal as waste is identified as the most likely alternative and disposition costs can be reasonably estimated.

### *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 the Department'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. Estimates of revenues and processing costs for surplus HEU were updated during FY 2000. Based upon these estimates, the carrying value of HEU for which the LEU blending product will have levels of contamination exceeding nuclear fuel specifications has been reduced to zero. A disposition liability for the costs to process this "off-spec" material, which will be blended to LEU for use in Tennessee Valley Authority nuclear power reactors, is also included in environmental liabilities. Net revenues from sales of the remaining surplus HEU are expected to exceed the carrying value of the surplus HEU.

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

	FY 2000			FY 1999		
	Acquisition Costs	Accumulated Depreciation	Net Book Value	Acquisition Costs	Accumulated Depreciation	Net Book Value
Land and land rights	\$ 1,255	\$ (586)	\$ 669	\$ 1,216	\$ (550)	\$ 666
Structures and facilities	29,691	(20,009)	9,682	29,027	(19,148)	9,879
ADP software	61	(32)	29	56	(11)	45
Equipment	14,211	(9,717)	4,494	14,128	(9,503)	4,625
Natural resources	101	(8)	93	98	(8)	90
Construction work in process	3,589	-	3,589	3,196	-	3,196
<b>Total property, plant and equipment</b>	<b>\$ 48,908</b>	<b>\$ (30,352)</b>	<b>\$18,556</b>	<b>\$ 47,721</b>	<b>\$ (29,220)</b>	<b>\$18,501</b>

**8. Other Non-Intragovernmental Assets** *(in millions)*

	FY 2000	FY 1999
Prepaid pension plan costs (see note 14)	\$ 1,651	\$ 946
Oil due from others	414	-
Oil held for others (see note 12)	-	252
Other	670	293
<b>Total other non-intragovernmental assets</b>	<b>\$ 2,735</b>	<b>\$ 1,491</b>

*Oil Due from Others*

The Department has entered into a Royalty-In-Kind exchange arrangement with the Department of the Interior's Mineral Management Service (MMS) to receive 28 million barrels of crude oil from Gulf of Mexico Federal offshore leases. The oil from the MMS offshore leases is being exchanged for approximately 29.3 million barrels of other crude oil (exchange oil) of

differing quality to be delivered to the Strategic Petroleum Reserve through December 31, 2001. As of September 30, 2000, 11.8 million barrels of exchange oil valued at \$258 million have been delivered to the Department's Strategic Petroleum Reserve. Oil due from others represents the remaining 17.5 million barrels of crude oil to be delivered to the Department by December 31, 2001. (See Note 26)

**9. Debt****(in millions)**

	<u>FY 2000</u>	<u>FY 1999</u>
<i>Intragovernmental</i>		
Borrowing from Treasury	\$ 2,513	\$ 2,515
Refinanced appropriations	3,786	3,878
Capitalization adjustment	<u>2,329</u>	<u>2,396</u>
Subtotal	\$ 8,628	\$ 8,789
<i>Non-intragovernmental</i>		
Non-Federal projects	6,488	6,778
<b>Total debt</b>	<b>\$ 15,117</b>	<b>\$ 15,567</b>

*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 weighted average interest rate as of September 30, 2000 and 1999, was 6.6 percent and 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, 2000 and 1999, for similar maturities, exceeds carrying value by approximately \$188 million and \$183 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 weighted average interest rate was 7.1 percent in FY 2000 and 1999. The majority of the refinanced appropriations represent the unpaid capital appropriations of the Corps of Engineers and the Bureau of Reclamation (See Note 5).

*Capitalization Adjustment*

The amount of appropriations refinanced as a result of the BPA Appropriations Refinancing Act of 1994 was \$6.6 billion. After refinancing, the appropriations outstanding were \$4.1 billion. The difference between the appropriated debt before and after the refinancing was recorded as a capitalization adjustment. This adjustment is being amortized over the remaining period of repayment. Amortization of the capitalization adjustment was \$67 million and \$65 million for FY 2000 and 1999, respectively. The weighted average interest rate was 7.1 percent in FY 2000 and 1999.

*Non-Federal Projects*

As discussed in Note 5, the non-Federal projects debt represents the 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.

The following table summarizes future principle payments required for the debt described above:

(in millions)				
<u>Fiscal Year</u>	<u>Borrowing from Treasury</u>	<u>Refinanced Appropriation</u>	<u>Capitalization Adjustment</u>	<u>Non-Federal Projects</u>
2001	\$ -	\$ 66	\$ 69	\$ 356
2002	146	24	67	268
2003	167	47	68	320
2004	180	73	68	330
2005	100	111	65	280
2006+	1,920	3,465	1,992	4,934
<b>Total</b>	<b>\$2,513</b>	<b>\$3,786</b>	<b>\$2,329</b>	<b>\$6,488</b>

## 10. Appropriated Capital Owed to Treasury

Appropriated capital owed to Treasury represents the balance of appropriations provided to the Department'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 of 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 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. The Department 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, the Department'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. The Department's power marketing administrations are responsible for collecting, and remitting to Treasury, revenues resulting from the sale of hydroelectric power generated by these facilities. (See Note 29)

## 11. Deferred Revenues

(in millions)

	FY 2000	FY 1999
Intragovernmental	\$ 26	\$ 29
Non-intragovernmental		
Nuclear Waste Fund	\$ 13,144	\$ 12,107
United States Enrichment Corporation	477	482
Power marketing administrations	644	473
Reimbursable work advances	211	227
Other	47	54
Subtotal	\$ 14,523	\$ 13,343
<b>Total deferred revenues</b>	<b>\$ 14,549</b>	<b>\$ 13,372</b>

FY 1999 amounts have been restated to conform with the FY 2000 presentation. Specifically, deferred revenues for spent nuclear fuel fees paid by the Tennessee Valley Authority to the Department in excess of costs incurred to date for the Department's Nuclear Waste Fund activities were reclassified from intragovernmental to non-intragovernmental in order to properly affect consolidated government-wide financial statement elimination entries.

### Nuclear Waste Fund

NWF revenues are accrued based on fees assessed against owners and generators of high-level radioactive

waste and spent nuclear fuel 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.

### United States Enrichment Corporation

Upon privatization of the USEC on July 28, 1998, OMB and Treasury designated the Department as successor to USEC for purposes of disposition of balances remaining in the United States Enrichment Fund, including payment of final bills associated with privatization.

*Power Marketing Administrations*

The power marketing administrations' deferred revenues represent primarily amounts paid to BPA from participants under various alternating current 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, and are recognized as revenues as contract commitments are satisfied.

## **12. Other Liabilities** *(in millions)*

	<u>FY 2000</u>	<u>FY 1999</u>
Intragovernmental		
Oil held for DOD (Note 6)	\$ 106	\$ 106
Other	<u>167</u>	<u>95</u>
Subtotal	<u>\$ 273</u>	<u>\$ 201</u>
Non-intragovernmental		
Compensation program for occupational illnesses	\$ 1,600	\$ -
Environment, safety and health compliance activities	1,279	1,322
Accrued payroll and benefits	746	771
Petroleum Pricing Violation Escrow Fund	548	552
Naval Petroleum Reserve Deposit Fund	323	323
Elk Hills School Land Fund	262	262
Oil held for others (Note 8)	-	252
Other	<u>235</u>	<u>251</u>
Subtotal	<u>\$ 4,993</u>	<u>\$ 3,733</u>
<b>Total other liabilities</b>	<u>\$ 5,266</u>	<u>\$ 3,934</u>

FY 1999 amounts have been restated to conform with the FY 2000 presentation. Specifically, Federal Employees' Compensation Act liabilities were reclassified to Pension and Other Actuarial Liabilities in accordance with new Standard General Ledger guidance issued by Treasury (see also Note 14). Contract holdbacks that were reported as accounts payable in the Department's FY 1999 financial statements were reclassified and are now included in other non-intragovernmental liabilities. Also, accrued unfunded annual leave was combined with accrued payroll and benefits.

*Compensation Program for Occupational Illnesses*

Public Law 106-398, the Energy Employees Occupational Illness Compensation Program Act of 2000, authorized compensation for certain illnesses suffered by employees of the Department, its predecessor agencies, and contractors who performed work for the nuclear weapons program. Covered illnesses include cancers resulting from exposure to radiation; chronic beryllium disease; silicosis; and other illnesses

arising from exposure to toxic substances during employment at atomic weapons facilities. In general, each employee and survivors of deceased employees eligible for compensation will receive compensation for the costs of medical care related to covered illness(es) and a choice of either lost wages or a lump sum payment of \$200,000.

Under an executive order signed by the President on December 7, 2000, the Department of Labor will have primary responsibility for administering the compensation program. The Department of Health and Human Services (HHS) will develop guidelines for establishing whether a covered cancer is related to a worker's employment at an atomic weapons facility. An independent HHS panel will review the cases of workers exposed to other toxic substances. The Department's responsibilities include identifying, notifying, and disseminating information about the program to potentially eligible individuals; providing requested information to HHS concerning worker exposure to radiation, beryllium, silica, and other toxic substances; and assisting HHS as necessary in

the review of applications and the determination of compensation. The Department is also required to identify atomic weapons employers and additions to the list of designated beryllium vendors; to work with states to assist contractor employees in filing state workers' compensation system claims; and to report at least annually on the claims filed under the program. Although compensation will not be paid from the Department's appropriations, the compensation program is a direct result of the nuclear weapons program conducted by the Department and its predecessor agencies. Accordingly, the Department has recognized a liability of \$1.6 billion for future compensation payments, based upon a Congressional Budget Office estimate. The liability will be adjusted in the coming years as criteria for eligibility are developed and potential recipients are identified.

#### *Environment, Safety and Health Compliance Activities*

The Department'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 the Department'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 the Department's Orders, (2) revised cost estimates for existing ES&H activities, and (3) costs of work performed in FY 2000.

#### *Accrued Payroll and Benefits*

Accrued payroll and benefits represent amounts owed to the Department's federal and contractor employees.

#### *Petroleum Pricing Violation Escrow Fund*

Pursuant to the Emergency Petroleum Allocation Act of 1973, the Department 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 on its commission.

#### *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.

#### *Oil Held for Others*

The Department 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, was recorded as oil held for others. Delivery of this oil to the commercial entity was completed in February 2000.

#### *Other Liabilities*

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

**13. Environmental Liabilities** *(in millions)*

	<u>FY 2000</u>	<u>FY 1999</u>
Environmental Management baseline estimates	\$ 182,728	\$ 183,641
Active and surplus facilities - other programs	26,006	25,403
High-level waste and spent nuclear fuel disposition	14,281	14,940
Other	<u>11,252</u>	<u>6,656</u>
Total environmental liabilities	\$ 234,267	\$ 230,640
Amount funded by current appropriations	(1,445)	(1,584)
Total unfunded environmental liabilities	<u>\$ 232,822</u>	<u>\$ 229,056</u>
<i>Changes in environmental liabilities</i>		
Total environmental liabilities, beginning balance	\$ 230,640	\$ 185,890
Prior period adjustments	<u>1</u>	<u>28,485</u>
Adjusted beginning balance	\$ 230,641	\$ 214,375
<i>Changes to environmental liability estimates</i>		
Environmental Management baseline estimates	5,090	15,596
Active and surplus facilities - other programs	713	(2,758)
High-level waste and spent nuclear fuel disposition	(554)	4,977
Other	<u>4,596</u>	<u>4,277</u>
Total changes in estimates	\$ 9,845	\$ 22,092
Operating expenditures related to remediation activities	(5,931)	(5,491)
Capital expenditures related to remediation activities	<u>(288)</u>	<u>(336)</u>
<b>Total environmental liabilities</b>	<b>\$ 234,267</b>	<b>\$ 230,640</b>

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. This contamination was caused by the production, storage, and use of radioactive materials and hazardous chemicals, which resulted in contamination of soil, surface water, and groundwater. The environmental legacy of nuclear weapons production also includes thousands of contaminated 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 wastes must be stabilized, safeguarded, and dispositioned, including a quantity

of plutonium sufficient to fabricate thousands of nuclear weapons.

**Assumptions and Uncertainties**

Estimating the cost of the Department's environmental cleanup liability requires making assumptions about future activities and is inherently uncertain. The future course of the Department's environmental management program will depend on a number of fundamental technical and policy choices, many of which have not been made. 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 baseline estimates reflect applicable local

decisions and expectations as to the extent of cleanup and site and facility reuse, which include consideration of Congressional mandates, regulatory direction, and stakeholder input.

The environmental liability includes a contingency estimate intended to account for the uncertainties associated with the technical cleanup scope of the program. For example, the precise nature and quantities of material being addressed are not always known, and some baseline estimates, including EM's baselines for treatment of high-level wastes, are incomplete because suitable cleanup technologies are under development.

The environmental liability estimates are dependent on annual funding levels and achievement of work as scheduled. Higher funding tends to accelerate cleanup work and reduce cleanup costs; lower funding tends to delay work and increase costs. Congressional appropriations at lower than anticipated levels or unplanned delays in project completion would cause increases in life cycle costs.

The liabilities as of September 30, 2000 and 1999, are stated in FY 2000 dollars and FY 1999 dollars, respectively, as required by Federal accounting standards. Future inflation could cause actual costs to be substantially higher than the recorded liability.

## Components of the Liability

### *Environmental Management Baseline Estimates*

The Department's Office of Environmental Management (EM) is responsible for managing the legacy of contamination from the nuclear weapons complex. As such, EM manages thousands of contaminated facilities formerly used in the nuclear weapons program and is also responsible for cleanup of contaminated soil and water. In FY 2000, EM updated its life cycle cost estimates which reflect a strategic vision to clean up most of the Department's sites by 2006. This strategy provides for a site by site projection of the work required to complete all EM projects, while complying with compliance agreements, statutes, and regulations. Each project baseline estimate includes detailed projections of the technical scope, schedule, and costs at each site for the cleanup of contaminated soil, groundwater, and facilities; treating, storing, and disposing of wastes; managing nuclear materials; and post-cleanup monitoring and stewardship. These life cycle cost estimates, which were developed by the cognizant field offices, cover the costs of these activities to 2070. Some post-cleanup monitoring and other long-term stewardship activities are expected to continue beyond 2070, but the Department believes the costs of those activities

cannot be reasonably estimated. The baseline 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.

In addition to the assumptions and uncertainties discussed above, the following key assumptions and uncertainties relate to the EM baseline estimates:

- The Department 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 is scheduled to open in 2010. At that time, it will accept spent nuclear fuel from commercial utilities. The repository is scheduled to begin accepting the Department's high-level waste in 2016 and to begin accepting the Department's spent nuclear fuel shortly thereafter. Delays in opening the repository could increase settlement costs with civilian nuclear utilities and cause EM project costs to increase.
- The Waste Isolation Pilot Plant (WIPP), a geologic repository for the disposal of mixed transuranic waste, opened in March 1999, and expects to receive and dispose all of the Department's transuranic waste over its planned 35-year operating period. Any significant disruptions in the availability of WIPP to receive transuranic waste from other sites could cause delays in site cleanup projects and increase life cycle costs.
- Only existing technologies, such as pumping and treating groundwater, are assumed to be available for estimating cleanup costs where applicable. Estimates were based on remedies considered technically and environmentally reasonable and achievable by local project managers and appropriate regulatory authorities.
- Estimated cleanup costs at sites for which there is no current feasible remediation approach are excluded from the baseline estimates, although applicable stewardship and monitoring costs for these sites are included. The cost estimate would be higher if some remediation were assumed for

these areas. However, because the Department has not identified effective remedial technologies for these sites, no basis for estimating costs is available. Significant sites for which cleanup costs are excluded include nuclear explosion test areas such as the Nevada Test Site; large surface water bodies including the Clinch and Columbia rivers; and most contaminated ground water for which, even with treatment, future use will remain restricted.

Changes to the EM baseline estimates during FY 2000 and 1999 resulted from inflation adjustments to reflect current year constant dollars; additions for facilities transferred from the active and surplus category discussed below; improved and updated estimates for the same scope of work; revisions in technical approach or scope; regulatory changes; and cleanup activities performed.

#### *Active and Surplus Facilities – Other Programs*

This liability includes anticipated remediation costs for active and surplus facilities managed by the Department's ongoing program operations which will ultimately require stabilization, deactivation, and decommissioning. The estimate is largely based on a cost-estimating model which extrapolates stabilization, deactivation, and decommissioning costs from facilities included in the EM baseline estimates to those active and surplus facilities with similar characteristics. Site-specific estimates are used when available. Cost estimates for active and surplus facilities are updated each year to reflect current year constant dollars; the transfer of cleanup and management responsibilities for these facilities by other programs to EM as discussed above; changes in facility size or contamination assessments; and estimated cleanup costs for newly contaminated facilities.

#### *High-Level Waste and Spent Nuclear Fuel Disposition*

The Nuclear Waste Policy Act of 1982 established the Department's responsibility to provide for permanent disposal of the Nation's high-level radioactive waste and spent nuclear fuel. The Act requires all owners and generators of nuclear waste, including the full Department, to pay their respective shares of the full

cost of the program. To that end, the Act establishes a fee on owners and generators which the Department must collect and annually assess to determine its adequacy. The Department's liability reflects its share of the future costs of the program based on its inventory of high-level waste and spent nuclear fuel, plus the unfunded portion of actual costs incurred to date and the accrued interest on the unfunded costs. The Department's liability does not include the portion of the cost attributable to other owners and generators. Changes to the high-level waste and spent nuclear fuel disposition liability during FY 2000 and 1999 resulted from inflation adjustments to reflect current year constant dollars; revisions in technical approach or scope; changes in the Department's allocable percentage share of future costs; and actual costs incurred by the Department that were allocated to the Department's share of the liability.

#### *Other Environmental Liabilities*

Other environmental liabilities consist of the Department's estimated costs to dispose of surplus plutonium, depleted uranium, and highly enriched uranium (HEU – see discussion in Note 6). Changes during FY 2000 and 1999 were primarily caused by increases in estimated costs to dispose of surplus plutonium and the initial recognition in FY 1999 of a liability for the disposition of depleted uranium.

On September 1, 2000, the Vice President signed an agreement between the United States and the Russian Federation providing for the disposition of certain weapons-grade plutonium by each party to the agreement. Additional quantities of plutonium may be brought under the agreement in the future. Congress has appropriated \$200 million for the Department to assist in implementing the Russian Federation's plutonium disposition program. Future appropriations, including funding from other nations, will be required to complete the program. In accordance with the provisions of Statement of Federal Financial Accounting Standards No. 5, *Accounting for Liabilities of the Federal Government*, the Department will recognize a liability for its share of the costs of the Russian disposition program as those costs are incurred by the program. Because no costs had been incurred to implement the program as of September 30, 2000, no liability is included in the accompanying financial statements.

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

	<u>FY 2000</u>	<u>FY 1999</u>
Contractor pension plans	\$ 396	\$ 321
Contractor postretirement benefits other than pensions	6,661	6,370
Contractor disability and life insurance plans	25	23
Federal Employees' Compensation Act	84	68
<b>Total pension and other actuarial liabilities</b>	<b>\$ 7,166</b>	<b>\$ 6,782</b>

FY 1999 amounts have been restated to conform with the FY 2000 presentation. Specifically, Federal Employees' Compensation Act liabilities have been reclassified from Other Liabilities in accordance with new Standard General Ledger guidance issued by Treasury (see also Note 12).

Most of the Department'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. The Department's cost under the contracts includes reimbursement of annual contractor contributions to these pension plans. The Department's contractors also sponsor postretirement benefits other than pensions (PRB) consisting of predominantly postretirement health care benefits. Since the Department approves the contractors' pension and postretirement benefit plans and is ultimately responsible for funding the plans, the responsibility for any related liabilities rests with the Department.

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

#### *Contractor Pension Plans*

The Department adopted SFAS No. 87, *Employers' Accounting for Pensions*, beginning in FY 1996 for contractor employees, for whom the Department has a continuing pension obligation. As of September 30, 2000, the Department has prepaid pension costs of \$1,651 million and accrued pension costs of \$384 million before minimum liability adjustment and \$396 million after minimum liability adjustment. The Department has a continuing obligation for a variety of contractor-sponsored pension plans (43 qualified and 8 nonqualified). In this regard, benefit formulas consist of final average pay (34 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 18 cover both union and non-union employees.

For qualified plans, the Department'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 Department's various 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 7.5 percent for FY 2000 and 6.5 percent for FY 1999 were used, the average long-term rate of return on assets was 8.31 percent in FY 2000 and 8.15 percent in FY 1999, and the average rate of compensation increase was 4.7 percent in FY 2000 and 4.6 percent in FY 1999 in determining the net periodic pension cost.

The weighted average discount rates used to determine the benefit obligations as of September 30, 2000 and 1999 were 8.0 percent and 7.5 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.

#### *Contractor Postretirement Benefits Other Than Pensions*

The Department follows SFAS No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions*, for contractor employees for whom the Department 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, 2000 and 1999, the Department has an accrued PRB liability of \$6,661 million and \$6,370 million, respectively. Generally, the PRB plans are unfunded, and the Department's funding policy is to fund on a pay-as-you-go basis. There are 6 contractors, however, that are prefunding benefits in part as permitted by law. The Department's contractors sponsor a variety of postretirement benefits other than pensions. Benefits consist of medical (39 contractors), dental (16 contractors), life insurance (23 contractors), and Medicare Part B premium reimbursement (4 contractors). Thirty-five of the contractors sponsor a traditional indemnity plan, a PPO, an HMO, or similar plan. Nineteen 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 Department's various 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 at all ages for a point of service plan, an HMO, or similar plan, grade from 8.6 percent in 1999 down to 5.5 percent in 2007 and later. The medical trend rates for under age 65 for a PPO, a traditional indemnity plan, or similar plan, grade from 9.5 percent in 1999 down to 5.5 percent in 2007 and later, and the medical trend rates for over age 64 grade from 9.05 percent in 1999 down to 5.5 percent in 2007 and later. The dental trend rates at all ages grade down from 6.85 percent in 1999 to 5.5 percent in 2007 and later.

The weighted average discount rates of 7.5 percent for FY 2000 and 6.5 percent for FY 1999 were used, and the average long-term rate of return on assets was 7.71 percent in FY 2000 and 7.36 percent in FY 1999 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 benefit obligation as of September 30, 2000 and 1999 were 8.0 percent and 7.5 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. The Department chose immediate recognition of the transition obligation existing at the beginning of FY 1994.

<i>(in millions)</i>	Pension Benefits		Other Postretirement Benefits	
	2000	1999	2000	1999
<b>Reconciliation of funded status</b>				
Accumulated benefit obligation	\$11,262	\$11,236		
Effect of future compensation increases	1,760	1,815		
Benefit obligation	\$13,022	\$13,051	\$5,507	\$4,746
Plan assets	23,202	21,245	123	122
Funded status	\$10,180	\$8,194	(\$5,384)	(\$4,624)
Unrecognized net (asset)/obligation at transition	(1,220)	(1,345)		
Unrecognized prior service cost	79	81	(115)	(129)
Unrecognized actuarial (gain)/loss	(7,772)	(6,278)	(1,160)	(1,617)
Net amount recognized	\$1,267	\$652	(\$6,659)	(\$6,370)
Minimum liability adjustment	(12)	(27)	-	-
Prepaid/(accrued) benefit cost after minimum liability	\$1,255	\$625	(\$6,659)	(\$6,370)
Total prepaid benefit cost after minimum liability	1,651	946	2	-
Total (accrued) benefit cost after minimum liability	(\$396)	(\$321)	(\$6,661)	(\$6,370)
<b>Components of net periodic costs</b>				
Service costs	\$415	\$482	\$162	\$164
Interest costs	994	953	415	341
Actual return on plan assets	(1,591)	(1,436)	(9)	(8)
Net amortization and deferral	(392)	(228)	(70)	(66)
Impact of curtailment or special termination benefits	12	5	(2)	(60)
Total net periodic costs	(\$562)	(\$224)	\$496	\$371
<b>Contributions and benefit payments</b>				
Employer contributions	\$58	\$61	\$205	\$181
Participant contributions	4	4	21	26
Benefit payments	765	745	226	207

## 15. Contingencies

*(in millions)*

	FY 2000	FY 1999
Spent nuclear fuel litigation	\$ 2,000	\$ 500
Other	30	2
<b>Total contingencies</b>	<b>\$ 2,030</b>	<b>\$ 502</b>

The Department 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. The Department 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 (Judgment Fund). The Judgment Fund is a permanent, indefinite appropriation available to pay judgments against the government for which the Department, unless required by law, is not required to reimburse from its appropriated funds. The following are significant contingencies:

- *Spent Nuclear Fuel Litigation* - In accordance with the Nuclear Waste Policy Act of 1982 (NWPA), the Department entered into contracts with more than 45 utilities, in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of spent nuclear fuel (SNF) by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, and does not anticipate there will be such a facility until at least 2010, the Department has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation has ensued as a result of this delay.

To date, that litigation has conclusively established that the Department's obligation to begin disposal of SNF is legally binding notwithstanding the lack of a facility to receive SNF. Currently, 14 utilities have filed suits in the Court of Federal Claims for breach of contract, in which they collectively seek \$5.82 billion. The industry is reported to estimate that damages for all utilities with which the Department has contracts will be at least \$50 billion. The Department, however, believes that the industry estimate is highly inflated and that, if the Department prevails on some key disputed issues, the actual total damages suffered by all utilities as a result of the delay in beginning SNF disposal is more likely to be in the range of between \$2 billion and \$3 billion, and has recorded a liability for the low end of that range.

Liability is certain in this matter. Other than ascertaining the actual amount of damages, the only outstanding issue is how that liability is to be satisfied. At this time, it is uncertain whether damages would be paid from the Judgment Fund, the Nuclear Waste Fund, or some other source. A ruling on this question has been requested from the Office of Legal Counsel at the Department of Justice.

- *Alleged Exposures to Radioactive and/or Toxic Substances* - A number of class action and/or multiple plaintiff tort suits have been filed against the Department's former contractors, and in some cases against individual managers and supervisors of the Department and its contractors, in which the plaintiffs seek damages for alleged exposures to radioactive and/or toxic substances as a result of the historic operations of the Department's nuclear facilities. The most significant of these cases arises out of past operations of the facilities at Rocky Flats, Colorado; Hanford, Washington; Paducah, Kentucky; Portsmouth (Piketon) and Mount, Ohio; and Brookhaven, New York. Collectively, in these cases, damages in excess of \$40 billion are sought.

These cases are being vigorously defended and, while in some cases proceedings are not far enough advanced to evaluate their likely outcome, in some of these cases substantially all of the plaintiffs' claims have been dismissed by the courts, and the likelihood of an unfavorable outcome is remote. Accordingly, the Department believes that, to the extent that there is a reasonable possibility of an unfavorable outcome in any of these cases, any liability that might ultimately be imposed would be significantly less than what the plaintiffs seek. No related liabilities are recorded in the Department's consolidated financial statements.

- *Uranium Enrichment Decontamination and Decommissioning Fund* - The Energy Policy Act of 1992 required the Department 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 (UE D&D) Fund, which is available to the Department to pay for cleaning up the 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 the lawsuits, Yankee Atomic Electric Co. v. United States, 112 F.3d 1569 (Fed. Cir. 1997), cert. denied, 524 U.S. 951 (1998), that focused primarily on the breach of contract claims. The Government has subsequently prevailed in the Court of Federal Claims in five other cases in which the utilities sought to distinguish their Takings and Due Process claims from those in Yankee Atomic. Those five cases are now on appeal to the Court of Appeals for the Federal Circuit and three of them have been argued and are pending decision by the Court.

Although the Department believes the assessments are lawful and the pending lawsuits should be dismissed as in the case it has already won, the utilities continue to strenuously contest the validity of the assessments. In an effort to evade the precedential effect of the Yankee Atomic decision in the Court of Federal Claims, 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 (SDNY). All of the cases have been consolidated in the SDNY for purposes of pretrial proceedings where the current focus is on the jurisdictional issue of whether the cases belong in the Court of

Federal Claims or the District Courts. The utilities and the government disagree whether the Court of Federal Claims can decide the utilities' restated Due Process claims and can provide the utilities with adequate relief should they prevail. The Government's appeal from the District Court's denial of the Government's motion to transfer the cases to the Court of Federal Claims is now pending decision in the United States Court of Appeals for the Federal Circuit.

The government is represented by the Department of Justice in all of the above referenced matters and continues to vigorously contest all challenges to the UE D&D Fund. As noted above, the cases in the United States Court of Federal Claims are subject to the favorable precedent in the previously decided 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. Final resolution of the UE D&D Fund litigation is not imminent. In Yankee Atomic the utility sought review by the Supreme Court, which was denied, and the Department anticipates that both the Government and utilities will exhaust all avenues for appeal in the remaining cases. Should the Government ultimately lose, the assessments could be declared unconstitutional or otherwise invalid. Future collections could be enjoined and the Government could be required to repay prior assessments, which commenced in fiscal year 1993, from either the UE D&D Fund or the Judgment Fund. (Through FY 2000, the utilities had paid \$1.5 billion into the D&D Fund, the Government had paid \$2.3 billion into the D&D Fund and the D&D Fund had spent \$1.9 billion. The utilities remained liable for \$1.3 billion in future assessments.) No related liabilities are recorded in the Department's consolidated financial statements.

- *Natural Resource Damage Claims* – the Department 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 the Department for natural resource injuries, primarily those remaining at the Department's facilities after cleanup. Although any estimate of such exposure is by necessity extremely speculative, the estimated range of the Department's NRD claim contingencies range from \$1.4 billion to \$2.5 billion.

Notwithstanding the potential for such claims, there neither are currently pending claims against the Department for injuries caused at its sites nor have there been any successful NRD claims against the Department. The Department's practice of addressing natural resource injuries during the remedy selection process should limit the exposure to potential NRD claims. The Department 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, the Department currently considers estimating its potential NRD liability speculative and any potential payment less than probable but reasonably possible. Therefore, the Department 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. The Department's liability, while reasonably possible, would be less than the amount claimed as remediation is already underway pursuant to a prior settlement agreement. Any such liability would be paid from the Judgment Fund.

**16. Unexpended Appropriations** *(in millions)*

	<u>FY 2000</u>	<u>FY 1999</u>
Unobligated		
(a) Available	\$ 2,470	\$ 2,077
(b) Unavailable		
Bonneville Power Administration	\$ -	\$ 313
Reimbursable work orders accepted in excess of apportionment authority	231	262
Other appropriations	522	490
Total unobligated - unavailable	<u>\$ 753</u>	<u>\$ 1,065</u>
Total unobligated	\$ 3,223	\$ 3,142
Undelivered orders	6,730	6,350
Unfilled customer orders	(2,000)	(1,717)
Advances	66	(242)
Apportioned not available	274	326
Less undelivered orders of power marketing administrations and non-appropriated funds	(2,114)	(1,690)
<b>Total unexpended appropriations</b>	<b><u>\$ 6,179</u></b>	<b><u>\$ 6,169</u></b>

**17. Liabilities Not Covered By Budgetary Resources** *(in millions)*

	<u>FY 2000</u>	<u>FY 1999</u>
Intragovernmental		
Debt (Note 9)	\$ 8,628	\$ 8,789
Appropriated capital owed to Treasury (Note 10)	1,943	2,069
Federal Employees' Compensation Act	18	8
Total intragovernmental	<u>\$ 10,589</u>	<u>\$ 10,866</u>
Debt (Note 9)	6,488	6,778
Deferred revenues (note 11)		
Nuclear Waste Fund	13,144	12,107
United States Enrichment Corporation	477	482
Environmental liabilities (Note 13)	232,822	229,056
Pension and other actuarial liabilities (Note 14)	7,166	6,782
Other liabilities (Note 12)		
Accrued annual leave for Federal employees	36	48
Compensation program for occupational illnesses	1,600	-
Environment, safety and health compliance activities	1,279	1,322
Other	54	41
Contingencies (Note 15)	2,030	502
<b>Total liabilities not covered by budgetary resources</b>	<b><u>\$ 275,685</u></b>	<b><u>\$ 267,984</u></b>

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

	<u>FY 2000</u>	<u>FY 1999</u>
Power technologies		
Program costs	\$ 301	\$ 323
Less earned revenues	<u>-</u>	<u>(2)</u>
	\$ 301	\$ 321
Building technology, state and community programs	290	255
Federal energy management program	27	23
Industrial technology	161	163
Transportation technology	262	277
Coal research and development	129	124
Petroleum research and development	55	43
Gas research and development	145	129
Clean coal technology		
Program costs	\$ 54	\$ 55
Less earned revenues	<u>(1)</u>	<u>-</u>
	53	55
Nuclear energy research initiative	20	6
Nuclear energy plant optimization program	1	-
Strategic Petroleum Reserve		
Program costs	\$ 210	\$ 318
Less earned revenues	<u>(15)</u>	<u>-</u>
	195	318
Naval Petroleum Reserves		
Program costs	\$ 26	\$ 38
Less earned revenues	<u>(10)</u>	<u>(10)</u>
	16	28
Power marketing administrations		
Program costs	\$ 3,524	\$ 3,076
Less earned revenues	<u>(3,789)</u>	<u>(3,226)</u>
	(265)	(150)
Energy Information Administration	74	72
Other energy resource activities	38	36
<b>Total net costs for energy resources</b>	<b>\$ 1,502</b>	<b>\$ 1,700</b>

FY 1999 amounts have been restated to conform with the FY 2000 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.

Nuclear Energy Research Initiative - support R&D to address the key issues affecting the future use of nuclear power. Through competitively selected, peer reviewed projects by universities, laboratories, and industry participants, research focuses on the development of advanced nuclear technologies including advanced (Generation IV) reactor systems, and power conversion cycles, proliferation resistant reactor and fuel concepts, advanced nuclear fuels, amelioration of nuclear waste, and fundamental science.

Nuclear Energy Plant Optimization Program (NEPO) - supports R&D to ensure that the current fleet of 104 licensed reactors operate with improved efficiency and are available for electricity production beyond the 2020-2025 time frame, as recommended by the President's Committee of Advisors on Science and Technology. NEPO R&D activities are identified based on input from electric utilities, national laboratories, the Nuclear Regulatory Commission, universities, and other stakeholders, and are cost shared with industry.

Strategic Petroleum Reserve - operation and maintenance of the nation'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.

Naval Petroleum Reserves - The Naval Petroleum and Oil Shale Reserves program (NPOSR) operates a Government-owned oil field in Wyoming (Naval Petroleum Reserve Numbered 3), and administers leases and monitors environmental compliance on Reserve land in California (Naval Petroleum Reserve Numbered 2). All proceeds from sales and royalties from leased acreage were returned to Treasury.

NOSRs -1 and -3, located in Colorado, were transferred to the Department of the Interior as mandated by the National Defense Authorization Act for FY 1998 (Public Law 105-85), although some environmental monitoring responsibility remains with the Department of Energy. During FY 2001, NOSR-2, an undeveloped property located in Utah, will be transferred to the Ute Indian Tribe in accordance with the Strom Thurmond National Defense Authorization Act of FY 2001 (P.L 106-398). The Act provides for the transfer of the majority of NOSR-2 to the Tribe, and the remainder to the Department of the Interior.

This action will leave only NPR-3 and the Rocky Mountain Oilfield Testing Center, co-located with NPR-3, as the only remaining NPOSR assets. The program anticipates the eventual return of these assets to the private sector or to local jurisdictions. NPOSR is also directing resources toward enhancing the Rocky Mountain Oilfield Testing Center for public and private research and development in order to increase the prospects for privatizing the facility.

In FY 1999, the assets of two of the oil shale reserves, NOSR-1 and NOSR-3, were written off in conjunction with the transfer of the reserves to the Department of the Interior. Discounting this \$10 million dollar write off, the NPRs reduced its FY 2000 operating costs by \$4 million by reducing certain operations and the number of employees through voluntary attrition and retirements.

**Power Marketing Administrations** - 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.

**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 the Department's 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.

## 19. Supporting Schedule of Net Cost for NNSA and Other National Security Activities

(in millions)

	FY 2000	FY 1999
Stockpile stewardship	\$ 1,818	\$ 1,789
Stockpile management	1,737	1,837
Secure transportation asset	436	73
Nonproliferation and verification research and development	224	239
Arms control and nonproliferation	269	253
Nuclear safeguards and security	119	105
Fissile materials disposition	130	110
International nuclear safety and HEU transparency	111	94
Naval reactors	693	638
Emergency management/preparedness	27	35
Emergency response	78	91
Uranium programs - downblend of HEU at Portsmouth	5	20
Worker and community transition	52	50
Intelligence	35	38
Counterintelligence	35	13
Cerro Grande fire activities	55	-
Russian origin uranium sales		
Cost of sales	-	5
Less earned revenues	-	(6)
	-	(1)
<b>Total net costs for NNSA and other national security activities</b>	<b>\$ 5,824</b>	<b>\$ 5,385</b>

FY 1999 amounts have been restated to conform with the FY 2000 presentation in order to reflect changes in the Department's budget structure. FY 1999 costs for Stockpile Management was adjusted to reclassify costs associated with nuclear materials transfers between the Department's sites that were incorrectly reported as transfers-out on the *Statement of Financing*.

**NNSA AND OTHER 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, retirement, and disposal of weapons; developing a new tritium production source; and maintaining the infrastructure at the production plants.

Secure Transportation Asset - provide safe, secure movement of nuclear weapons, special nuclear materials, selected non-nuclear weapons components, limited-life components, and any other Department materials requiring safe, secure transport to and from military locations, between nuclear weapons complex facilities and to other government locations within the continental United States.

Nonproliferation and Verification R&D - 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 providing intelligence support in assessing nuclear threats.

Arms Control & Nonproliferation - advance U.S. nonproliferation export control objectives to halt the spread of weapons of mass destruction, and support the implementation of bilateral and multilateral arms control and nonproliferation initiatives. Upgrade the security of Russian weapons-usable nuclear material at Russian Navy, commercial and weapons complex sites, and support the Russian Nuclear Cities Initiative.

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.

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

International Nuclear Safety and HEU Transparency - 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.

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

Emergency Response - administer and direct the programs of the Department's emergency response operations to ensure their availability and viability in responding to nuclear and radiological emergencies within the U.S. and abroad.

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. In October 2000, the Secretary of Energy announced that the Department would place the Portsmouth Gaseous Diffusion Plant in cold standby for five years, following the shutdown of that facility by USEC in June 2001.

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

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.

Cerro Grande Fire Activities - Supplemental appropriation to meet the emergency requirements for recovery activities necessitated by the fire near the Los Alamos National Laboratory in New Mexico. Fire recovery activities include the following: physical damage and destruction repair and risk mitigation; restoring services for utilities, electrical infrastructure and communications; emergency response costs including overtime pay, fire risk reduction and mitigation, and fire fighting equipment; and resumption of normal laboratory support and programmatic operations.

Russian Origin Uranium Sales - Section 3112(b) of the USEC Privatization Act of 1996 provided that the USEC, pursuant to the Russian HEU Agreement, transfer to the Department 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 the Department in December 1996, in accordance with a memorandum of agreement between USEC and the Department.

In accordance with the provisions of the Act, the Department must sell this uranium over a seven-year period. From FY 1997 through FY 1998, the Department 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 Department to other buyers. The USEC Privatization Act allows the Department 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 the Department'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, the Department should have no further obligation to purchase Russian uranium.

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

	<u>FY 2000</u>	<u>FY 1999</u>
Site project completion	\$ 1,181	\$ 1,156
Defense facilities closure projects	1,407	1,410
Post 2006 completion	2,606	2,524
Technology development	258	294
EM privatization	372	-
Uranium enrichment decontamination and decommissioning		
Program costs	\$ 288	\$ 240
Less earned revenues	<u>(164)</u>	<u>(124)</u>
	124	116
Civilian radioactive waste management		
Program costs	\$ 403	\$ 376
Contingent liability costs (See Note 15)	1,500	
Less earned revenues	<u>(295)</u>	<u>(179)</u>
	1,608	197
Civilian research and development	10	-
Termination costs	109	110
Uranium programs	38	95
Fast Flux Test Facility	42	36
Adjustment for operating expenditures related to remediation activities	(5,931)	(5,491)
<b>Total net cost for environmental quality</b>	<b>\$ 1,824</b>	<b>\$ 447</b>

FY 1999 amounts have been restated to conform with the FY 2000 presentation in order to reflect changes in the Department's budget structure. The FY 1999 legacy waste cleanup adjustment was restated to reflect a reclassification of an elimination entry associated with the Department's high-level waste and spent nuclear fuel liability that was incorrectly reported as a component of Financing Sources that Fund Costs of Prior Periods on the *Statement of Financing*.

**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 the Department 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 the Department'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 the Department recorded the environmental liabilities.

Environmental Management Privatization Initiatives - provides for the privatization of projects at the Oak Ridge and Idaho Operations Offices and allows the Department to reimburse contractors in the event the Government incurs liabilities for termination of privatization contracts.

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 the Department's 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 the Department 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 2000 and FY 1999 totaled \$707 million and \$673 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).

Civilian Research and Development - A future deployed Accelerator Transmutation of Waste (ATW) system has the potential to significantly reduce the radioactive toxicity and volume of civilian spent nuclear fuel (waste) and, at the same time, produce electricity to help off-set the cost of the overall

program. Additionally, ATW technology could avoid the need to build a second repository. Equally important, ATW research would support the exploration of many new frontiers of scientific and engineering research in areas such as materials, high energy physics data, high powered accelerators, advance reactor coolants, and the unique area of coupled subcritical reactors driven by accelerators. While the long-term goal of this research is to find new technologies to deal with nuclear waste, these new areas of nuclear science and engineering can open the door to advances into new reactor technologies and have the potential to enhance the proliferation resistance to nuclear power.

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 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 record of decision was published in calendar 2001.

Adjustment for operating expenditures related to remediation activities - current year operating expenditures for the remediation of contaminated facilities and wastes generated from past operations represent a reduction of the Department's environmental liabilities. These expenditures are excluded from current year program expenses since the expense was accrued in prior years when the Department recorded the environmental liabilities.

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

	<u>FY 2000</u>	<u>FY 1999</u>
Biological and environmental research	\$ 397	\$ 397
Fusion energy sciences	238	224
Basic energy sciences	665	670
High energy physics	675	677
Nuclear physics	379	327
Computational and technology research	137	144
Superconducting Super Collider	1	1
Small business innovative research/technology transfer	86	88
Technical information management program	11	10
University reactor fuel assistance & support	15	10
Advanced radioisotope power system	35	45
Isotope Production and Distribution		
Program costs	\$ 32	\$ 36
Less earned revenues	<u>(7)</u>	<u>(9)</u>
	25	27
Other science activities	2	4
<b>Total net cost for science</b>	<b>\$ 2,666</b>	<b>\$ 2,624</b>

FY 1999 amounts have been restated to conform with the FY 2000 presentation.

**SCIENCE 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 the Department'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 Department's 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 – research and development support for energy related technology that will significantly benefit U.S. businesses, including a pilot technology transfer program initiative.

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

University Reactor Fuel Assistance and Support - provides assistance to the Nation's university nuclear engineering programs including reactor fuel assistance and instrumentation and equipment upgrades for university research reactors.

Advanced Radioisotope Power System - development, demonstration, testing, and delivery of radioisotope power systems for special national security applications and NASA's space exploration missions.

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)***

	<u>FY 2000</u>	<u>FY 1999</u>
Inspector General	\$ 33	\$ 31
Facility safety	62	73
Health studies	98	91
Federal Energy Regulatory Commission		
Program costs	\$ 174	\$ 179
Less earned revenues	<u>(178)</u>	<u>(193)</u>
	(4)	(14)
Reimbursable work programs		
Program costs		
Intragovernmental	\$ 1,375	\$ 1,292
Public	<u>537</u>	<u>552</u>
Less earned revenues		
Intragovernmental	\$(1,331)	\$ (1,254)
Public	<u>(522)</u>	<u>(546)</u>
	59	44
Technology transfer activities		
Program costs	\$ 86	\$ 86
Less earned revenues	<u>(85)</u>	<u>(89)</u>
	1	(3)
Other revenues and costs of services provided		
Program costs		
Intragovernmental	\$ 18	\$ 34
Public	29	27
Less earned revenues		
Intragovernmental	\$ (31)	\$ (42)
Public	<u>(37)</u>	<u>(35)</u>
	(21)	(16)
Other programs	<u>2</u>	<u>7</u>
<b>Total net costs for other programs</b>	<b>\$ 230</b>	<b>\$ 213</b>

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 the Department's operations.

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 Department-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 the Department's 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 the Department of Energy that regulates essential aspects of electric, natural gas and oil pipeline, and non-Federal hydropower industries. It ensures that the rates, terms and conditions of service for segments of the electric and natural gas and oil pipeline industries are just and reasonable, it authorizes the construction of natural gas pipeline facilities, and it ensures that hydropower licensing, administration, and safety actions are consistent with the public interest. 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 - The Department 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 the Department's direct mission, but part of the customer's mission, cooperative work is part of the Department's direct mission. Reimbursable work is financed by funds of Federal agencies ordering the work or by cash advances from non-Federal customers, and the Department receives

no appropriated funds for such work or services. Cooperative work, however, is financed by funds appropriated to the Department that may be used in a cooperative effort with one or more Federal or non-Federal participants. Authorities for the Department 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 Department of Energy 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.

The Department'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 the Department 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 the Department with the 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, the Department estimates revenue foregone for reimbursable and cooperative work activities for FY 2000 and FY 1999 of \$44 million and \$38 million, respectively.

Technology Transfer Program - The Department 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 the Department'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)***

	<u>FY 2000</u>	<u>FY 1999</u>
Change in unfunded environmental liability estimates (Note 13)	\$ 9,845	\$ 22,092
Change in unfunded safety and health liabilities (Note 12)	(43)	(372)
Compensation program for occupational illnesses (Note 12)	1,600	-
Other	(266)	2
<b>Total costs not assigned to programs</b>	<b>\$ 11,136</b>	<b>\$ 21,722</b>

Other costs not assigned to programs was reclassified to correct the net value of nuclear materials transferred to others that was incorrectly reported as cost.

This amount was restated as an FY 1999 Transfers-Out on the *Statement of Financing*.

**24. Prior Period Adjustments *(in millions)***

	<u>FY 2000</u>	<u>FY 1999</u>
Environmental liabilities	\$ (1)	\$ (28,485)
Nuclear Waste Fund	-	(226)
Write-down of legacy waste facilities and equipment	-	(1,774)
Other	110	143
<b>Total prior period adjustments</b>	<b>\$ 109</b>	<b>\$ (30,342)</b>

*Environmental liabilities*

In response to an audit finding by the Inspector General, the Department corrected its cost estimating techniques for establishing contingencies/uncertainties in FY 1999, 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*

The Department changed its capitalization practices related to environmental management processing facilities and equipment during FY 1995. The Department 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 identified additional facilities and equipment resulting in write-downs of capitalized property.

**25. Statement of Budgetary Resources** *(in millions)*

The FY 1999 amounts have been restated to conform with the FY 2000 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 Nuclear Waste Fund and Uranium Enrichment Decontamination and Decommissioning Fund budgetary authority to include \$749 million and \$376 million of receipts that are available for investments but are not available for obligations, respectively;
- Restatement of spending authority from offsetting collections and adjustments to eliminate the Department's Working Capital Fund receipt collections; and
- Restatement of obligated balance transferred, net to correct prior year error.

**26. Transfers In, (net)** *(in millions)*

	<u>FY 2000</u>	<u>FY 1999</u>
Transfers in		
Oil transferred from the Department of the Interior	\$ 561	\$ 96
Other capital assets transferred from other agencies	7	6
Subtotal	<u>\$ 568</u>	<u>\$ 102</u>
Transfers out		
Miscellaneous receipts returned to U.S. Treasury	(8)	(38)
Naval Petroleum Reserve receipts returned to U.S. Treasury	(10)	(6)
Capital assets transferred to other agencies	(29)	(47)
Subtotal	<u>\$ (47)</u>	<u>\$ (91)</u>
<b>Total transfers in, net</b>	<b>\$ 521</b>	<b>\$ 11</b>

The FY 1999 amounts have been restated to conform with the FY 2000 presentation. FERC revenues, which are returned to the U.S. Treasury, were reclassified from transfers-out and exchange revenues not in the budget to earned reimbursements collected and included as an adjustment to appropriations used on the *Statement of Changes in Net Position*.

*Oil Transferred from the Department of the Interior*

The Department has entered into a Royalty-In-Kind exchange arrangement with the Department of the Interior's Mineral Management Service to receive 28 million barrels of crude oil from Gulf of Mexico Federal offshore leases. The Department accrues the market value of this oil at the point of delivery to its contractors as an intragovernmental transfer. (See Note 8).

**27. Exchange Revenues Not in the Budget (in millions)**

	<u>FY 2000</u>	<u>FY 1999</u>
Nuclear Waste Fund	\$ (275)	\$ (161)
Decontamination and Decommissioning Fund	(164)	(123)
Power marketing administrations	(335)	(703)
Other	(17)	(3)
<b>Total exchange revenues not in the budget</b>	<b>\$ (791)</b>	<b>\$ (990)</b>

The FY 1999 amounts have been restated to conform with the FY 2000 presentation. FERC revenues, which are returned to the U.S. Treasury, were reclassified from transfers-out and exchange revenues not in the budget to earned reimbursements collected and

included as an adjustment to appropriations used. Power marketing revenues returned to the U.S. Treasury were reclassified to exchange revenues not in the budget from other resources that do not fund net cost of operations.

**28. Financing Sources Yet to Be Provided (in millions)**

	<u>FY 2000</u>	<u>FY 1999</u>
Change in unfunded environmental liability estimates (see note 13)	\$ 9,845	\$ 22,092
Change in unfunded safety and health liabilities (see note 12)	(43)	(372)
Change in unfunded actuarial liabilities and prepaid pension plan costs (Notes 8 and 14)	(321)	(193)
Change in Nuclear Waste Fund contingent liability (see Note 15)	1,500	-
Compensation program for occupational illnesses (Note 12)	1,600	-
Other unfunded liability changes	12	(46)
<b>Total financing sources yet to be provided</b>	<b>\$ 12,593</b>	<b>\$ 21,481</b>

**29. Custodial Activities**

	<u>FY 2000</u>	<u>FY 1999</u>
Cash Collections		
Power marketing administrations	\$ 364	\$ 537
Petroleum Pricing Violation Escrow Fund	65	60
Other	15	16
<b>Total cash collections for custodial activities</b>	<b>\$ 444</b>	<b>\$ 613</b>

*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 the Department.

*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 also distributes funds to the U.S. Treasury and to the States, Possessions and Territories of the United States.

# Consolidating Schedules

**Consolidating Schedules - Balance Sheets****As of September 30, 2000 and 1999****FY 2000**

<i>(in millions)</i>	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
<b>ASSETS</b>			
Intragovernmental			
Fund Balance with Treasury	\$50	\$1,040	\$10,384
Investments			12,748
Accounts Receivable, Net		45	1,900
Regulatory Assets		5,228	
Other Assets			21
Investments			263
Accounts Receivable, Net	4	354	4,116
Inventory, Net			
Strategic Petroleum & Northeast Home Heating Oil Reserves			15,307
Nuclear Materials			22,013
Other Inventory		75	406
General Property, Plant, and Equipment, Net	18	5,057	13,481
Regulatory Assets		7,105	
Other Assets		606	2,129
Total Assets	<u>\$72</u>	<u>\$19,510</u>	<u>\$82,768</u>
<b>LIABILITIES</b>			
Intragovernmental			
Accounts Payable	\$1	\$61	\$81
Debt		8,628	
Appropriated Capital Owed to Treasury		1,943	
Deferred Revenues			876
Other Liabilities	1	83	749
Accounts Payable	6	162	3,113
Debt		6,488	
Deferred Revenues	4	644	13,875
Environmental Liabilities			234,267
Pension and Other Actuarial Liabilities		48	7,118
Other Liabilities	40	60	4,893
Contingencies			2,030
Total Liabilities	<u>\$52</u>	<u>\$18,117</u>	<u>\$267,002</u>
<b>NET POSITION</b>			
Unexpended Appropriations	11	10	6,158
Cumulative Results of Operations	9	1,383	(190,392)
Total Net Position	<u>\$20</u>	<u>\$1,393</u>	<u>(\$184,234)</u>
Total Liabilities and Net Position	<u>\$72</u>	<u>\$19,510</u>	<u>\$82,768</u>

		FY 1999				
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated
	\$11,474	\$35	\$875	\$10,624		\$11,534
	12,748			10,460		10,460
(\$1,405)	540		13	1,991	(\$1,499)	505
	5,228		5,228			5,228
(15)	6			7	(1)	6
	263			263		263
	4,474	7	345	4,165		4,517
	15,307			15,143		15,143
	22,013			21,911		21,911
	481		84	424		508
	18,556	18	5,029	13,454		18,501
	7,105		7,706			7,706
	2,735		229	1,262		1,491
(\$1,420)	\$100,930	\$60	\$19,509	\$79,704	(\$1,500)	\$97,773
(\$10)	\$133	\$1	\$34	\$67	(\$13)	\$89
	8,628		8,789			8,789
	1,943		2,069			2,069
(850)	26		4	860	(835)	29
(560)	273		16	837	(652)	201
	3,281	6	232	2,816		3,054
	6,488		6,778			6,778
	14,523	7	473	12,863		13,343
	234,267			230,640		230,640
	7,166		37	6,745		6,782
	4,993	34	64	3,635		3,733
	2,030			502		502
(\$1,420)	\$283,751	\$48	\$18,496	\$258,965	(\$1,500)	\$276,009
	6,179	3	11	6,155		6,169
	(189,000)	9	1,002	(185,416)		(184,405)
	(\$182,821)	\$12	\$1,013	(\$179,261)		(\$178,236)
(\$1,420)	\$100,930	\$60	\$19,509	\$79,704	(\$1,500)	\$97,773

## Consolidating Schedules of Net Costs

For the Years Ended September 30, 2000 and 1999

<i>(in millions)</i>	FY 2000		
	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
<b>Costs</b>			
Energy Resources			
Program Costs		\$3,524	\$1,793
Earned Revenues		(3,789)	(26)
Net Cost of Energy Resources Programs		(\$265)	\$1,767
NNSA and Other National Security Activities			
Program Costs			5,824
Earned Revenues			
Net Cost of NNSA and Other National Security Activities			\$5,824
Environmental Quality			
Program Costs			2,703
Earned Revenues			(459)
Net Cost of Environmental Quality Programs			\$2,244
Science			
Program Costs			2,686
Earned Revenues			(7)
Net Cost of Science Programs			\$2,679
Other Programs			
Program Costs	174		2,322
Earned Revenues	(178)		(2,088)
Net Cost of Other Programs	(\$4)		\$234
Costs Not Assigned to Programs			\$11,043
Net Cost of Operations	(\$4)	(\$265)	\$23,791

		FY 1999				
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated
	\$5,317 (3,815)		\$3,076 (3,226)	\$1,862 (12)		\$4,938 (3,238)
	\$1,502		(\$150)	\$1,850		\$1,700
	5,824			5,391 (6)		5,391 (6)
	\$5,824			\$5,385		\$5,385
(420)	2,283 (459)			1,148 (303)	(398)	750 (303)
(\$420)	\$1,824			\$845	(\$398)	\$447
(13)	2,673 (7)			2,648 (9)	(15)	2,633 (9)
(\$13)	\$2,666			\$2,639	(\$15)	\$2,624
(82) 82	2,414 (2,184)	179 (193)		2,277 (2,050)	(84) 84	2,372 (2,159)
	\$230	(\$14)		\$227		\$213
\$93	\$11,136			\$21,851	(\$129)	\$21,722
(\$340)	\$23,182	(\$14)	(\$150)	\$32,797	(\$542)	\$32,091

## Consolidating Schedules of Changes in Net Position

For the Years Ended September 30, 2000 and 1999

FY 2000

<i>(in millions)</i>	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
Net Cost of Operations	\$4	\$265	(\$23,791)
Financing Sources (Other Than Exchange Revenues)			
Appropriations Used	(8)	5	17,898
Other Non-Exchange Revenues			10
Imputed Financing	7	6	59
Transfers-in			3,554
Transfers-out	(3)		(3,010)
Net Results of Operations	\$ -	\$276	(\$5,280)
Prior Period Adjustments		105	4
Net Change in Cumulative Results of Operations	\$ -	\$381	(\$5,276)
Unrealized Holding Gain (Loss) on Investments			300
Increase (Decrease) in Unexpended Appropriations	8	(1)	3
Change in Net Position	\$8	\$380	(\$4,973)
Net Position - Beginning of Period	12	1,013	(179,261)
Net Position - End of Period	\$20	\$1,393	(\$184,234)

## Consolidating Schedules of Budgetary Resources

For the Years Ended September 30, 2000 and 1999

FY 2000

<i>(in millions)</i>	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
<b>BUDGETARY RESOURCES</b>			
Budgetary Authority	\$3	\$515	\$19,858
Unobligated Balances - Beginning of Period	4	903	2,569
Unobligated Balances - Beginning of Period, Net of Transfers	175	3,416	2,387
Actual Recoveries of Prior Year Obligations			61
Authority Not Available		(294)	(2,009)
Total Budgetary Resources	\$182	\$4,540	\$22,866
<b>STATUS OF BUDGETARY RESOURCES</b>			
Obligations Incurred	\$175	\$3,500	\$20,690
Unobligated Balances Available	7	1,040	1,423
Unobligated Balances Not Available			753
Total Status of Budgetary Resources	\$182	\$4,540	\$22,866
<b>OUTLAYS</b>			
Obligations Incurred	\$175	\$3,500	\$20,690
Less Spending Authority from Offsetting Collections and Actual Recoveries of Prior Year Obligations	(175)	(3,416)	(2,448)
Obligated Balance, Net - Beginning of Period	20	237	7,644
Less Obligated balance, Net - End of Period	(25)	(262)	(8,033)
Total Outlays	(\$5)	\$59	\$17,853

		FY 1999						
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated		
\$340	\$ (23,182)	\$14	\$150	(\$32,797)	\$542	(\$32,091)		
	-					-		
(320)	17,575	2	14	17,771	(521)	17,266		
	10							
	72	8	5	62		75		
(2,986)	568			2,283	(2,181)	102		
2,966	(47)	(25)	(2)	(2,224)	2,160	(91)		
\$ -	(\$5,004)	(\$1)	\$167	(\$14,905)	\$ -	(\$14,739)		
	109	(4)	44	(30,382)		(30,342)		
\$ -	(\$4,895)	(\$5)	\$211	(\$45,287)	\$ -	(\$45,081)		
	300			(1,247)		(1,247)		
	10	(2)	(8)	430		420		
\$ -	(\$4,585)	(\$7)	\$203	(\$46,104)	\$ -	(\$45,908)		
	(178,236)	19	810	(133,157)		(132,328)		
\$ -	(\$182,821)	\$12	\$1,013	(\$179,261)	\$ -	(\$178,236)		

		FY 1999						
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated		
(\$420)	\$19,956	\$170	\$500	19,412	(\$398)	\$19,684		
	3,476	3	523	2,192		2,718		
(\$105)	5,873		2,816	2,094	(104)	4,806		
	61		3	18		21		
	(2,303)		(166)	(1,449)		(1,615)		
(\$525)	\$27,063	\$173	\$3,676	\$22,266	(\$502)	\$25,613		
(\$525)	\$23,840	\$169	\$2,773	20,031	(\$502)	\$22,471		
	2,470	4	591	1,482		2,077		
	753		312	753		1,065		
(\$525)	\$27,063	\$173	\$3,676	\$22,266	(\$502)	\$25,613		
(\$525)	\$23,840	\$169	\$2,773	20,031	(\$502)	\$22,471		
105	(5,934)		(2,819)	(2,112)	104	(4,827)		
	7,901	21	345	7,709		8,075		
	(8,320)	(20)	(237)	(7,644)		(7,901)		
(\$420)	\$17,487	\$170	\$62	\$17,984	(\$398)	\$17,818		

## Consolidating Schedules of Financing

For the Years Ended September 30, 2000 and 1999

FY 2000

<i>(in millions)</i>	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
<b>OBLIGATIONS AND NONBUDGETARY RESOURCES</b>			
Obligations Incurred	\$175	\$3,500	\$20,690
Less Spending Authority from Offsetting Collections and Adjustments			
Earned Reimbursements			
Collected	(175)	(3,302)	(2,130)
Receivable from Federal Sources		(115)	12
Change in Unfilled Orders (Decreases) Increases	1	1	(257)
Recoveries of Prior-Year Obligations			(61)
Financing Imputed for Cost Subsidies	7	6	59
Transfers - In, Net	(3)		544
Exchange Revenues Not In the Budget	(4)	(336)	(451)
Other	(3)		
Total Obligations as Adjusted, and Nonbudgetary Resources	<u>(\$2)</u>	<u>(\$246)</u>	<u>\$18,406</u>
<b>RESOURCES THAT DO NOT FUND NET COST OF OPERATIONS</b>			
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	(\$2)	\$12	(\$133)
Costs Capitalized on the Balance Sheet			
General Property, Plant, and Equipment	(3)	(134)	(1,540)
Purchases of Inventory		(20)	(973)
Financing Sources That Fund Costs of Prior Periods		4	(5,932)
Other		(108)	
Total Resources that Do Not Fund Net Cost of Operations	<u>(\$5)</u>	<u>(\$246)</u>	<u>(\$8,578)</u>
<b>COSTS THAT DO NOT REQUIRE RESOURCES</b>			
Depreciation and Amortization	\$3	\$93	\$992
Revaluation of Assets and Liabilities			206
Loss on Disposition of Assets		11	
Other		111	277
Total Costs that Do Not Require Resources	<u>\$3</u>	<u>\$215</u>	<u>\$1,475</u>
<b>FINANCING SOURCES YET TO BE PROVIDED</b>		<u>\$12</u>	<u>\$12,488</u>
<b>NET COST OF OPERATIONS</b>	<u>(\$4)</u>	<u>(\$265)</u>	<u>\$23,791</u>

		FY 1999						
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated		
(\$525)	\$23,840	\$169	\$2,773	\$20,031	(\$502)	\$22,471		
102	(5,505)	(168)	(2,779)	(2,153)	103	(4,997)		
	(103)		(9)	9				
3	(252)		(28)	(35)	1	(62)		
	(61)		(2)	(18)		(20)		
	72	8	5	62		75		
(20)	521	(25)	(2)	59	(21)	11		
	(791)		(703)	(287)		(990)		
	(3)	(3)				(3)		
(\$440)	\$17,718	(\$19)	(\$745)	\$17,668	(\$419)	\$16,485		
	(\$123)	\$4	\$25	(\$7)		\$22		
7	(1,670)	(2)	(292)	(1,571)	6	(1,859)		
	(993)		1	(588)		(587)		
	(5,928)			(5,526)		(5,526)		
	(108)		489			489		
\$7	(\$8,822)	\$2	\$223	(\$7,692)	\$6	(\$7,461)		
	\$1,088	\$3	\$275	\$1,099		\$1,377		
	206			(141)		(141)		
	11		1			1		
	388		94	255		349		
	\$1,693	\$3	\$370	\$1,213		\$1,586		
\$93	\$12,593		\$2	\$21,608	(\$129)	\$21,481		
(\$340)	\$23,182	(\$14)	(\$150)	\$32,797	(\$542)	\$32,091		

## Consolidating Schedules of Custodial Activities

For the Years Ended September 30, 2000 and 1999

**FY 2000**

<i>(in millions)</i>	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs
<b>SOURCES OF COLLECTIONS</b>			
Cash Collections			
Interest			\$28
Penalties and Fines			37
Other	\$15	\$364	
Net Collections	\$15	\$364	\$65
Accrual Adjustment			(38)
Total Revenue	\$15	\$364	\$27
<b>DISPOSITION OF REVENUE</b>			
Transferred to Others			
Department of the Treasury		(364)	(55)
Others	(15)		24
Increase (Decrease) in Amounts to be Transferred			4
Retained by DOE			
Net Custodial Activity	\$ -	\$ -	\$ -

		FY 1999				
Eliminations	Consolidated	Federal Energy Regulatory Commission	Power Marketing Administrations	All Other DOE Programs	Eliminations	Consolidated
	\$28			\$23		\$23
	37			38		38
	379	\$16	\$537	(1)		552
	\$444	\$16	\$537	\$60		\$613
	(38)			(22)		(22)
	\$406	\$16	\$537	\$38		\$591
	(419)		(537)			(537)
	9	(16)		(32)		(48)
	4			57		57
				(63)		(63)
	\$ -	\$ -	\$ -	\$ -		\$ -



# Required Supplementary Information

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

## Deferred Maintenance Required Supplementary Information

- Deferred Maintenance Information is a requirement under the Office of Management and Budget's Statement of Federal Financial Accounting Standards Number 6, *Accounting for Property, Plant and Equipment* and Statement of Federal Financial Accounting Standards Number 14, *Amendments to Deferred Maintenance* which 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.
- 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 operation condition standard is equal to a Facility Condition Index (FCI) of  $\leq 5$  percent.
- An amount of \$1,460 million of deferred maintenance was estimated to return the facilities to acceptable operating condition. The percentage of active buildings above acceptable operating condition is estimated at 85 percent.
- Pursuant to the cost/benefit considerations provided in Statement of Federal Financial Accounting Standards Number 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 \$2.1 million of deferred maintenance was estimated to return capital equipment assets to acceptable operating condition.



## Required Supplementary Stewardship Information for Research & Development (Dollars in Thousands)

	<u>FY 2000</u>	<u>FY 1999</u>	<u>FY 1998</u>
<b>BASIC</b>			
<b>Energy Resources</b>			
Power Technologies	\$27,104	\$17,189	\$26,969
Coal Research and Development	3,003	2,826	1,943
Power Marketing Administrations	3,000	3,000	3,016
Other Energy Resources Activities	<u>1,373</u>	<u>732</u>	<u>3,379</u>
<b>Total Energy Resources</b>	<u>34,480</u>	<u>23,747</u>	<u>35,307</u>
<b>National Nuclear Security</b>			
Nonproliferation and Verification Research and Development	<u>13,492</u>	<u>2,294</u>	<u>9,582</u>
<b>Total National Nuclear Security</b>	<u>13,492</u>	<u>2,294</u>	<u>9,582</u>
<b>Environmental Quality</b>			
Technology Development	<u>39,478</u>	<u>60,103</u>	<u>57,386</u>
<b>Total Environmental Quality</b>	<u>39,478</u>	<u>60,103</u>	<u>57,386</u>
<b>Science</b>			
Biological & Environmental Research	317,427	314,125	303,722
Fusion Energy Sciences	213,121	197,142	202,857
Basic Energy Sciences	609,900	585,284	571,788
High Energy Physics	527,720	548,658	494,312
Nuclear Physics	302,830	265,062	205,695
Computation & Technology Research	124,006	49,691	121,857
Superconducting Super Collider	---	8	4,379
Small Business Innovative Research/ Technology Transfer	---	83,816	90,186
Other Energy Research Activities	<u>1,045</u>	<u>1,886</u>	---
<b>Total Science</b>	<u>2,096,049</u>	<u>2,045,672</u>	<u>1,994,796</u>
<b>Total Basic</b>	<u>\$2,183,499</u>	<u>\$2,131,816</u>	<u>\$2,097,071</u>

## Required Supplementary Stewardship Information for Research & Development (Dollars in Thousands)

	<u>FY 2000</u>	<u>FY 1999</u>	<u>FY 1998</u>
<b>APPLIED</b>			
<b>Energy Resources</b>			
Power Technologies	\$97,217	\$140,133	\$112,086
Building Technology, State & Community Programs	18,312	25,300	4,021
Industrial Technology	27,021	---	29,280
Transportation Technology	65,487	58,892	51,803
Coal Research and Development	50,053	47,105	48,582
Petroleum Research and Development	17,504	13,354	22,989
Gas Research and Development	48,028	42,578	43,759
Power Marketing Administrations	10,470	10,470	10,470
Other Energy Resources Activities	4,383	4,790	5,380
<b>Total Energy Resources</b>	<u>338,475</u>	<u>342,622</u>	<u>328,370</u>
<b>National Nuclear Security</b>			
Stockpile Stewardship	1,126,296	1,085,516	985,968
Stockpile Management	86,808	55,544	36,709
Nonproliferation and Verification Research and Development	65,959	62,912	113,727
<b>Total National Nuclear Security</b>	<u>1,279,063</u>	<u>1,203,972</u>	<u>1,136,404</u>
<b>Environmental Quality</b>			
Technology Development	72,192	61,323	115,141
Civilian Radioactive Waste Management	58,662	59,006	62,108
<b>Total Environmental Quality</b>	<u>130,854</u>	<u>120,329</u>	<u>177,249</u>
<b>Science</b>			
Biological & Environmental Research	62,441	51,613	---
Computation & Technology Research	13,317	1,378	-4
University and Science Education	---	-7	3,409
<b>Total Science</b>	<u>75,758</u>	<u>52,984</u>	<u>3,405</u>
<b>Total Applied</b>	<u>\$1,824,150</u>	<u>\$1,719,907</u>	<u>\$1,645,428</u>

## Required Supplementary Stewardship Information for Research & Development (Dollars in Thousands)

	<u>FY 2000</u>	<u>FY 1999</u>	<u>FY 1998</u>
<b>DEVELOPMENT</b>			
<b>Energy Resources</b>			
Power Technologies	\$76,782	\$132,012	\$102,005
Building Technology, State & Community Programs	36,367	22,804	16,161
Industrial Technology	108,666	131,175	91,686
Transportation Technology	192,981	145,605	150,534
Coal Research and Development	47,050	44,278	46,639
Petroleum Research and Development	28,559	21,788	34,483
Gas Research and Development	69,113	61,271	65,638
Clean Coal Technology	---	---	84,795
Nuclear Energy Research Initiative	18,119	5,866	---
Nuclear Energy Plant Optimization Program	833	---	---
Power Marketing Administrations	9,640	11,600	17,144
Other Energy Resources Activities	5,650	6,849	8,982
<b>Total Energy Resources</b>	<u>593,760</u>	<u>583,248</u>	<u>618,067</u>
<b>National Nuclear Security</b>			
Stockpile Stewardship	497,618	463,390	410,294
Nonproliferation and Verification Research and Development	88,922	95,237	85,860
Naval Reactors	633,531	588,597	588,534
Intelligence	6,488	4,375	---
Fissile Materials Disposition	49,921	43,906	49,533
<b>Total National Nuclear Security</b>	<u>1,276,480</u>	<u>1,195,505</u>	<u>1,134,221</u>
<b>Environmental Quality</b>			
Technology Development	108,288	91,984	56,711
Termination Costs	---	81,937	---
Civilian R&D	7,629	---	---
Uranium Programs	364	1,401	5,880
<b>Total Environmental Quality</b>	<u>116,281</u>	<u>175,322</u>	<u>62,591</u>
<b>Science</b>			
Advanced Radioisotope Power System	29,703	40,433	27,931
<b>Total Science</b>	<u>29,703</u>	<u>40,433</u>	<u>27,931</u>
<b>Total Development</b>	<u>2,016,224</u>	<u>1,994,508</u>	<u>1,842,810</u>
<b>Total Research &amp; Development</b>	<u>\$6,023,873</u> ***	<u>\$5,846,231</u> ***	<u>\$5,585,309</u> ***

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In accordance with Statement of Federal Financial Accounting Standard Number 8, Supplementary Stewardship Reporting, Chapter 7 - Research & Development, the Department applied the requirements of Statement of Federal Financial Accounting Standard Number 4, Managerial Cost Accounting Standards for the Federal Government. As a result the full amount invested in research and development was \$6,810,217 in FY 2000, \$6,700,897 in FY 1999, and \$6,468,557 in FY 1998.

## Required Supplementary Stewardship Information for Research & Development (Dollars in Thousands)

### **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 *Applied & Development* - Activities conducted to support energy conservation and energy supply for the industry sector.

Nuclear Energy Plant Optimization Program *Development* - Activities carried out to address technical and regulatory barriers to continued safe and economic operation of existing nuclear power plants. Specifically, aging and plant efficiency improvements.

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

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.

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 Nuclear 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.

Nonproliferation & Verification R&D *Basic, Applied & Development* - Activities conducted 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.

Stockpile Management *Applied* - Research activities supporting the Enhanced Surveillance Program and the Advanced Design and Production Technologies Program.

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.

### **Environmental Quality**

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

Civilian R&D *Development* - Activities related to civilian research and development.

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

## Required Supplementary Stewardship Information for Research & Development (Dollars in Thousands)

### Science

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

Basic Energy Sciences 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 Physics 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.

## Intragovernmental Amounts

### Intragovernmental Assets:

Agency	Fund Balance with Treasury	Investments	Accounts Receivable	Regulatory Assets	Other
U.S. Treasury	\$ 11,474	\$ 12,748	\$ 132	\$ 5,228	\$ -
Defense Agencies	-	-	271	-	1
Tennessee Valley Authority	-	-	21	-	-
General Services Administration	-	-	17	-	-
Other	-	-	99	-	5
<b>Total intragovernmental assets</b>	<b>\$ 11,474</b>	<b>\$ 12,748</b>	<b>\$ 540</b>	<b>\$ 5,228</b>	<b>\$ 6</b>

### Intragovernmental Liabilities:

Agency	Accounts Payable	Debt	Appropriated Capital Owed to Treasury	Deferred Revenues	Other
U.S. Treasury	\$ 60	\$ 8,628	\$ 1,943	\$ -	\$ 129
Defense Agencies	21	-	-	7	106
Department of Agriculture	19	-	-	-	-
General Services Administration	7	-	-	-	-
Department of State	-	-	-	8	-
Office of Personnel Management	1	-	-	-	22
Other	25	-	-	11	16
<b>Total intragovernmental liabilities</b>	<b>\$ 133</b>	<b>\$ 8,628</b>	<b>\$ 1,943</b>	<b>\$ 26</b>	<b>\$ 273</b>

### Intragovernmental Earned Revenue and Related Costs:

Agency	Earned Revenue
Defense Agencies	\$ 1,007
U.S. Treasury	726
Department of Health & Human Resources	82
Other	297

<b>Total intragovernmental earned revenues</b>	<b>\$ 2,112</b>
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Budget Functional Classification	Gross Costs to Generate Revenues
Atomic Energy Defense	\$ 1,056
Energy Supply	357
Energy Information	7
General Science	5
<b>Total</b>	<b>\$ 1,425</b>

# **Audit Reports**



## Department of Energy

Washington, DC 20585

February 16, 2001

### MEMORANDUM FOR THE SECRETARY

FROM:   
Gregory H. Friedman  
Inspector General

SUBJECT: INFORMATION: Report on the Department of Energy's Consolidated Financial Statements

I am pleased to inform you that the Department's financial statements for Fiscal Year 2000 have received an unqualified audit opinion. This is the second year in a row that the Department has received such an opinion. The audit of the Department's statements was conducted pursuant to the Government Management and Reform Act of 1994. The objective of the Act is to improve financial practices in the Federal Government by issuing audited financial statements for each agency. The preparation of the statements is the responsibility of the Department, and the Office of Inspector General (OIG) is responsible for the audit.

This year, the OIG contracted with the accounting firm of KPMG LLP to conduct the audit. A copy of the report is attached. The accounting firm concluded that the financial statements present fairly, in all material respects, the Department's financial position as of September 30, 2000, and its net costs, changes in net position, budgetary resources, reconciliation of net costs to budgetary obligations and custodial activities for the year then ended. The OIG agrees with this opinion.

As part of this determination, the auditors considered the Department's internal control over financial reporting and tested the Department's compliance with certain provisions of applicable laws and regulations that could have a direct and material effect on the consolidated financial statements.

Three reportable weaknesses in the Department's system of internal controls were identified. These related to: (1) Performance Measurement Reporting; (2) Financial Management at the Western Area Power Administration (Western); and (3) Unclassified Information System Security. Each of these items represents a repeat finding from the prior year's audit report.

- Although the Department made improvements in reporting the results of its performance activities, the quality of certain measures was questionable. Specifically, performance goals, in many cases, were not output or outcome oriented; some were not meaningful or relevant or stated in objective or quantifiable terms. Additionally, costs were not clearly related to outcomes.



- For most of Fiscal Year 2000, Western's financial system did not generate timely, useful reports containing complete and accurate financial information. To compensate for the increased control risk, an intensive effort was required to ensure reliability of Western's financial information and account balances. As of December 2000, Western had made progress. This improvement allowed KPMG to consider this a reportable condition instead of a material internal control weakness as was reported last year by the OIG.
  
- In the area of Unclassified Information System Security, the Department has certain network vulnerabilities and general access control weaknesses. Full implementation of the Cyber Security Program throughout the Department should help ensure that Federal information standards are met, and that information systems are adequately protected against unauthorized access.

Significant progress was made in one area relating to the environmental liability estimate. The Department utilizes a parametric model to estimate the majority of the \$26 billion clean-up cost for active and surplus facilities. Most of the active facilities cost is associated with the clean-up of facilities in the National Nuclear Security Administration. This year, the Department improved the quality of input data for this estimate in response to a recommendation in our last year's report. Accordingly, this issue is no longer a reportable condition.

To ensure the quality of the audit, the OIG approved the scope of KPMG's assignment and monitored their work. We also reviewed the audit report and related working papers to ensure compliance with applicable auditing standards.

I would like to thank all elements of the Department for their courtesy and cooperation during the conduct of the audit.

Attachment

cc: Under Secretary for Nuclear Security/Administrator for Nuclear Security  
Chief Financial Officer



2001 M Street, N.W.  
Washington, D.C. 20038

## INDEPENDENT AUDITORS' REPORT

The Inspector General, U.S. Department of Energy:

We have audited the Fiscal Year 2000 consolidated financial statements of the U.S. Department of Energy (Department). The objective of our audit was to express an opinion on the fair presentation of the Department's consolidated financial statements. In connection with our audit, we also considered the Department's internal control over financial reporting and tested the Department's compliance with certain provisions of applicable laws and regulations that could have a direct and material effect on its consolidated financial statements.

### Summary

As stated in our opinion, we concluded that the Department's Fiscal Year 2000 consolidated financial statements are presented fairly, in all material respects, in conformity with accounting principles generally accepted in the United States of America.

The cost estimates supporting the Department's environmental remediation liability of \$234 billion, as of September 30, 2000, are based upon assumptions regarding future actions and decisions spanning several decades, many of which are beyond the Department's control. These matters are discussed in Note 13 to the consolidated financial statements.

Our consideration of internal control over financial reporting resulted in reportable conditions in the following three areas:

- Performance measurement reporting;
- Network vulnerabilities and access control weaknesses relating to unclassified computer information systems, and
- Financial management at Western Area Power Administration.

Our tests of compliance with certain provisions of laws and regulations disclosed no instances of noncompliance that would be reportable under *Government Auditing Standards*, issued by the U.S. General Accounting Office or Office of Management and Budget (OMB) audit guidance.

The following sections discuss our opinion on the Department's consolidated financial statements, our consideration of the Department's internal control over financial reporting, the results of our tests of the Department's compliance with certain provisions of laws and regulations, and management's and our responsibilities.



KPMG LLP KPMG LLP is a U.S. limited liability partnership in  
a member of KPMG International, a Swiss association.

## Independent Auditor's Report

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### Opinion on Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of the U.S. Department of Energy as of September 30, 2000, and the related consolidated statements of net cost, changes in net position, budgetary resources, financing, and custodial activities for the year then ended.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the U.S. Department of Energy as of September 30, 2000, and its net costs, changes in net position, budgetary resources, reconciliation of net costs to budgetary obligations, and custodial activities for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

As discussed in Note 13 to the consolidated financial statements, the cost estimates supporting the Department's environmental remediation liability of \$234 billion, as of September 30, 2000, are based upon assumptions regarding future actions and decisions spanning several decades, many of which are beyond the Department's control.

The accompanying consolidated financial statements of the Department as of and for the year ended September 30, 1999 were audited by other auditors whose report thereon, dated January 31, 2000, expressed an unqualified opinion on those statements.

The information in the Overview and Required Supplementary Information sections of the Department's *Fiscal Year 2000 Performance and Accountability Report* is not a required part of the consolidated financial statements but is supplementary information required by the Federal Accounting Standards Advisory Board or OMB Bulletin No. 97-01, *Form and Content of Agency Financial Statements*, as amended. We did not audit the information in the Overview and Required Supplementary Information sections and, accordingly, we express no opinion on it. We have applied certain limited procedures that consisted principally of inquiries of management regarding the methods of measurement and presentation of this information. We determined that the Department did not complete the intragovernmental balance reconciliations with its non-Department of Energy trading partners, as specified by the January 2000 technical amendment to OMB Bulletin No. 97-01, because certain trading partners did not respond timely to the Department's requests for confirmation.

Our audit was conducted for the purpose of forming an opinion on the Fiscal Year 2000 consolidated financial statements taken as a whole. The consolidating information on pages 93 to 103 is presented for purposes of additional analysis of the consolidated financial statements rather than to present the financial position, net costs, changes in net position, budgetary resources, reconciliation of net costs to budgetary obligations, and custodial activities of the Department's components individually. The consolidating information for Fiscal Year 2000 has been subjected to the auditing procedures applied in the audit of the Department's consolidated financial statements and, in our opinion, is fairly stated in all material respects in relation to the consolidated financial statements taken as a whole.

## Independent Auditor's Report

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### Internal Control over Financial Reporting

We noted certain matters involving the internal control over financial reporting and its operation that we consider to be reportable conditions under standards established by the American Institute of Certified Public Accountants (AICPA). However, none of the reportable conditions, identified below, are believed to be material weaknesses.

Our consideration of internal control over financial reporting for Fiscal Year 2000 would not necessarily disclose all matters that might be reportable conditions. Under standards issued by the AICPA, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal control over financial reporting 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 consolidated 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 consolidated 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. Because of inherent limitations in any internal control, misstatements due to error or fraud may occur and not be detected.

The objective of our audit was not to provide assurance on the Department's internal control over financial reporting. In addition, our procedures were not designed to provide assurance on internal control over Required Supplementary Stewardship Information or reported performance measures. Consequently, we do not provide an opinion on internal control over financial reporting, Required Supplementary Stewardship Information, or performance measures.

The following reportable conditions are described in more detail in Exhibit I:

- **Performance Measurement Reporting** – The OMB requires that performance measures, to be useful, be output and outcome oriented, meaningful and relevant, objective and quantifiable, and consistent with the measures developed in the strategic planning process. The Department has made some progress in improving its performance measurement reporting, but more remains to be done. The Department plans to continue improving its performance measures in response to feedback from OMB, the U.S. General Accounting Office, and the Congress.
- **Unclassified Information System Security** – We noted network vulnerabilities and access control weaknesses in the Department's unclassified computer information systems. Without adequate access and computer security controls, the integrity of essential financial management system data may be threatened.
- **Western Area Power Administration (Western)** – Throughout Fiscal Years 1999 and 2000, Western has been addressing operational deficiencies in its new financial management system, including problems with system functionality and performance, data accuracy,

## Independent Auditor's Report

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security, and reporting. Western's accounting personnel lack experience and training in the functionality of the new system and have not adequately developed formal reconciliation procedures that are effective in ensuring accurate and timely financial reporting.

Exhibit II presents the status of prior year audit findings.

We also noted other matters involving internal control over financial reporting and its operation that we have reported to Departmental management in a separate letter dated February 1, 2001.

### Compliance with Laws and Regulations

Our tests of compliance with certain provisions of laws and regulations, performed as part of obtaining reasonable assurance about whether the Fiscal Year 2000 consolidated financial statements are free of material misstatement, exclusive of those requirements referred to in the Federal Financial Management Improvement Act (FFMIA) of 1996, disclosed no instances of noncompliance that are required to be reported herein under *Government Auditing Standards* or OMB Bulletin No. 01-02. In addition, our tests of compliance with FFMIA Section 803(a) requirements disclosed no instances in which the Department's financial management systems did not substantially comply with the Federal financial management systems requirements, applicable Federal accounting standards, or the U.S. Government Standard General Ledger at the transaction level. However, providing an opinion on compliance with laws and regulations was not an objective of our audit and, accordingly, we do not express such an opinion.

### Responsibilities

**Management's Responsibility.** The Government Management Reform Act (GMRA) of 1994 requires Federal agencies to report annually to Congress on their financial status and any other information needed to fairly present the agencies' consolidated financial position and results of operations. To meet the GMRA reporting requirements, the Department prepares annual consolidated financial statements.

Management is responsible for:

- Preparing the consolidated financial statements in conformity with accounting principles generally accepted in the United States of America;
- Establishing and maintaining internal controls over financial reporting, and
- Complying with laws and regulations, including FFMIA.

In fulfilling this responsibility, estimates and judgments by management are required to assess the expected benefits and related costs of internal control policies.

## Independent Auditor's Report

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**Auditors' Responsibility.** Our responsibility is to express an opinion on the Fiscal Year 2000 consolidated financial statements of the Department based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and OMB Bulletin No. 01-02. Those standards and OMB Bulletin No. 01-02 require that we plan and perform the audit to obtain reasonable assurance that the consolidated financial statements are free of material misstatement.

An audit includes:

- Examining, on a test basis, evidence supporting the amounts and disclosures relating to the consolidated financial statements;
- Assessing the accounting principles used and significant estimates made by management, and
- Evaluating the overall consolidated financial statement presentation.

We believe that our audit provides a reasonable basis for our opinion.

In planning and performing our Fiscal Year 2000 audit, we considered the Department's internal control over financial reporting by obtaining an understanding of the Department's internal control, determining whether internal controls 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 consolidated financial statements. We limited our internal control testing to those controls necessary to achieve the objectives described in OMB Bulletin No. 01-02 and *Government Auditing Standards*. We did not test all internal controls as defined by the Federal Managers' Financial Integrity Act of 1982.

In addition, as required by OMB Bulletin No. 01-02, we considered the Department's internal control over Required Supplementary Stewardship Information by obtaining an understanding of the Department's internal control, determining whether these internal controls had been placed in operation, assessing control risk, and performing tests of controls.

As further required by OMB Bulletin No. 01-02, with respect to internal control related to performance measures determined by management to be key and reported in the Overview section of the Department's *Fiscal Year 2000 Performance and Accountability Report*, we obtained an understanding of the design of significant internal controls relating to the existence and completeness assertions.

As part of obtaining reasonable assurance about whether the Department's Fiscal Year 2000 consolidated financial statements are free of material misstatement, we performed tests of the Department's compliance with certain provisions of laws and regulations, noncompliance with which could have a direct and material effect on the determination of the consolidated financial statement amounts, and certain provisions of other laws and regulations specified in OMB Bulletin No. 01-02, including certain requirements referred to in the FFMIA. We

## **Independent Auditor's Report**

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limited our tests of compliance to the provisions described in the preceding sentence, and we did not test compliance with all laws and regulations applicable to the Department.

In accordance with the provisions of OMB Bulletin No. 01-02 and FFMIA, we performed tests of compliance with FFMIA section 803(a) requirements that indicate whether the Department's financial management systems substantially comply with Federal financial management systems requirements, applicable Federal accounting standards, and the U.S. Government Standard General Ledger at the transaction level.

**Distribution.** This report is intended solely for the information and use of the Department's management, the Department's Office of the Inspector General, OMB, and Congress, and is not intended to be and should not be used by anyone other than these specified parties.

KPMG LLP

February 1, 2001

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions**

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**Performance Measurement Reporting**

**Background:** Statement of Federal Financial Accounting Standards (SFFAS) No. 15, *Management's Discussion and Analysis*, requires Federal agencies to include, in documents presenting their financial statements, discussion and analysis of the financial statements and related information. This discussion should provide a clear and concise description of the reporting entity, its mission, activities, accomplishments, and overall financial condition and results. It should also include information on whether and how the mission of the reporting entity is being accomplished.

The Department presents performance measurement data and other information required by SFFAS No. 15, for each of its principal programs in the Overview section of its *Fiscal Year 2000 Performance and Accountability Report*. This performance measurement data is based primarily on information from the Department's *Strategic Plan* and the revised final *Annual Performance Plan* (also published as the Secretary's *Performance Agreement* with the President), which are prepared under the requirements of the Government Performance and Results Act of 1993.

Prior auditors of the Department's consolidated financial statements have observed that the usefulness of many programmatic performance measures presented in the Overview was limited. Management has generally concurred with the auditors' recommendations and agreed to improve the utility of performance information and its presentation. The Department has made some progress in resolving performance reporting issues, but more remains to be done.

**Finding 1: Performance Measurement Reporting**

The OMB requires that performance measures, to be useful, be output and outcome oriented, meaningful and relevant, objective and quantifiable, and consistent with the measures developed in the strategic planning process. Performance measures should also be described in terms understandable to the casual reader.

The Department has made some progress in providing a balanced collection of performance measures to help readers obtain a complete understanding of how the reported programs performed. However, the Department has not yet revised its performance measures to fully meet OMB's requirements. This is partly because the recommendations in the prior year audit report, as well as commentary on the Department's performance reporting by the U.S. General Accounting Office, were not issued until after the Secretary's Fiscal Year 2000 *Performance Agreement* with the President, which established the current measures, was finalized. Management has indicated that its planned Fiscal Year 2001 changes to the performance measurement reporting process will be responsive to the audit recommendations and will be more responsive to feedback the Department has obtained from OMB, the U.S. General Accounting Office, and the Congress.

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions, Continued**

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The Department's performance reporting for Fiscal Year 2000 contains the following deficiencies, many of which were noted in the Fiscal Year 1999 audit:

- Cost-effectiveness data relating to performance is not presented, except for the total net costs of each business line for the fiscal year.
- The quality of certain measures is questionable. Goals in many cases are not output or outcome oriented; some are not meaningful or relevant, or stated in objective or quantifiable terms. In addition, much of the performance measurement reporting is not easily understood by the casual reader.
- Information regarding the Federal Energy Regulatory Commission is not included.
- Goals and the related results are not consistently presented together, in the Overview.

These deficiencies limit the readers' ability to assess the Department's performance.

**Recommendation:**

We recommend that the Department continue to improve the development, presentation, and reporting of performance measures consistent with the Government Performance and Results Act, applicable OMB guidance, and Federal accounting standards. Making these improvements will require cooperation from all areas within the Department.

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions, Continued**

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**Unclassified Information System Security**

We noted network vulnerabilities and access control weaknesses in unclassified information systems.

Network Vulnerabilities

**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 mainframe environments with a closed architecture and limited access 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 2:** Network Vulnerabilities

Federal and Departmental directives require the establishment and maintenance of security over unclassified information systems, including financial management systems. Past audits identified significant weaknesses in selected systems and devices attached to the computer networks at the Department sites we reviewed. The Department has implemented corrective actions to improve network security at those sites we reviewed in prior years. However, we identified significant weaknesses at two sites we visited in Fiscal Year 2000. At these sites, we identified network vulnerabilities similar to those found at sites visited in previous years, including poor password management, unnecessary access to certain powerful computer services, weak configuration management, outdated software with known security problems, and firewall configuration problems. In addition, we identified inadequate network monitoring at one site that could allow unauthorized intrusion that would not be detected.

The identified weaknesses and vulnerabilities increase the risk that malicious destruction or alteration of data or the processing of unauthorized operations could occur at those two sites. Although these weaknesses and vulnerabilities could impact all unclassified systems, we identified compensating controls over financial system access, data comparison, and backup and recovery procedures that mitigate their potential effect on the integrity of the Department's financial systems.

**Recommendation:**

Due to security concerns, recommendations to address the issues discussed above will be included in a separate report to the Chief Information Officer. Those recommendations include system enhancements and upgrades needed to reduce network vulnerabilities.

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions, Continued**

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Access Control Weaknesses

**Background:** The Department has mandated compliance with several Federal information security directives and public laws in DOE Notice 205.1, *Unclassified Computer Security Program*, dated July 26, 1999. The program, also referred to as the “Cyber Security Program,” also establishes policies for the protection of unclassified information and information systems. Within this security framework, the Department operates the financial management system that forms the basis for preparing its consolidated financial statements.

**Finding 3:** Access Control Weaknesses

Information system controls for accounting applications and the resulting consolidated financial statements are specified in the Department's Cyber Security Program. The Program covers security requirements and information security controls needed to provide adequate access protection. However, at a number of locations, the Program has not been fully implemented. We noted weaknesses in security planning, including outdated risk assessments and security directives. In a few cases, documentation that the program had been implemented, such as a locally-developed implementation plan, does not exist. Actual security practices are also lacking in some instances. At one site, we noted vulnerabilities in the means to re-establish computer functions in the event a disaster occurs. Another site has not implemented important physical security safeguards, such as logging visitor access to the computer center. Without adequate access and computer security controls, the integrity of essential financial management system data may be threatened.

**Recommendation:**

Management should follow up on the implementation of its Cyber Security Program throughout the Department to ensure that the Federal information standards are met and that its information and information systems are adequately protected against unauthorized access.

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions, Continued**

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**Western Area Power Administration**

**Background:** The Western Area Power Administration (Western), a component of the Department, markets and transmits electric power and provides related services. Western implemented a new financial management system on November 2, 1998. Throughout Fiscal Years 1999 and 2000, Western has been addressing operational deficiencies in the system including problems with system functionality and performance, data accuracy, security, and reporting. As reported in the Department's Fiscal Year 1999 audit, components of Western's new financial system did not have common data elements; consistent controls over data entry, transaction processing, and reporting; or transaction entry procedures to preclude unnecessary duplication. Further, the system lacked adequate internal controls and system documentation to meet user needs.

**Finding 4:** Financial Management at Western

OMB Circular No. A-127, *Financial Management Systems*, requires Federal agencies to ensure that financial systems 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.

Throughout 1999 and for most of 2000, Western's system did not generate timely, useful reports that contained complete and accurate financial information. Thus, Western was unable to accurately track and report on budget execution and meet external reporting requirements, including the preparation of financial statements. For example, Western's separate Fiscal Year 1999 financial statement audit could not be completed until November 2000, and its Fiscal Year 2000 financial statements are not yet ready for separate audit.

There were several causes for Western's financial system problems. During the new system implementation, Western did not run the old financial system in parallel with the new system. Also, Western did not adequately plan, test, and document the new system, and its personnel did not receive adequate user training. Finally, Western made significant changes to the new system without having a disciplined change control process.

To compensate for the increased control risk created by these conditions, Western used alternative measures to verify the reliability of its financial information and account balances included in the Department's consolidated financial statements for Fiscal Years 1999 and 2000.

Although Western has made progress in improving its systems, certain conditions remain that expose Western to potential loss of data integrity, reporting inaccuracies, and operational inefficiencies.

**Independent Auditor's Report**  
**Exhibit I — Reportable Conditions, Continued**

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Specifically, control weaknesses continue to exist in the following areas:

- Methods of implementing changes to the production environment;
- Physical security of the data center;
- Administrative security and review of user access and rights;
- Network access security, and
- Lack of formalized plans or procedures for disaster recovery.

In addition, Western continues to experience difficulties in reconciling subsidiary ledgers to its general ledger. Such reconciliations should be routine in nature, and are standard operating procedure in most organizations. However, Western's personnel lack experience and training in the functionality of the new system, including an understanding of how data is captured and processed; what reports the system is capable of generating; and how these reports may be used to assist in reconciling data. Also, due to personnel constraints and competing priorities, Western has not adequately developed formal reconciliation procedures that are effective in ensuring accurate and timely financial reporting.

Subsequent to September 30, 2000, Western hired additional experienced and Federally-trained accounting personnel. This should strengthen Western's accounting department and mitigate some of the financial management concerns discussed above.

**Recommendations:**

We recommend that the Chief Financial Officer continue to monitor Western's implementation of its detailed corrective action plan, developed originally in 1999, and the additional recommendations, below.

We also recommend that Western's management:

- Review the adequacy of its overall financial management policies and procedures, including development of formal reconciliation procedures.
- Verify that reconciliations are prepared timely and properly.
- Ensure that its accounting department is staffed with sufficient and experienced personnel who meet the core competency requirements outlined for financial accountants in the Federal government's Joint Financial Management Improvement Program guidance.

**Independent Auditor's Report**  
**Exhibit II — Status of Prior Year Audit Findings**

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**Findings Reported in Fiscal Year 1999**  
**(parenthetical disclosure of year first reported)**

**Status at September 30, 2000**

**Material Weakness**

1. Western's New Financial Management System (1999)

Prior audit recommendations are partially implemented. Included in Exhibit I as a reportable condition focused on improving overall financial management at Western.

**Reportable Conditions**

2. Input Data for Active and Surplus Facilities Parametric Model (1999)
3. Network Vulnerabilities (1999)
4. Performance Measure Reporting (1997)

Prior audit recommendations are substantially implemented. No longer considered a reportable condition.

Improvements made, but still reported in Exhibit I as a reportable condition.

Improvements made, but still reported in Exhibit I as a reportable condition.



## Department of Energy

Washington, DC 20585

February 15, 2001

KPMG LLP  
2001 M Street, NW  
Washington, DC 20036

I am providing this letter in connection with your audit of the United States Department of Energy's (the Department) consolidated balance sheet as of September 30, 2000, and the related consolidated statements of net cost, changes in net position, budgetary resources, financing, and custodial activities for the year then ended. We have reviewed your Independent Auditors' Report and provide the following responses to your recommendations.

### **Finding 1: Performance Measurement Reporting**

#### *Auditors' Recommendation:*

The Department should continue to improve the development, presentation, and reporting of performance measures consistent with the Government Performance and Results Act, applicable OMB guidance, and Federal accounting standards. Making these improvements will require cooperation from all areas within the Department.

#### *Management's Response:*

The Chief Financial Officer generally concurs with the recommendation. The development of relevant, quantifiable performance measures is an evolving process, and is an area where all Departmental elements need to focus if improvements are to be made. Unfortunately, the scientific research and development nature of many of the Department's activities increases the level of difficulty of this undertaking. Similarly, while we acknowledge that improvements could be made to the Overview, presenting summary performance results in a manner easily understood by the casual reader is more challenging because of the technical and scientific nature of the Department's work. Notwithstanding these considerations, we are committed to improving the reporting of the Department's performance results.

### **Finding 2: Network Vulnerabilities**

#### *Auditors' Recommendation:*

Due to security concerns, recommendations to address the issues discussed above will be included in a separate report to the Chief Information Officer. Those recommendations include system enhancements and upgrades needed to reduce network vulnerabilities.

*Management's Response:*

Upon receipt of the separate report, the Chief Information Officer will take appropriate actions to address the recommendations.

**Finding 3: Access Control Weaknesses**

*Auditors' Recommendation:*

Management should follow up on the implementation of its Cyber Security Program throughout the Department, to ensure that the Federal information standards are met and that its information and information systems are adequately protected against unauthorized access.

*Management's Response:*

The Chief Information Officer generally concurs with the recommendation. While we are not fully satisfied with the protection of our information assets at all of our sites, we recognize that there has been tremendous improvement since the Secretary of Energy announced sweeping reforms in the Spring of 1999. As a result of these changes, the Department developed and documented a multi-level management and oversight process for cyber security. The Office of the Chief Information Officer is intent on maintaining the current cyber security program and is sufficiently proactive to meet future challenges. The Department is continuing to develop a formal, comprehensive cyber security management program that integrates risk management processes for ensuring confidentiality, integrity, and availability of the Department's critical information assets.

On July 26, 1999, the Department issued DOE Notice 205.1, Unclassified Cyber Security Program, that set forth the requirements and responsibilities for protecting all unclassified DOE information and information systems. Each Departmental organization is required to document its Cyber Security Program in a Cyber Security Program Plan (CSPP) and update it at least every two years. DOE Notice 205.1 requires each organization to address 13 different elements in the organization's CSPP, including cyber security controls; cyber boundary protection; and operational threat, risk and vulnerability assessment processes. These CSPP elements closely align with the five risk management principles outlined in the General Accounting Office's May 1998 Executive Guide Information Security Management: Learning From Leading Organizations (GAO/AIMD-98-68).

In addition, the Department has adopted a multi-level management oversight process for cyber security. The Department's Office of Independent Oversight and Performance Assurance evaluates line management implementation of Departmental security policy. This Office maintains a robust vulnerability and penetration testing capability and conducts a full schedule of comprehensive assessments that include both performance testing and programmatic evaluations. Moreover, the Office of the Inspector General and the Office of Counterintelligence also conduct cyber security reviews for specific missions and line organizations. The Department is also beginning a continuous three-year peer review process cycle, in accordance with DOE Notice 205.1.

To ensure that its policies and procedures are current and effective, the Department is integrating cyber security into management and work practices across the DOE complex using the approach developed in the Department's integrated safety management program. This effort will include developing and staffing any necessary new policies, orders, manuals, and other guidance to support integrated cyber security management and to establish the roles and responsibilities for cyber security across the Department. Such policy and guidance includes establishing a central cyber security management focal point, establishing line management responsibility for cyber security, and clarifying any current ambiguous lines of authority.

**Finding 4: Financial Management at Western**

*Auditors' Recommendation:*

The Chief Financial Officer should continue to monitor Western's implementation of its detailed corrective action plan, developed originally in 1999, and the additional recommendations below.

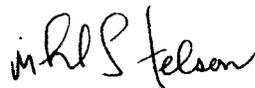
In addition, Western's management should:

- ◆ Review the adequacy of its overall financial management policies and procedures, including the development of formal reconciliation procedures.
- ◆ Verify that reconciliations are prepared timely and properly.
- ◆ Ensure that its accounting department is staffed with sufficient and experienced personnel who meet the core competency requirements outlined for financial accountants in the Federal government's Joint Financial Management Improvement Program guidance.

*Management's Response:*

The Chief Financial Officer generally concurs with these recommendations. As noted in your report, although Western has made progress in improving its systems, certain conditions still need to be addressed. The Chief Financial Officer will continue to monitor Western's implementation of its detailed corrective action plan. Furthermore, we will oversee Western management's implementation of the three recommendations directed to Western.

Sincerely,



Michael L. Telson  
Chief Financial Officer

# **Appendices**

# Detailed Performance Results

The Government Performance and Results Act (GPRA) of 1993 requires Federal agencies to report performance results annually. A summary of DOE's FY 2000 performance results is contained in the Overview section of this report. The following pages contain detailed information on the results achieved for all performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President. A cross-walk from the presentation of performance measures and indicators as presented in the Agreement to their organization by Decision Unit is provided here.

## Organization of Detailed Performance Results

The detailed performance measures in this section are organized differently from the discussion of performance in the Overview. The description of the Department's performance in the overview is organized around the strategic structure of the Department's work, i.e., by business lines and, within each business line, by objectives. The detailed performance results in this section are also organized around the business lines, but they are then also shown by the financial decision units used in the budget. The budget Decision Units are nearly identical to the program elements of the financial statement footnotes for the net costs for each business line. The reason for the difference in the organizations overview and the details is that the overview is intended to be readable from beginning to end, describing how the Department is accomplishing its mission. The detailed performance results are intended as reference material addressing what each program delivered for its net costs. To facilitate the linkage, tables are provided showing the relationship between the strategic structure of the Department's work and the financial organization of the performance results.

## Overall Comparison of Actual Performance to Projected Performance

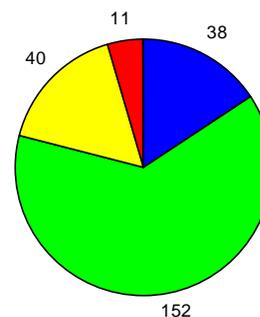
For each performance measure or indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

"Exceeded Goal"	means the results were <i>significantly</i> more than planned.
"Met Goal"	means the results <i>met the target</i> performance level or were slightly more than the target but not significantly more.
"Nearly Met Goal"	means the performance was less than the target level but <i>not significantly less</i> .
"Below Expectations"	means the results were <i>significantly less</i> than the target.
"Unspecified"	means that the end of year results were not available at the time of printing.

When performance was "Below Expectations," a "Plan of Action" is included after the assessment. In some cases where the performance was assessed as "Nearly Met Goal," a "Plan of Action" is also included.

The overall results for the 241 measures and indicators for FY 2000 are:

Count	Percent	Assessment	
38	16%	Exceeded Goal	
152	62%	Met Goal	
40	17%	Nearly Met Goal	
11	5%	Below Expectations	
<u>0</u>	<u>0%</u>	Unspecified	
241	100%		



## Evolution of the FY 2000 Performance Goals

The FY 2000 performance goals were originally proposed in the Annual Performance Plan that was submitted with the FY 2000 budget in February 1999, nine months before the fiscal year began. The goals were revised at the beginning of the fiscal year based on Congressional action on the budget. Some goals were added, some deleted, and some changed based on events that accrued since they were originally proposed. The revised goals were published in the FY 2001 Annual Performance Plan the following February. These revised goals were also published separately as the Secretary's FY 2000 Performance Agreement with the President. The Agreement is the working document that was distributed to all DOE employees. The FY 2000 Agreement contained 241 performance measures arranged by the Departmental business line and strategic objective. The cross-walk identifies the evolution of the performance goals and relates them to their budget Decision Unit.

## Program Evaluations Conducted During FY 2000

GPRA defines program evaluation as *"an assessment, through objective measurement and systematic analysis, of the manner and extent to which Federal programs achieve intended objectives."* Program evaluation, therefore, covers a broad range of evaluative activities. At DOE, we group these evaluations into three major categories:

- (1) ***Measurement of progress against quantitative, results-oriented, performance goals over time:*** The Department has developed Annual Performance Agreements between the Secretary and the President each year since FY 1995. The performance goals in these agreements represent our most significant outputs and outcomes for the fiscal year. We track the results toward the goals during the year and report them once at mid-year and then at the end of year. We make these results publicly available on the World-Wide-Web. This report contains the detailed performance results and self-assessments for FY 1999 and FY 2000. Where our performance did not meet the goal for FY 2000, the plan of action to address the status is provided.
- (2) ***Reviews and Evaluations: Multi-discipline reviews, cross-program reviews, and management reviews to evaluate whether the programs and organizations are properly focused and are achieving their intended results:*** The major evaluations within each business line that the Department has conducted during FY 2000 are listed at the front of the discussion of detailed results for each business line. Through these evaluations, the Department is able to re-assess its programs and reorient them or apply additional resources in order to ensure that they achieved their intended objectives as part of the strategic planning process conducted in FY 2000.
- (3) ***Project reviews to ensure that activities are on schedule and that they will achieve their objectives within the level of resources allocated to the projects:*** The Department has conducted external, independent reviews and internal, independent reviews of nearly all projects involving the acquisition of capital assets or the environmental restoration of DOE facilities over the past two years. The purpose of these reviews has been to determine if the scope, underlying assumptions, cost and schedule baselines, and contingency provisions are valid and credible within budgetary and administrative constraints. There are many examples of first-rate facilities completed or under construction that have met, or are meeting their project objectives, on schedule, and within budget. The reviews also revealed that some of our projects have been poorly managed. In FY 1999, to correct these deficiencies, the Deputy Secretary instituted a Project Management Reform Initiative and established a strong corporate organization to strengthen the management of projects. The Department has developed an action plan geared to both the Deputy Secretary's initiative and to address findings in the National Research Council's 1999 report entitled, *Improving Project Management in DOE*. This plan is being aggressively implemented.

### Impact on FY 2001 Performance Plans

The performance plans for the current year, FY 2001, were impacted by actual performance during FY 2000, Congressional action on the proposed budget, and the Department's strategic planning. Performance goals, measures, indicators, and targets for FY 2001 were revised as the performance for FY 2000 was being collected. Where results were less than the goal for FY 2000, plans of action are presented with the detailed results. Revised performance measures for FY 2001 will be published with the FY 2002 budget request.

### Previously unreported results

In the FY 1999 Accountability Report, four performance measures were reported as "unspecified" although each had a discussion of the results. The status of these items is discussed below.

Decision Unit	DOE Office	Performance Reference	Status
Security and Emergency Operations	SO	NS3-3	The results in the FY 1999 report were complete and should have been assessed as "Met Goal."
Environmental Management	EM	EQ3-1	The results were discussed in FY 1999 report.
Environmental Management	EM	EQ4-1	The data is reported on a calendar year basis and was therefore "unspecified" in FY 1999. FY 1999 results were reported in FY 2000.
Departmental Administration	PO	ER4-1	Results in FY 1999 report were complete. The measure was not carried forward for FY 2000.

### Completeness and reliability of performance data

There are no material inadequacies in the completeness or reliability of the performance data. The performance data for FY 2000 is complete: there are no performance measures for which performance data is not provided. The reliability of the data is based on the Department's policy that the primary tool used at all levels to assess and evaluate results is self-assessment. The DOE program offices provided the performance information and concurred with this report.

### Contribution of non-Federal parties to the preparation of this report

Non-Federal parties did not participate in the development of this report. However, because the Department uses many contractors to perform its mission, much of the information provided came from contractors.

## Crosswalk of Performance Goals and DOE Budget Decision Units For Energy Resources

FY 2000 Goals*	Number of Measures for FY 2000 Goal	DOE Decision Unit	DOE Office	Page No.
<b>ER1 Reduce the vulnerability of the U.S. economy to disruptions in energy supplies.</b>				
ER1-1	2	Domestic Oil and Gas Supply RD&D	FE	A29
ER1-2	3	Petroleum Reserves	FE	A39
ER1-3	1	Departmental Administration & Hearing and Appeals	IA	A170
ER1-4	1	Clean Fuels RD&D	FE	A37
ER1-4	3	Transportation Sector	EE	A47
ER1-6	2	Departmental Administration & Hearing and Appeals	PO	A165
ER1-6	3	Power Marketing Administrations	PMA	A52
<b>ER2 Ensure that a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.</b>				
ER2-1	1	Departmental Administration & Hearing and Appeals	PO	A166
ER2-2	1	Domestic Oil and Gas Supply RD&D	FE	A30
ER2-3	1	Energy Management	EE	A43
ER2-3	7	Solar and Renewable Energy	EE	A11
ER2-4	1	Departmental Administration & Hearing and Appeals	IA	A171
ER2-4	6	High Efficiency, No/Low Emissions Power Systems R&D	FE	A33
ER2-7	2	Nuclear Energy R&D	NE	A15
ER2-8	2	Nuclear Energy R&D	NE	A16
ER2-9	1	Industry Sector	EE	A45
<b>ER 3 Increase the efficiency and productivity of energy use, while limiting environmental impacts.</b>				
ER3-1	1	Transportation Sector	EE	A48
ER3-2	3	Industry Sector	EE	A45
ER3-3	5	Building Technology, State and Community Programs	EE	A41
ER3-3	1	Energy Management	EE	A43
<b>ER4 Support U.S. energy, environmental, and economic interests in global markets.</b>				
ER4-1	3	Departmental Administration & Hearing and Appeals	PO	A167
ER4-2	1	Departmental Administration & Hearing and Appeals	IA	A172
<b>ER5 Carry out information collection, analysis, and research that will facilitate development of informed positions on long-term energy supply and use alternatives.</b>				
ER5-1	2	Energy Information Administration	EI	A49
ER5-1	1	Solar and Renewable Energy	EE	A13
ER5-2	1	Domestic Oil and Gas Supply RD&D	FE	A31
ER5-2	1	High Efficiency, No/Low Emissions Power Systems R&D	FE	A36
ER5-2	1	Solar and Renewable Energy	EE	A13

\*Since the 1997 Strategic Plan, goals have been combined: ER1-5 with ER1-4 and ER2-5 and ER2-6 with ER2-4.

## Crosswalk of Performance Goals and DOE Budget Decision Units For National Nuclear Security

FY 2000 Goals*	Number of Measures for FY 2000 Goal	DOE Decision Unit	DOE Office	Page No.
<b>NS1 Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.</b>				
NS1-1	3	Defense Programs	DP	A55
NS1-4	1	Defense Programs	DP	A57
<b>NS2 Replace nuclear testing with a Stockpile Stewardship Program.</b>				
NS2-1	1	Defense Programs	DP	A58
NS2-2	2	Defense Programs	DP	A59
NS2-3	1	Defense Programs	DP	A61
<b>NS3 Ensure the vitality of DOE's national security enterprise.</b>				
NS3-1	2	Defense Programs	DP	A61
NS3-3	2	Intelligence and Counterintelligence	IN&CN	A85
NS3-3	13	Security and Emergency Operations	SO	A90
NS3-5	1	Defense Programs	DP	A63
NS3-5	2	Security and Emergency Operations	SO	A95
NS3-6	3	Worker and Community Transition	WT	A87
<b>NS4 Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.</b>				
NS4-1	1	Defense Programs	DP	A65
NS4-2	5	Fissile Materials Disposition	NN	A81
NS4-2	6	Highly Enriched Uranium Transparency Implementation	NN	A79
<b>NS5 Continue leadership in policy support and technology development for international arms control and nonproliferation efforts.</b>				
NS5-1	5	Arms Control and Nonproliferation	NN	A67
NS5-2	8	Arms Control and Nonproliferation	NN	A69
NS5-3	7	Nonproliferation and Verification R&D	NN	A73
<b>NS6 Meet national security requirements for naval propulsion and for other advanced nuclear power systems.</b>				
NS6-1	3	Naval Reactors	NR	A83
<b>NS7 Improve international nuclear safety.</b>				
NS7-1	5	International Nuclear Safety	NN	A75

\*Since the 1997 Strategic Plan, goals have been combined: NS1-2 and NS1-3 with NS1-1; NS3-2 with NS3-1; NS3-4 with NS3-3; NS6-2 with NS6-1; and NS7-2 and NS7-3 with NS7-1.

## Crosswalk of Performance Goals and DOE Budget Decision Units For Environmental Quality

FY 2000 Goals*	Number of Measures for FY 2000 Goal	DOE Decision Unit	DOE Office	Page No.
<b>EQ1 Reduce the most serious risks from the environmental legacy of the U.S. nuclear weapons complex first.</b>				
EQ1-1	2	Environmental Management	EM	A110
<b>EQ2 Clean up as many as possible of the Department's 44 remaining contaminated geographic sites by 2006.</b>				
EQ2-1	6	Environmental Management	EM	A111
EQ2-4	3	Environmental Management	EM	A112
EQ2-4	1	Fast Flux Test Facility	NE	A21
EQ2-4	1	Uranium Programs	NE	A27
EQ2-4	3	Termination Costs	NE	A23
<b>EQ3 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.</b>				
EQ3-1	5	Environmental Management	EM	A113
<b>EQ4 Prevent future pollution.</b>				
EQ4-1	3	Environmental Management	EM	A115
<b>EQ5 Dispose of high level radioactive waste and spent nuclear fuel in accordance with the Nuclear Waste Policy Act as amended.</b>				
EQ5-1	3	Civilian Radioactive Waste Management	RW	A119
<b>EQ7 Maximize the beneficial reuse of land and effectively control risks from residual contamination.</b>				
EQ7-1	2	Environmental Management	EM	A116

\*Since the 1997 Strategic Plan, an objective and some goals have been combined: Objective EQ6 with Objective EQ2; EQ2-2 and EQ2-3 with EQ2-1; EQ3-2 with EQ3-1; and EQ7-2 with EQ7-1.

## Crosswalk of Performance Goals and DOE Budget Decision Units For Science

FY 2000 Goals*	Number of Measures for FY 2000 Goal	DOE Decision Unit	DOE Office	Page No.
<b>SC1 Develop the science that underlies DOE's long-term mission.</b>				
SC1-1	1	Fusion Energy Sciences	SC	A141
SC1-1	1	Biological and Environmental Research	SC	A127
SC1-1	3	Basic Energy Sciences	SC	A135
SC1-2	1	Fusion Energy Sciences	SC	A141
SC1-2	4	High Energy & Nuclear Physics	SC	A123
SC1-3	1	Basic Energy Sciences	SC	A136
SC1-3	1	Fusion Energy Sciences	SC	A142
SC1-4	1	High Energy & Nuclear Physics	SC	A125
SC1-4	3	Biological and Environmental Research	SC	A128
SC1-5	1	Fusion Energy Sciences	SC	A142
SC1-5	1	Biological and Environmental Research	SC	A130
SC1-6	1	Fusion Energy Sciences	SC	A142
SC1-6	1	Biological and Environmental Research	SC	A130
<b>SC2 Deliver leading-edge technologies that are critical to the DOE mission and the Nation.</b>				
SC2-1	1	Biological and Environmental Research	SC	A131
SC2-1	4	Isotope Support	NE	A25
SC2-1	2	Nuclear Energy R&D	NE	A17
SC2-1	2	Advanced Scientific Computing Research	SC	A137
SC2-2	2	Advanced Scientific Computing Research	SC	A138
<b>SC3 Improve the management of DOE's research enterprise to enhance the delivery of leading-edge science and technology at reduced costs.</b>				
SC3-1	1	Fusion Energy Sciences	SC	A143
SC3-1	1	Biological and Environmental Research	SC	A131
SC3-1	2	Basic Energy Sciences	SC	A136
SC3-3	3	Advanced Scientific Computing Research	SC	A139
<b>SC4 Assist in the government-wide effort to advance the Nation's science education and literacy.</b>				
SC4-1	2	Nuclear Energy R&D	NE	A18
SC4-1	2	Biological and Environmental Research	SC	A132

\*Since the 1997 Strategic Plan, goals have been combined: SC3-2 with SC3-1; SC3-4 with SC1-1; and SC4-2 with SC4-1.

## Crosswalk of Performance Goals and DOE Budget Decision Units For Corporate Management

FY 2000 Goals*	Number of Measures for FY 2000 Goal	DOE Decision Unit	DOE Office	Page No.
<b>CM1 Ensure the safety and health of the DOE workforce and members of the public, and the protection of the environment in all Departmental activities.</b>				
CM1-1	6	Environment, Safety and Health	EH	A147
CM1-1	1	Independent Oversight & Performance Assurance	OA	A105
CM1-3	1	Departmental Administration	MA	A153
<b>CM2 As a good neighbor and public partner, continually work with customers and stakeholders in an open, frank, and constructive manner.</b>				
CM2-1	2	Environmental Management	EM	A116
CM2-2	1	Departmental Administration	MA	A153
CM2-3	5	Security and Emergency Operations	SO	A99
<b>CM3 Use efficient and effective management systems and approaches to guide decision making, streamline and improve operations, align resources, and reduce costs.</b>				
CM3-1	3	Departmental Administration	CFO	A159
CM3-1	2	Departmental Administration	MA	A154
CM3-3	3	Departmental Administration	MA	A155
CM3-4	3	Departmental Administration	ED	A163
<b>CM4 Improve the Delivery of products and services through contract reform and the use of business-like management practices.</b>				
CM4-1	1	Departmental Administration	CFO	A160
CM4-1	4	Departmental Administration	MA	A157
CM4-2	4	Departmental Administration	CFO	A161
<b>CM5 Implement information systems so employees can perform their jobs efficiently and effectively.</b>				
CM5-1	2	Security and Emergency Operations	SO	A101
<b>CM6 Improve performance through evaluations, reviews, audits, and inspections.</b>				
CM6-1	5	Office of Inspector General	IG	A175

\*Since the 1997 Strategic Plan, goals have been combined: CM1-2 with CM1-1; CM1-4 completed; and CM3-2 with CM3-1.

## Energy Resources

**Strategic Goal for FY 2000:** *The Department of Energy and its partners promote secure, competitive, and environmentally responsible energy systems that serve the needs of the public.*

The following pages contain detailed information on the results achieved for performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President for the Energy Resources Business Line.

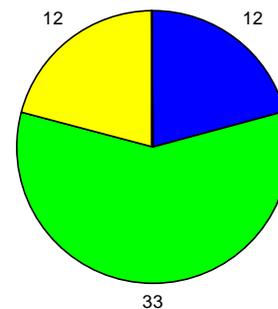
For each performance measure and indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

- "Exceeded Goal" means the results were *significantly* more than planned.
- "Met Goal" means the results *met the target* performance level or were slightly more than the target, but not significantly more.
- "Nearly Met Goal" means the performance was less than the target level but *not significantly less*.
- "Below Expectations" means the results were *significantly* less than the target.
- "Unspecified" means that the end of year results were not available at the time of printing.

When performance was less than "Met Goal," a "Plan of Action" is included after the assessment.

There were 57 performance measures in FY 2000 for this business line. Of these, 7 are funded by, and their details presented with, Corporate Management Decision Units of the Offices of Policy (PO) and International Affairs (IA) as shown in the cross-walk table. Similarly, there are performance measures funded, and their details presented here, that support other business lines. The overall results are:

Count	Percent	Assessment	
12	21%	Exceeded Goal	
33	58%	Met Goal	
12	21%	Nearly Met Goal	
0	0%	Below Expectations	
<u>0</u>	<u>0%</u>	Unspecified	
57	100%		



**Program Evaluations Conducted During FY 2000:**

GPRA defines program evaluation as “an assessment, through objective measurement and systematic analysis, of the manner and extent to which Federal programs achieve intended objectives.” Program evaluation, therefore, covers a broad range of evaluative activities. DOE’s three major categories of program evaluations are discussed in the introduction to the detailed performance results. The major evaluations within this business line that were conducted during FY 2000 are listed below. Through these evaluations, the Department was able to re-assess its programs and reorient them or apply additional resources in order to ensure that they achieved their intended objectives as part of the strategic planning process conducted in FY 2000.

- Feb. 2000 ***Energy Research and Development Portfolio:*** Volume 1 of a 4 volume R&D Portfolio provides an analysis of the complete set of R&D investments supporting Energy Resources. (<http://www.osti.gov/portfolio>)
- Sep. 2000 ***Powering the New Economy:*** The report summarizes DOE’s accomplishments, R&D programs, and ongoing energy challenges. (<http://www.policy.energy.gov>)
- Sep. 2000 ***Scenarios of U.S. Carbon Reductions:*** A peer-reviewed study conducted by an inter-laboratory working group, documents how the four key energy sector: buildings, transportation, industry, and electric utilities could respond to directed programs and policies to expand adoption of energy-efficiency and low-carbon technologies. ([http://www.ornl.gov/ORNL/Energy\\_Eff/labweb.htm](http://www.ornl.gov/ORNL/Energy_Eff/labweb.htm))

## DOE Decision Unit: Solar and Renewable Energy

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Solar and Renewable Energy*	EE	18	Power Technologies	301	321

\*Excludes transportation-related work which is included in the Decision Unit for Transportation Sector. Total net costs are shown here.

### Description:

The mission of the Solar and Renewable Resources Technologies program is to lead the national effort to develop renewable energy technologies and to accelerate their acceptance and use, nationally and internationally. Within the Office of Energy Efficiency and Renewable Energy (EERE), the program supports research and development of clean, reliable renewable energy technologies and cutting edge power delivery technologies that will improve the performance and efficiency of electric power systems. The EERE Office of Power Technologies (OPT) implements the program activities.

### DEVELOPING RENEWABLE DOMESTIC ENERGY (ER 2-3)

Develop renewable energy technologies and support policies capable of tripling non-hydroelectric renewable energy generating capacity by 2010.

#### *FY 2000 Targets and Results:*

M *Facilitate the installation of 20,000 solar energy systems in support of the Million Solar Roofs Initiative, bringing the total number of installed systems to 70,000.*

**Results:** Milestone met early, 70,000 total systems installed by March 30, 2000. By the end of the year we had exceeded 100,000 installations.

**Assessment:** Exceeded Goal

M *Develop a 13 percent efficient stable prototype thin-film photo-voltaic module.*

**Results:** Siemens Solar, Inc. has produced prototype copper indium diselenide (CIS) modules that were measured at the Department's National Renewable Energy Laboratory (NREL) at 12.9 percent efficiency—essentially meeting the goal. CIS is the most promising film for meeting the Program's cost goals. Achieving nearly 13 percent validates the feasibility of low-cost commercial modules that can become more cost competitive than today's crystalline silicon technologies.

**Assessment:** Nearly Met Goal

M *Demonstrate fully autonomous operation of a 10KW dish engine system for off-grid applications.*

**Results:** At mid-year was running on grid. By the end of the year OPT had completed 50 hours fault free test, signed agreements with Native American partners—January 2000, completed mod 2 system design June 2000; initiated Native American tribes' training-September 2000; All aspects of remote power management have been demonstrated.

**Assessment:** Met Goal

M *Complete three projects which will be co-firing with biomass on a regular basis.*

**Results:** Three projects were completed that permits biomass co-firing on a regular basis (subject to material availability). Northern Indiana Public Service Company (NIPSCO) Bailly Station has completed the co-firing along with petroleum coke to permit better economies and can co-fire with biomass. Bailly is a 160 MWe cyclone boiler and co-firing has taken place at percentages of up to 5 percent by heat input. TVA Colbert Station co-fires biomass regularly in a 182 MWe wall-fired pulverized coal unit at heat input of 5 percent. A third utility, the Greenridge Station of New York State Electric and Gas (NYSEG) (now AES) co-fires regularly. This project was initiated with DOE funds and produces up to 10 percent of electricity from wood (~10MW out of 108MW). A fourth utility, Allegheny Albright Station is preparing to co-fire within the next couple of months in a long-term commercial operation. This utility will make use of equipment that was originally installed at the Greenwich Power Utility (GPU) Seward Station (one of the initial target sites) which

was effectively shut-down in an economic decision independent of the biomass project.

**Assessment:** Met Goal

M *Complete two designs of advanced air-cooled condensers for geothermal applications.*

**Results:** In FY 2000 NREL developed improved designs for tube bundles, filed a patent for the design and began discussions with potential industry partners, including manufacturers to produce tubes and full heat exchangers for testing. The Idaho National Environmental and Engineering Laboratory (INEEL) has completed a design of finned condenser tubes and has begun laboratory testing of representative cross sections. A manufacturer who has joined the project as an industrial partner has tentatively agreed to provide prototype tubes for additional testing.

**Assessment:** Nearly Met Goal

**Plan of Action:** NREL plans to design an air-cooled condenser unit for a 1MW plant in FY 2001 and develop a test plan for it. INEEL will focus on developing information required to select the best possible design, bench-scale tests will be completed during FY 2001. Emphasis will be placed on collaboration with manufacturers to identify suitable methods to fabricate the selected design.

M *Install and begin testing of two proof-of-concept turbines under the Next Generation Turbine program leading to commercial availability of technology capable of producing electricity at 2-1/2 cents per kWh in a 15 mph wind resource by 2003.*

**Results:** Completed installation of first proof of concept turbine in March 2000, and second in May 2000. Several months of field testing was successfully completed, confirming performance of advanced technologies. Testing is continuing into FY 2001.

**Assessment:** Met Goal

M *Establish an Interagency Council and an Advisory Committee on biobased products and bioenergy. By April 30, 2000, develop a Strategic Plan for the development and use of biobased products and bioenergy as required by Executive Order 13134.*

**Results:** The Interagency Council on Biobased Products and Bioenergy was established in January 2000 with the first of the quarterly meetings on January 21, 2000. The Bioenergy Advisory Committee was approved on May 31, 2000 but never met. The Interagency Council and the Advisory Committee were both superseded by the Biomass R&D Act of 2000. From the Act, the Biomass Research and Development Technical Advisory Committee was replaced with the Biomass Technical Advisory

Committee which was established in October 2000. The Interagency Council on Biobased Products and Bioenergy was replaced with the Biomass R&D Board with a transparent transition from one to the other. The National Biobased Products and Bioenergy Coordination Office, established under the Executive Order, was kept as the coordination function among federal agencies and departments for biobased programs.

The Biomass R&D Board developed a strategic plan. The plan was approved as a final draft by the board in early December 2000. The Biomass Research and Development Technical Advisory Committee has since reviewed the strategic plan. It is scheduled for publication in March 2001.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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.

**Assessment:** Exceeded Goal

M *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

M *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

M *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

M *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

M *Establish a United States 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

## EXPANDING PUBLIC ACCESS TO ENERGY INFORMATION (ER 5-1)

Develop and expand public access to energy data, forecasts, analyses, and educational materials.

### *FY 2000 Targets and Results:*

M *Respond to 70,000 inquiries by individuals, small businesses, and state and local government through the Energy Efficiency and Renewable Energy Clearinghouse (EREC).*

**Result:** In FY 2000, our information performance grew consistent with the current shift toward in-

creased use of the Internet to satisfy information needs of individuals, small businesses, and state and local government. While EREC received nearly 50,000 inquiries, a 29 percent decrease from FY 1999, its information complement, the EREN Web site, received a 33 percent increase in page views per month—from 1,300,000 in October 1991 to 1,900,000 in September 2000. The demand components of this performance measure are outside the control of the program. Experience demonstrates a portion of clearinghouse inquiries are sensitive to promotion and active DOE promotion of the Clearinghouse was suspended due to funding cutbacks and increased focus on Internet performance to meet the needs of the energy public.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

No performance measures established for FY 1999.

## DEVELOPING INNOVATIVE OPTIONS FOR 21<sup>ST</sup> CENTURY ENERGY MARKETS (ER 5-2)

Carry out research and scenario analysis to help identify and understand options that could revolutionize 21<sup>st</sup> century energy markets.

### *FY 2000 Targets and Results:*

M *Demonstrate over 90 percent absorption of CO<sub>2</sub> in a sorbent enhanced reformer reactor for hydrogen production.*

**Results:** Quarterly technical report for Air Products and Chemical Cooperative Agreement. Experimental data from laboratory tests run in a process development unit in the second quarter of FY 2000 was presented to an independent peer review panel in May 2000. The data showed absorption of CO<sub>2</sub> exceeded 90 percent at design operating conditions.

**Assessment:** Exceeded Goal

### *FY 1999 Targets and Results:*

No performance measures established for FY 1999.



## DOE Decision Unit: Nuclear Energy R&D

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Nuclear Energy R&D	NE	18	Nuclear Energy Research Initiative	20	6
		18	Nuclear Energy Plant Optimization Program	1	-
		21	University Reactor Fuel Assistance & Support	15	10
		21	Advanced Radioisotope Power System	35	45

### Description:

The mission of the Nuclear Energy Research and Development program is to conduct advanced research and development in areas such as nuclear power and space power systems. In addition, this program supports nuclear engineering education and the enhancement of the Nation's nuclear science infrastructure.

### SUPPORTING RESEARCH TO IMPROVE EXISTING NUCLEAR POWER PLANTS (ER 2-7)

Support research to improve nuclear power plant reliability and availability, and increase the capacity factor of existing nuclear power plants from the 1996 average of 76 percent to 85 percent by 2010.

#### *FY 2000 Targets and Results:*

M *Implement a cooperative cost-shared R&D program by working with industry, universities, national laboratories, and the Nuclear Regulatory Commission, to address technical issues that could impact continued operation of current nuclear power plants.*

**Results:** The Department implemented the Nuclear Energy Plant Optimization (NEPO) program, a DOE/Electric Power Research Institute (EPRI) cooperative cost-shared R&D program to develop and apply new technologies to manage the long-term effects of plant aging and to improve the reliability, availability, and productivity of U.S. nuclear power plants, while maintaining a high level of safety.

An industry, government, university, and laboratory coordination committee prioritized and recommended 14 R&D projects, to be initiated in FY 2000. These recommendations were reviewed and endorsed by the Nuclear Energy Research Advisory Committee (NERAC).

A cooperative agreement with EPRI for executing some of the R&D was completed in May 2000. All tasks under the cooperative agreement were initiated.

The last of a series of program guidance letters to national laboratories for executing the remaining R&D was issued in August 2000.

**Assessment:** Met Goal

M *Issue the first update to the Joint DOE/EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants.*

**Results:** The final draft update of the Joint DOE-EPRI Strategic Research and Development Plan to Optimize U.S. Nuclear Power Plants was completed in September 2000. The following are the key events leading to issuance of the plan:

NERAC provided guidance for updating the plan in June 2000.

A stakeholder workshop to develop information for updating the plan was held in July 2000.

A draft plan was issued for broad public review with comments received in September 2000.

The plan was approved by the Principal Deputy Director, Office of Nuclear Energy, Science and Technology, on October 17, 2000.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

- M *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 EPRI signed the Cooperation in Light Water Reactor Research MOU on September 22, 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

## **MAINTAINING NUCLEAR POWER AS A VIABLE OPTION FOR THE FUTURE (ER 2-8)**

Maintain a viable nuclear option for the future through cooperative research development activities with the U.S. electric industry, national laboratories, and universities that will address key obstacles to nuclear power's acceptability now and in the future.

### ***FY 2000 Targets and Results:***

- M *Continue Nuclear Energy Research Initiative (NERI) research to improve the understanding of new reactor and fuel cycle concepts and nuclear waste management technologies, and begin to develop a preliminary feasibility assessment of the concepts and technologies.*

**Results:** In FY 1999, 46 NERI research awards were made in the areas of proliferation resistant reactor and fuel cycle concepts; new reactor designs with higher efficiency, low output and reduced cost; new technologies to manage nuclear waste; and fundamental nuclear science. The Department's Office of Nuclear Energy, Science and Technology performed individual assessments of the projects initiated in FY 1999 to determine their suitability for continuation and to gain a further understanding of research progress in order to begin assessing the feasibility of the various concepts. Forty-five of the 46 NERI projects initiated in FY 1999 were continued for their second year of research and one project was completed.

In addition to continuing the research projects initiated in FY 1999, the Department solicited additional research projects in FY 2000 in Generation IV advanced nuclear energy systems, proliferation resistant reactor and fuel cycle concepts, and fundamental nuclear science. In response, the Department received 126 proposals that underwent independent peer review and DOE programmatic review. Ten new projects were awarded – eight in Generation IV nuclear energy technology, one in proliferation resistant fuel technology, and one in fundamental science.

**Assessment:** Met Goal

M *Advance the state of scientific knowledge and technology to enable incorporation of improved proliferation resistance, safety, and economics in the potential future design and development of advanced reactor and nuclear fuel systems.*

**Results:** The research projects awarded in FY 1999 were continued in FY 2000 to advance the state of scientific knowledge and technology, to improve the economics, proliferation resistance, and safety of advanced nuclear reactors and fuel systems. The majority of these projects involve research being conducted over a three year period. Notable projects include:

- Secure, Transportable, Autonomous Light Water Reactor (Star-LWR)
- Encapsulated Fission Heat Source
- Direct Energy Conversion Fission Reactor
- Demand-driven Nuclear Energizer Module
- Hydrogen/Methane Fuel Generation Using Nuclear Power
- Development of Advanced Technologies to Reduce Design, Fabrication, and Construction Costs for Future Nuclear Power Plants
- Uranium-thorium Dioxide Fuels for Light Water Reactors
- Hexagonal Tight Lattice Boiling Water Reactor Fuel Design
- Extended Burn-up Light Water Reactor Fuel Matrix
- Composite Ceramic Clad and Ceramic Corrosion Protection for Zircaloy Clad
- Risk Informed Assessment of Regulatory and Design Requirements for Future Nuclear Power Plants

The Department awarded 10 new NERI projects in FY 2000 to improve the economics, proliferation resistance, and safety of advanced nuclear reactors and fuel systems. Key FY 2000 projects include:

- Design & Layout for Compact, Factory Produced, Transportable Generation IV Reactor Systems;
- An In-Core Power Deposition and Fuel Thermal Environmental Monitor for Long Lived Reactor Cores;
- Design & Construction of a Prototype Advanced On-line Fuel Burnup Monitoring System for Modular Pebble Bed Reactor;

- Optimization of Heterogeneous Schemes for Utilization of Thorium in PWRs to Enhance Proliferation Resistance and Reduce Waste;
- Isomer Research: Energy Release, Validation, Production, and Applications

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 included 20 universities, eight national laboratories, 16 industrial organizations and one government R&D agency. Awards went to 32 proposals that involved 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

## **DEVELOPING THE TECHNOLOGIES TO MEET DOE'S ENERGY, NATIONAL SECURITY, AND ENVIRONMENTAL GOALS (SC 2-1)**

Develop the technologies required to meet DOE's energy, national security, and environmental quality goals.

### ***FY 2000 Targets and Results:***

M *Complete bench scale demonstration of the process to recover Pu-238 scrap for reuse in power systems for future missions using radioisotope power systems.*

**Results:** The development and demonstration of a bench-scale Pu-238 scrap recovery process for reuse of scrap Pu-238 in radioisotope power systems for future missions was successfully completed to fully meet the goal. Meeting this goal is an important

factor in developing a full-scale Pu-238 scrap recovery process required to provide Pu-238 for radioisotope power systems for future national security and NASA space exploration missions.

**Assessment:** Met Goal

M *Execute industrial contract and initiate associated laboratory efforts to develop small Radioisotope Thermoelectric Generators (RTGs) for anticipated use on NASA's Europa Orbiter and Pluto/Kuiper missions planned for launch in 2003 and 2004.*

**Results:** A contract to develop a small RTG to support NASA's future missions was executed. However, NASA has since changed its mission plans by deferring the Pluto mission and requesting DOE to develop a Stirling Radioisotope Power System instead of small RTGs for potential use on a Europa Orbiter mission now planned for launch in 2006. NASA has also requested DOE to maintain the option of using a spare RTG and assembling a spare converter from the Cassini mission for use as backups for the Europa mission. Contracts to support NASA's request have been executed; thus, fully meeting the intent of the commitment.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

## **DEVELOPING AND PROMOTING TECHNOLOGIES AND PROGRAMS THAT DELIVER INFORMATION AND CONTRIBUTE TO LEARNING IN SCIENCE, MATH, ENGINEERING, AND TECHNOLOGY (SC 4-1)**

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.

### ***FY 2000 Targets and Results:***

M *Support U.S. universities' nuclear energy research and education capabilities by:*

- *Providing fresh fuel to all university reactors requiring this service;*
- *Providing funding for reactor upgrades and improvements to at least 23 universities;*
- *Partnering with 17 or more private companies to fund DOE/Industry Matching Grants Programs for universities;*
- *Increasing the funding for Reactor Sharing by 20 percent over FY 1998, enabling each of the 29 schools eligible for the program to improve the use of their reactors for teaching, training, and education within the surrounding community.*

**Results:** Through the Department's University Reactor Fuel Assistance and Support Program, the Department: supplied reactor fuel to all university reactor programs requiring new fuel in FY 2000; provided funding for reactor upgrades and improvements to 21 of the 22 university proposals that requested assistance; partnered with 22 private companies to award 22 DOE/Industry Matching Grants; and awarded reactor sharing grants to all of the 25 schools that applied for the grants; and, funding for the reactor sharing program increased by 26 percent in FY 2000 over FY 1998.

**Assessment:** Exceeded Goal

M *Attract outstanding U.S. students to pursue nuclear engineering degrees by: (NE)*

- *Providing 18-20 fellowships;*
- *Increasing the number of Nuclear Engineering Education Grants to 45 existing and new grants;*
- *Providing scholarships and summer on-the-job training to approximately 50 sophomore, junior, and senior nuclear engineering and science students.*

**Results:** Through the Department's University Reactor Fuel Assistance and Support Program fellowships were awarded to 24 M.S. and PhD. students; 45 Nuclear Engineering Education Research (NEER) grants were awarded; and, 50 scholarships and summer internships were awarded to undergraduate students.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

- M *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; DOE 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

- M *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; 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



## DOE Decision Unit: Fast Flux Test Facility

Annual Performance Plan Decision Unit	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Fast Flux Test Facility	NE	20	Fast Flux Test Facility	42	36

### Description:

A Secretarial decision based on the Programmatic Environmental Impact Statement (PEIS) and other inputs was reached in January 2001 to permanently deactivate FFTF. The Fast Flux Test Facility (FFTF) program provided for the safe and cost-effective maintenance of the FFTF. The FFTF is the Department's only steady-state source for high-energy, high-fluence neutrons to support nuclear research and medical isotope production missions. The FFTF was being maintained in standby while the Department completes a National Environmental Policy Act (NEPA) review of the environmental impacts associated with enhancing the Department's nuclear research facility infrastructure, including the potential restart of the FFTF.

### DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES (EQ 2-4)

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.

#### *FY 2000 Targets and Results:*

- M *Maintain the Fast Flux Test Facility in a safe, environmentally-compliant standby condition while implementing a Secretarial decision to conduct a National Environmental Policy Act review of the environmental impacts of enhancing the Department's nuclear research facility infrastructure.*

**Results:** The Fast Flux Test Facility (FFTF) remains in a safe, environmentally compliant standby condition, and the National Environmental Policy Act review has been completed with publication in December 2000 of a final PEIS to evaluate alternatives for enhancing the Department's nuclear research facility infrastructure to meet growing civilian research needs over the next 35 years. A Secretarial decision based on the PEIS and other inputs; was reached in January 2001 to permanently deactivate FFTF.

**Assessment:** Met Goal

#### *FY 1999 Targets and Results:*

- M *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 NEPA review of the environmental impacts associated with returning the Fast Flux Test Facility to operation. This decision by the Energy Secretary followed careful consideration of the results from the 90-day program scoping plan prepared by the Pacific Northwest National Laboratory, recommendations from the Department's independent Nuclear Energy Research Advisory Committee (NERAC), and advice from staff.

**Assessment:** Met Goal



## DOE Decision Unit: Termination Costs

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Termination Costs	NE	20	Termination Costs	109	110

### Description:

The mission of this program is to manage the Department's vital research and development facilities, such as those at Argonne National Laboratory, and to carry out long-term treatment and management of DOE's sodium-bonded spent nuclear fuel.

### DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES (EQ 2-4)

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.

#### *FY 2000 Targets and Results:*

M *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 and disposition of 100 percent of the secondary sodium coolant from the Experimental Breeder Reactor-II (EBR-II) and 40 percent of the Fermi reactor sodium coolant at Argonne National Laboratory-West (ANL-W) was completed on July 25, 2000 when the last pallet of sodium hydroxide drums containing this sodium was shipped to the Radioactive Waste Management Complex (RWMC).

**Assessment:** Met Goal

M *Initiate the draining of sodium from the EBR-II primary system and processing it for disposal.*

**Results:** Draining of the EBR-II primary system sodium began in late August, 2000, with processing of this sodium to sodium hydroxide initiated on September 4, 2000. By the end of September 2000, 37 percent of the primary system sodium (SPF) had been drained from EBR-II and 18 percent of this sodium processed into sodium hydroxide at the Sodium Process Facility (SPF). (With this major milestone completed, the EBR-II plant closure activity is on track to be placed into an industrially and radiologically safe shutdown condition by March 2002 as scheduled.)

**Assessment:** Met Goal

M *Depending upon the conclusion of the National Environmental Policy Act analysis currently underway, complete the Fuel Conditioning maintenance items and resume sodium-bonded fuel treatment activities.*

**Results:** The NEPA activities for treatment and management of sodium-bonded spent nuclear fuel were concluded with the issuance of the Final Environmental Impact Statement on July 28, 2000, and the approval of a Record of Decision on September 13, 2000, to treat EBR-II spent nuclear fuel and other miscellaneous lots of sodium-bonded spent nuclear fuel at ANL-W using the electrometallurgical treatment technology. Fuel Conditioning Facility maintenance activities were completed on schedule, and sodium-bonded EBR-II fuel treatment activities resumed on September 13, 2000.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

- M *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. (EQ6-2)*

**Results:** The conversion of the sodium coolant identified in this measure was completed, but not the disposition. Specifically, 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 SPF at ANL-West. This treatment resulted in approximately 945 drums of solidified sodium hydroxide which are to be disposed of in the 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.

- M *Complete the demonstration of the electrometallurgical spent fuel treatment technology by the end of FY 1999 using Experimental Breeder Reactor-II spent nuclear fuel. (EQ6-2)*

**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

## DOE Decision Unit: Isotope Support

Annual Performance Plan Decision Item Unit	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Isotope Support	NE	21	Isotope Production and Distribution Program	25	27

### Description:

The mission of the Isotope Program is to serve the national need for a reliable supply of isotope products, services, and related technology used in medicine, industry, and research.

### DEVELOPING THE TECHNOLOGIES TO MEET DOE'S ENERGY, NATIONAL SECURITY, AND ENVIRONMENTAL GOALS (SC 2-1)

Develop the technologies required to meet DOE's energy, national security, and environmental quality goals.

#### *FY 2000 Targets and Results:*

M *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:** The program slightly exceeded 95 percent on-time deliveries out of 602 shipments. One order did not meet customer specifications: selenium-75 isotope in the chemical form of selenite was shipped instead of selenate as ordered. The order was replaced. It should be noted that although the Cerro Grande Fire interrupted operations during May 2000, the Los Alamos National Laboratory (LANL) staff worked through the first weekend after the fire and, as a result, only one delivery was late.

**Assessment:** Met Goal

M *Complete at least 40 percent of the construction of the Los Alamos Isotope Production Facility, which is needed for the production of short-lived isotopes for medical research.*

**Results:** On January 25, 2000, the facility construction contract was awarded and construction commenced on February 21, 2000. The lower facility construction including the target shield structure

was completed up to approximately 20 feet from the existing Los Alamos Neutron Science Center (LANSCE) building and most of the special facility equipment was procured and delivered to the site, thereby meeting this commitment. To accommodate the needs of the Offices of Defense Programs and Science, LANL chose to delay a critical accelerator outage by seven months. The decision weighed the importance of this project against the scientific experiments to be conducted at the facility by these other customers. To minimize the impact of the LANSCE unscheduled change, the Department worked with the construction contractor to avoid construction delays and increased cost. Also, in spite of the Cerro Grande Fire, during May 2000, that forced a shutdown of all laboratory activities, the construction contractor was able to make up lost time working 9,131 hours without a lost time work injury.

**Assessment:** Met Goal

M *Invest in two new process development technologies as requested by researchers that enhance isotope production, services and delivery application systems.*

**Results:** The first project is to develop a new process for processing xenon-127. Assembly of the xenon-127 processing apparatus at Brookhaven National Laboratory was completed as well as cold and hot testing of the apparatus, preparation of a Food and Drug Administration (FDA) Drug Master File, and shipments to researchers. Xenon-127 has been approved by the FDA for lung-ventilation studies and may be expanded to include brain scans. Production and distribution to hospitals will start in FY 2001. This isotope was recommended in the Isotope Expert Panel Report.

The second project started this year is to develop a liquid-liquid extraction process for the separation of radium-225 and actinium-225 from the stock of thorium-229. Researchers are assessing whether alpha-emitting isotopes can destroy cancer cells and reduce tumors, and demand for these isotopes is increasing. Phase one of this project is complete. Preliminary data indicates that the extraction process will shorten the production time by almost 50 percent resulting in higher yield of actinium-225 and lower processing cost. Phase two of this project will be completed in FY 2001. At that time, we will be able to conduct separation experiments and determine the long-term organic phase stability.

**Assessment:** Met Goal

M *Implement the Advanced Nuclear Medicine Initiative by providing isotopes or financial assistance for at least five researchers.*

**Results:** The Advanced Nuclear Medicine Initiative (ANMI) was inaugurated in FY 2000, and financial assistance was provided to nine researchers—nearly double the anticipated number. The additional grants were made possible by handling the effort entirely at Headquarters with minimal support from the field thereby minimizing program implementation costs. A Notice of Expression of Interest was published in the Federal Register and the Commerce Business Daily in December 1999 and an Application Guide for preparing responses was posted simultaneously on the NE web page. In response, the Department received 64 proposals from more than 40 organizations. Using the peer-review selection process, nine awards were made. The average funding for these proposals is \$250,000 per year for three years. These projects show strong potential for a breakthrough in using nuclear medicine in the diagnosis and treatment of life-threatening diseases. The use of medical isotopes saves money and greatly improves the quality of patient care. For example, when doctors use diagnostic imaging technology, fewer invasive procedures are required, and the time that a patient must be hospitalized is reduced. This initiative also fulfills a recommendation of the Nuclear Energy Research Advisory Committee subcommittee.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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 nearly 700 shipments in this period to domestic and overseas customers. Of these, 27 shipments failed to arrive on

time, resulting in a 96 percent on time delivery, thus exceeding our goal. 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.

**Assessment:** Exceeded Goal

M *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

M *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

## DOE Decision Unit: Uranium Programs

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Uranium Programs	NE	19	Uranium Programs	5	20
	NE	20	Uranium Programs	38	95

### Description:

The mission of Uranium Programs is to address the facility and environmental legacies associated with the uranium enrichment program 1, management of government assets, and associated research and development. Primarily, this involves the effective management and disposition of the Department's depleted uranium hexafluoride (UF<sub>6</sub>) and excess natural uranium inventories.

### DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES (EQ 2-4)

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.

#### *FY 2000 Targets and Results:*

M *Meet commitments to the Ohio Environmental Protection Agency, the Tennessee Department of Environment and Conservation, and the Defense Nuclear Facilities Safety Board to ensure the safety of the Department's inventory of depleted UF<sub>6</sub>.*

**Results:** The Defense Nuclear Facilities Safety Board (DNFSB), in a letter dated December 16, 1999, stated the Board believes that DOE has met all of the commitments in the Implementation Plan for Recommendation 95-1 and considers the recommendation closed. Even though 95-1 is now considered closed, the Board will continue to monitor the long-term storage of the cylinders and the eventual conversion of the depleted UF<sub>6</sub> to a more stable form. The Department is also on-track in meeting its commitments to the states of Ohio and Tennessee for depleted UF<sub>6</sub> cylinder management activities.

**Assessment:** Exceeded Goal

#### *FY 1999 Targets and Results:*

M *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. (EQ-6-2)*

**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 Ohio EPA continue to be met with the UF<sub>6</sub> 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 depleted UF<sub>6</sub> 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

M *Remove all highly enriched uranium oxides from the Portsmouth site. (NS4-2)*

**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 FY 1999. This action will significantly reduce the safeguards and security operating costs to DOE at Portsmouth.

**Assessment:** Met Goal

## DOE Decision Unit: Domestic Oil and Gas Supply RD&D

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Oil Technology*	FE	18	Petroleum Research and Development	55	43
Gas Technology	FE	18	Gas Research and Development	145	129

\*Excludes Gas-to-Liquids work which is included in the Decision Unit for Clean Fuels RD&D. Total net costs are shown here.

### Description:

The Department's Domestic Oil and Gas Supply Program operates under a single overriding goal: to ensure the availability of competitively-priced oil and natural gas supplies to support a strong U.S. economy. The Program's RD&D activities focus on enhancing the efficiency and environmental quality of domestic oil and natural gas exploration, recovery, processing, transport, and storage operations. Improved technologies and information are required to boost production of natural gas, a clean and abundant domestic fossil fuel that is an increasingly important component of our Nation's energy portfolio, and to extend the life of domestic oil reservoirs. Program efforts are also directed to making environmental regulation cost-effective, compliance feasible, and reasonably economic, while assuring economic access to and recovery of domestic oil and gas resources consistent with effective environmental protection.

### BOOSTING THE NATION'S PRODUCTION OF DOMESTIC OIL (ER 1-1)

Support research and development, policies, and improved regulatory practices capable of ending the decline in domestic oil production before 2005.

#### ***FY 2000 Targets and Results:***

M *Complete demonstration and transfer of 7 advanced secondary and tertiary technologies, adding 92 million barrels of reserves, increasing the number of economic wells and reducing abandonment rates.*

**Results:** With successful technology transfer, the technologies tested in the seven projects could result in the eventual production of up to 184 million barrels of incremental oil, from within the geologic basins that the projects are located.

**Assessment:** Met Goal

M *Complete field testing and monitoring of two technologies for downhole separation of oil and water, resulting in a reduction in water and potential increase in oil production per well.*

**Results:** Two projects were designed to collect data on performance of existing downhole oil-water separation techniques in order to assist other operators in choosing a technology to reduce water production and possibly increase oil production. Data collection was completed for the first project and a final report has been delivered to DOE. Data collection and analysis have been completed for the second technology and a draft report is being reviewed. The final report was completed on February 1, 2001.

**Assessment:** Nearly Met Goal

**Plan of Action:** Complete the final report in the first quarter of FY 2001. A third field project is being initiated with the installation of the downhole separator scheduled for early in calendar year 2001. Data will be collected over a six month period, followed by analysis and a report.

***FY 1999 Targets and Results:***

- M *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

- M *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:** 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 assist other States to implement similar websites.

**Assessment:** Nearly Met Goal

**BOOSTING THE NATION'S PRODUCTION OF NATURAL GAS (ER 2-2)**

Support R&D policies and improved regulatory practices that can increase domestic natural gas supplies, moderate future price increases, and provide 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.

***FY 2000 Targets and Results:***

- M *Demonstrate a cost effective horizontal well and advanced exploration and stimulation technologies in low permeability natural gas formations for increasing recovery of the 5,000+ TCF of gas in place in the Greater Green River and Wind River Basins.*

**Results:** These technologies will increase discovery and production of gas from non-conventional reservoirs in the Rocky mountain region. A total of three horizontal wells have been drilled and cored in the Greater Green River Basin, providing extensive geologic characterization of the basin and the gas resource as well as demonstration of the cost effectiveness of horizontal wells. As a result of the work in the Riverton Dome, Wyoming area, the final report on advanced exploration technologies has been submitted. The second element of this effort, the stimulation demonstration, has been canceled because the industry partner was unable to do the work due to two rounds of corporate acquisition followed by closing of its Rocky Mountain office.

**Assessment:** Nearly Met Goal

**Plan of Action:** A stimulation demonstration will not be pursued at this time.

***FY 1999 Targets and Results:***

- M *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 Gas Research Institute (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

## DEVELOPING INNOVATIVE OPTIONS FOR 21<sup>ST</sup> CENTURY ENERGY MARKETS (ER 5-2)

Carry out research and scenario analysis to help identify and understand options that could revolutionize 21<sup>st</sup> Century energy markets.

### ***FY 2000 Targets and Results:***

M *Identify a site containing gas hydrates suitable for testing the feasibility of methane recovery.*

**Results:** Huge hydrate resources are believed to underlie permafrost in the Alaska North Slope. These resources represent logistically simpler and more economical test sites than offshore hydrates. However, geologic characterization is necessary before production testing can be done. During the month of September 2000, the US Geological Survey and National Energy Technology Laboratory researchers working with industry collected open-hole wireline logs and mud logs of several expected gas hydrate accumulations in the vicinity of Tarn Oil Field. Preliminary analysis of the data suggests the occurrence of a series of highly concentrated hydrate-bearing sandstone units, making the site appropriate for conducting hydrate production testing. Geochemical analyses of the data and samples will continue into FY 2001.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

No performance measures established for FY 1999.



## DOE Decision Unit: High Efficiency, No/Low Emissions Power Systems R&D

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Coal and Power Systems*	FE	18	Coal Research and Development Technology	129	124
Clean Coal Technology	FE	18	Clean Coal Technology	53	55

\*Excludes Coal and Power Systems/Fuels work which is included in the Decision Unit for Clean Fuels R&D. Total net costs are shown here.

### Description:

The primary goal for the power systems RD&D program is to develop progressively, cleaner, lower cost and higher efficiency power systems. By 2015 the Vision 21 program is designed to develop systems which produce near-zero level of pollutants while simultaneously reducing electricity costs by 10% to 20%. The systems would also be amenable to carbon dioxide capture and a program is underway to develop technologies to sequester carbon dioxide emissions either through direct capture or enhancing natural sinks.

### REDUCING EMISSIONS FROM EXISTING FOSSIL FUEL POWER PLANTS AND DEVELOPING CLEAN HIGH EFFICIENCY FOSSIL FUELED POWER PLANTS FOR THE 21<sup>ST</sup> CENTURY (ER 2-4)

By 2015, significantly reduce emissions from currently existing fossil fuel powerplants, and from new plants by: (1) developing market-ready coal power systems with efficiencies over 60 percent (new plants are currently about 35 percent) and near zero emissions; and (2) integrating advanced turbine and fuel cell technology to achieve market-ready gas-fueled powerplants with efficiencies over 70 percent.

#### *FY 2000 Targets and Results:*

M *Begin testing of first market prototype solid oxide fuel cell for distributed power applications.*

**Results:** A 100KW solid oxide fuel cell (SOFC) hybrid has been successfully tested. Plans for testing of a 250-320KW SOFC are underway.

**Assessment:** Met Goal

M *Complete validation testing for critical components of advanced utility-scale turbines with over 60 percent efficiency (combined cycles mode) and ultra-low NO<sub>x</sub> emissions.*

**Results:** For GE, the full-scale no-load test on 7H frame was completed in February 2000, as planned. All test parameters were met. For Siemens-Westinghouse, 85 percent of the validation tests are complete.

**Assessment:** Nearly Met Goal

M *In support of Vision 21, complete testing of a 250KW fuel cell/turbine hybrid and deliver a conceptual design of a 1MW fuel cell/turbine hybrid powerplant to facilitate market entry.*

**Results:** The 250KW hybrid has been shaken out successfully at the factory site and shipped to the National Fuel Cell Research Center for testing. Testing has not been completed due to delays in shipping the unit to the National Fuel Cell Research Center. The EPA has agreed to release the initial funding for the 1MW Fort Meade demonstration which will result in the initiation of a 1MW powerplant conceptual design.

**Assessment:** Nearly Met Goal

**Plan of Action:** Tests on a 220KW hybrid unit will begin in December 2000, for a six month testing period.

M *Complete demonstration of the third integrated gasification combined cycle project (Piñon Pine) utilizing air-blown gasification and hot gas cleanup for improved thermal efficiency, and continue operations of one other project (Polk) in order to establish the engineering foundation leading to the new generation of 60 percent efficient powerplants.*

**Results:** (a) Piñon Pine integrated gasification combined cycle (IGCC) Project (Sierra Pacific Power Company) Plant has just been sold, subject to approval by the Nevada Public Utility Commission. Upon completion of transaction, new milestones for completion of the project will be determined with the new plant owners. (b) Polk IGCC Project (Tampa Electric) a. The project has been operational since October 6, 1996, and has generated over 2,800,000MW hours of electrical power on syngas. Plant availability exceeding 95 percent has been attained. The plant is currently operating.

**Assessment:** Nearly Met Goal

**Plan of Action:** Discussions with new owners of the Piñon Pine IGCC Plant will take place when upon completion of the transfer of ownership of the plant.

M *Complete pilot studies on mercury emission controls that augment existing pollution control technologies, and are expected to reduce mercury emissions by over 50 percent at less than half the cost originally estimated in EPA's December 1997 report to Congress on mercury.*

**Results:** ADA Technologies, Inc. (completed piloted study on: 09.30.00) "Novel Process for Removal and Recovery of Vapor-Phase Mercury"

This technology employs a noble metal (gold) to adsorb mercury in the vapor phase, and subsequently release it as a small volume for recycle or disposal. The defining characteristic of the technology is that no waste stream is created, and the properties of the coal ash are not impacted. Limited work in Phase I indicated 95 percent removal of both elemental and oxidized forms of mercury, with successful regeneration of the sorbent. In tests of a bench-scale rig in actual flue gases of coal-fired boilers in Phase II, it was found that the gold sorbent was attacked by a combination of SO<sub>2</sub> with either HCl or NO<sub>2</sub>. It has been concluded, therefore, that the process cannot be recommended for use where acid gases are present. Applications free from acid gases include about 20 percent of coal-fired power plants that incorporate flue gas desulfurization systems, which capture 85 to 95 percent of oxidized mercury but none of the elemental form. ADA's process might be a useful "polishing" step in these instances, to boost the overall rate of mercury removal.

DE-AC22-95PC95256 Public Service of Colorado (with ADA Technologies, Inc.) (Completed: 09.30.00) "Investigation and Demonstration of Dry Carbon-Based Sorbent Injection for Mercury Control"

Under the Mega PRDA program, Public Service of Colorado, DOE and EPRI funded work to evaluate carbon injection for mercury control and to compare this with sorption on native flyash at several of the utility's stations. Pilot-scale test equipment has been operated in a slip-stream at the contractor's Comanche station, leading to the following items among many findings:

- An ESP yields lower mercury removal than a baghouse, for a given rate of carbon injection.
- There is a diminishing return for increasing rates of carbon injection.
- Cooling the gas stream improves the efficiency of the sorption process.
- Both injected carbon and native flyash sorb mercury by contact in the dustcake on filter bags.
- Maximum removal was 70 percent in the ESP, but more than 90 percent in a baghouse.
- Mercury is retained at high levels on native flyash at three of the utility's stations – two of which burn coals from the Powder River Basin, while the third uses a Colorado bituminous.

DE-FG22-95PC95216 University of Washington (Completed: 12/28/99)

"Reduction of Inherent Mercury Emissions in PC Combustion" Field data show that mercury entering FGD systems in the oxidized state is captured more readily than the elemental form and that oxidation is related to chlorine. Other findings include:

- Oxidation increases with higher temperatures.
- Oxidation increases with HCl concentration.
- Oxidation is retarded by the presence of CO<sub>2</sub> and water vapor.
- The extent of oxidation is independent of mercury concentration. An interesting conclusion of this research is that, while chlorine added to improve oxidation will be most effective if exposed to a high-temperature environment, chemical kinetic modeling indicates that the oxidation actually occurs during the cooling of the gases to the point where measurement is taken. Thus, the rate of quenching is a parameter of importance.

DE-FG02-97ER82456 Physical Sciences, Inc. (Completed: 09/15/00) "Control of Mercury Emissions from Fossil Fuel-Fired Power Plants"

Zeolite materials were investigated and a sorbent was selected for laboratory testing and subsequently for pilot-scale operations at the Mercer station of Public Service Electric and Gas in Trenton, New Jersey. Activated carbon was tested for comparison. Poor results were attributed to operating problems at the utility, resulting in excessively low temperatures in the flue gases. A single test of a zeolite sample in a test furnace at NETL showed 62 percent removal of mercury, compared with 68 percent for a commercially available activated carbon in the same facility. The contractor believes that the zeolite has a low-temperature limit, below which other precautions may be required to obtain satisfactory performance.

II. Radian International DE-AC22-95PC95260: "Enhanced Control of Mercury and Other HAP's by Innovative Modifications to Wet FGD Processes"

III. Babcock and Wilcox, Inc. DE-FC22-94PC94251: "Advanced Emissions Control Development Program"

IV. Public Service Company of Colorado, EPRI, ADA DE-AC22-95PC95256: Investigation and Demonstration of Dry Carbon-Based Sorbent Injection for Mercury Control"

V. ADA Technologies, Inc. DE-AC22-95PC95257: "Novel Process for Removal and Recovery of Vapor Phase Mercury"

**Assessment:** Met Goal

M *Complete the first large scale (600MW) test of selective non-catalytic reduction, which will allow coal-fired power plants to satisfy ozone transport (OTAG) requirements for reduction of emissions of oxides of nitrogen and also reduce fine particulate matter.*

**Results:** The full-scale testing and evaluation of selective non-catalytic reduction (SNCR) technology was completed in April 2000. The \$6.5 million project was carried out in partnership with American Electric Power (AEP), the Ohio Coal Development Office, and EPRI. A consortium of electric utilities including GPU GENCO, Allegheny Energy, Illinova, Ameren, Louisville Gas and Electric Company, Baltimore Gas and Electric, New England Electric System, Buckeye Power, Southern Company Services, Cinergy, TVA, East Kentucky Power Cooperative, WEPCO, and FirstEnergy, also participated in the program. DOE-NETL provided \$500,000, or about 8 percent, of the total project cost.

Testing was performed at the AEP Cardinal Plant Unit 1, a 600MWe opposed-wall, cell-fired, dry-

bottom, pulverized coal-fired boiler located in Brilliant, Jefferson County, Ohio. Equipped with LNBs, Unit 1 was in compliance with the Title IV emission limit of 0.68 lb/million Btu. The specific objective of the SNCR project was to reduce NO<sub>x</sub> by an additional 30 percent, while maintaining ammonia concentrations in the flue gas, known as "slip," at or below 5 ppm. This level of control, when combined with the reduction from the LNBs, would achieve an overall reduction from the plant's baseline NO<sub>x</sub> level of about 67 percent.

Long-term testing of the SNCR system at the Cardinal Plant was carried out between September 20 and November 19, 1999. During this time, the unit was held at various load points (300, 450, and 600MWe in order to verify that SNCR could successfully perform at full, intermediate, and minimum loads. The system provided approximately 30 percent reduction in NO<sub>x</sub> across the load range while minimizing slip. The most significant balance-of-plant concerns, air heater pluggage and flyash contamination, were not a major problem during the long-term test program, but a longer test period would be needed to fully evaluate the effect of SNCR operations on air heater pluggage, flyash contamination, and opacity.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

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

**Results:** The 100KWe unit has operated successfully for greater than 6,000 hours. The unit is continuing to operate well at the demonstration site in the Netherlands.

**Assessment:** Met Goal

M *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 NO<sub>x</sub> 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

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

**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.

**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.

**New Assessment:** Complete commercial demonstration of one integrated gasification combined cycle project (Wabash River) and make a decision on a request for 2 additional years of operations. Continue operation of two other gasification projects (Tampa Electric and Piñon Pine) in order to establish the engineering foundation leading to a new generation of 60 percent efficient, ultra clean, coal powerplants.

**Assessment:** Met Goal

## DEVELOPING INNOVATIVE OPTIONS FOR 21ST CENTURY ENERGY MARKETS (ER 5-2)

Carry out research and scenario analysis to help identify and understand options that could revolutionize 21<sup>st</sup> Century energy markets.

### *FY 2000 Targets and Results:*

M *Commence 3-4 small scale carbon sequestration development projects from those selected in the FY 1998 Novel Concepts solicitation, and begin feasibility studies for 1-2 sequestration projects selected under FE's August and September 1999 solicitations.*

**Results:** Several of the projects selected under the Novel concepts solicitation in April, 1998 are pro-

gressing at or ahead of schedule. For example, the Project titled "Landfill operation for Carbon Sequestration and Maximum Methane Emission Control" has resulted in two successful demonstrations at a landfill in Yolo County, California. The project has received official recognition from EPA as a Project XL site, and also involves the California Energy Commission. In addition, two projects involving the geological storage of CO<sub>2</sub>, one in coal seams, and the other in a saline reservoir in Ohio, have been demonstrated in the lab and at the bench scale level.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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, 1999 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 CO<sub>2</sub> 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 CO<sub>2</sub>. Preliminary feasibility studies for 12 projects resulting from an earlier solicitation were completed in March 1999. 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

## DOE Decision Unit: Clean Fuels RD&D

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Coal and Power Systems / Fuels	FE	18	Coal Research and Development	-*	-*
Clean Fuels RD&D	FE	18	Clean Coal Technology	-**	-**

\*Coal and Power Systems/Fuels net costs are shown in the Decision Unit for High Efficiency, No/Low Emissions Power Systems RD&D.

\*\*Clean Fuels RD&D net costs are shown in the Decision Unit for Domestic Oil and Gas Supply RD&D

### Description:

The Integrated Fossil Energy Clean Fuels Program is implementing partnerships with industry to ensure a stable, affordable supply of transportation fuels capable of meeting existing as well as proposed emission requirements defined in EPA regulations. This is being accomplished by supporting the development and deployment of innovative technologies to provide ultra-clean burning, high performance transportation fuels from fossil energy resources. This initiative promotes, in partnership with the refining and transportation industries, the development and deployment of technologies that will produce ultra-clean, high performance transportation fuels for the 21<sup>st</sup> Century from both petroleum and non-petroleum sources. These will enable the introduction of advanced, highly efficient fuel/engine combinations being developed by the Department, such as the Partnership for a New Generation of Vehicles (PNGV), which offers the promise of lower regional emissions and greater than double the miles per gallon of fuel. In the nearer term, ultra-clean transportation fuels can be produced from improved or new refinery upgrading technology. In the mid-to-longer term, ultra-clean transportation fuels from natural gas, coal and other carbonaceous feedstocks would enjoy a high level of compatibility with the existing infrastructure, and could provide environmental benefits due to their suitability for use in advanced, high-efficiency vehicle engines. The first component will include R&D projects that lead to the production of sufficient quantities of fuel to validate performance and emissions testing that will be done in collaboration with DOE's Office of Transportation Technologies. The second component is a supporting research program carried out by National Laboratories and co-sponsored with the fuel industry that is focused on the development of advanced fuel-making process components, materials, and chemistry needed for the manufacture of ultra-clean performing transportation fuels.

### DEVELOPING ALTERNATIVE TRANSPORTATION FUELS AND MORE EFFICIENT VEHICLES

(ER 1-4)

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 5 percent.

#### *FY 2000 Targets and Results:*

- *Complete solicitation for, and selection of, candidate industrial teams for the Entry Entrance Coproduction Plant (EECP) project in which innovative alternative fuels will be coproduced along with electricity and chemical products.*

**Results:** Three EECP projects were chosen for negotiation. Two projects were awarded in FY 1999. Texaco Natural Gas, Inc. and team combine its gasification technology with Rentech Fischer-Tropsch technology to produce high quality transportation fuels and chemicals from coal and petroleum coke. The Global Energy Corporation team is evaluating the production of power and chemicals from a plant that processes coal and non-coal feedstocks. Both projects have started activities this fiscal year. A third project, Waste Management and Processors, Inc. and its team, including Sasol Technology Ltd. and Texaco Global Gas and Power is to assess the economics and feasibility of a plant that converts coal residue into premium transportation fuels and power. Negotiations for this project are expected to be completed by the end of July 2000.

**Assessment:** Met Goal



## DOE Decision Unit: Petroleum Reserves

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Strategic Petroleum Reserve SPR Petroleum Account	FE	18	Strategic Petroleum Reserve	195	318
Naval Petroleum and Oil Shale	FE	18	Naval Petroleum Reserves	16	28

### Description:

Petroleum Reserves includes the Strategic Petroleum Reserve (SPR) and the Naval Petroleum and Oil Shale Reserves (NPOSR). The SPR ensures and maintains the readiness capability to drawdown and distribute crude oil from the SPR inventory to commercial distribution systems in order to protect the domestic U.S. economy from the impact of energy supply disruptions. The SPR executes obligations to act cooperatively with member nations of the International Energy Agency (IEA) to deter or respond to supply disruptions that would adversely affect member nations. The NPOSR, following the sale of Elk Hills, its primary asset, to the private sector in February 1998, continues to manage, operate, maintain and produce three properties remaining under its jurisdiction. The program is relatively small, and no performance measures are included in the Performance Plan. Also included is the Elk Hills School Lands Fund, which was established to settle certain Elk Hills related lands claims with the State of California.

### MAINTAINING AN EFFECTIVE STRATEGIC PETROLEUM RESERVE (ER 1-2)

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.

#### *FY 2000 Targets and Results:*

M *Complete the Life Extension Program to ensure the long-term reliability, effectiveness, and operational readiness of SPR facilities and systems.*

**Results:** During March 2000, the SPR completed the remaining projects of its \$328 million dollar, 7-year Life Extension Program ahead of schedule. With completion of the refurbishment work, the percent of the \$328 million Life Extension Program under contract increased to 97 percent. Remaining execution is contingent on the settlement of contract claims.

**Assessment:** Met Goal

M *Ensure the achievement of a calculated site availability of 95 percent or greater with drawdown capability of 4.1 million barrels per day for a sustained 90 day period within 15 days notice by the President.*

**Results:** The SPR continually monitors and assesses its drawdown capabilities. It also performs quarterly drawdown reviews of its site availability and drawdown functions. At the end of FY 2000, SPR's calculated site availability was at 95 percent with drawdown capability of 4.18 million barrels per day for a sustained 90 day period within 15 days notice by the President.

**Assessment:** Met Goal

M *Complete contracting for the transfer and/or exchange of 28 million barrels of Federal Royalty Oil from the Department of Interior for a net increase of approximately 23 million barrels in SPR inventory, with deliveries of a remaining 4 million barrels in FY 2001.*

**Results:** Completed the contracting for the transfer and/or exchange of 28 million barrels of Federal Royalty Oil from the Department of Interior. Through FY 2000, 12.3 million barrels were added to the inventory of the SPR. Some FY 2000 deliveries were deferred into FY 2001/2002 due to logistics and

market considerations, resulting in a greater number of barrels to be delivered to the SPR inventory than originally estimated.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

- *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

## DOE Decision Unit: Building Technology, State and Community Programs

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Building Technology, State and Community Programs	EE	18	Building Technology, State and Community Programs	290	255

### Description:

In partnership with industry and government, the Office of Building Technology, State and Community Programs (BTS) develops, promotes, and integrates energy technologies and practices to make buildings more efficient and affordable and communities more livable.

### IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS

(ER 3-3)

By 2010, improve the energy efficiency of the existing U.S. building stock by reducing annual energy consumption by 2 quadrillion Btu by the year 2010 relative to what would have otherwise been consumed.

#### *FY 2000 Targets and Results:*

M *Weatherize 68,000 homes, bringing the total number of homes weatherized to 4.8 million.*

**Results:** Weatherized 34,000 homes by midyear and Weatherized 72,000 homes of low-income families with DOE funding by end-year report, bringing the total number of homes weatherized to 4.9 million using all funding sources.

**Assessment:** Exceeded Goal

M *Recruit 5 utility partners to promote Energy Star products; an additional 500 retail stores to promote Energy Star products; and 40 window partners to promote Energy Star Windows.*

**Results:** By end year, recruited 13 utility partners to promote ENERGY STAR products. Recruited an additional 2,100 retail stores to promote Energy Star products and 40 window partners to promote Energy Star Windows.

**Assessment:** Exceeded Goal

M *Recruit 50 new Rebuild America Partners, increasing the total number of Rebuild America communities to 290. New partners will begin action plans that will result in over 100 million square feet of floor space renovated, reducing annual energy costs by \$28 million and reducing CO<sub>2</sub> emissions by 100 thousand metric tons when local actions are completed in 2003.*

**Results:** Recruited 60 new Rebuild America Partners exceeding the goal of 50, increasing the total number of Rebuild America communities to 300.

**Assessment:** Exceeded Goal

M *Issue final rules regarding energy efficiency standards for fluorescent lamp ballasts and water heaters and issue proposed rules regarding energy efficiency standards for clothes washers and central air conditioners.*

**Results:** By the end of the year, issued the final rule regarding energy efficiency standards for fluorescent lamp ballasts on September 19, 2000, and published the proposed rules for residential central air conditioners and clothes washers on October 5, 2000. All three of those final rules will be sent to the Office of Management of Budget (the final review step) for their review by mid-December. Due to additional testing to resolve issues on efficiency potential, the final rule for water heaters is anticipated to be issued in January 2001.

**Assessment:** Nearly Met Goal

M *In partnership with Building America, develop more than 2,000 highly energy-efficient, environmentally sound, and cost-effective houses and disseminate results to builders of 15,000 other houses through the Partnership for Advanced Technology in Housing (PATH).*

**Results:** The program developed 2,000 highly energy-efficient, environmentally sound, and cost-effective homes. But it was unable to disseminate results to all 15,000 builders due to lack of substantial support from PATH.

**Assessment:** Nearly Met Goal

**Plan of Action:** Seeking additional support from PATH and other dissemination sources to meet dissemination goals.

### ***FY 1999 Targets and Results:***

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

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

**Assessment:** Exceeded Goal

M *Work with the Federal Trade Commission to allow manufacturers to add the ENERGY STAR logo to the yellow and black FTC "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 the Federal Trade Commission proposed rule to allow manufacturers to add the ENERGY STAR logo to the FTC Energy guide label.

**Assessment:** Exceeded Goal

M *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

M *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 1000 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

## DOE Decision Unit: Energy Management

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Federal Energy Management Program	EE	18	Federal Energy Management Program	27	23

### Description:

The mission of the Federal Energy Management Program (FEMP) is to reduce the use and cost of energy in the Federal sector by advancing energy efficiency, water conservation, and the use of solar and other renewable energy sources. FEMP accomplishes its mission by leveraging both Federal and private resources to provide technical and financial assistance to other Federal agencies, which take actions and make investments that increase energy efficiency and renewable energy utilization, and reduce water consumption in their buildings, facilities, and operations.

### DEVELOPING RENEWABLE DOMESTIC ENERGY (ER 2-3)

Develop renewable energy technologies and support policies capable of tripling non-hydroelectric renewable energy generating capacity by 2010.

#### ***FY 2000 Targets and Results:***

- M *Complete one nationwide technology Super-Energy Savings Performance Contract (ESPC) for use by all agencies, bringing the total number of technology Super-ESPCs to four.*

**Results:** Analysis of opportunities completed. Solicitation drafted and reviewed by HQ staff.

**Assessment:** Nearly Met Goal

**Plan of Action:** Issue the solicitation in FY 2001 and implement projects in calendar year 2001.

#### ***FY 1999 Targets and Results:***

- M *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 ESPC's 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. The Department's Federal Energy Management Program is

currently re-evaluating the most appropriate mechanisms to increase deployment of renewable technologies in Federal facilities.

**Assessment:** Below Expectation

### IMPROVING THE ENERGY EFFICIENCY OF BUILDINGS (ER 3-3)

By 2010, improve the energy efficiency of the existing U.S. building stock by reducing annual energy consumption by 2 quadrillion Btu by the year 2010 relative to what would have otherwise been consumed.

#### ***FY 2000 Targets and Results:***

- M *Continue efforts to reduce the use of energy in Federal buildings and report the results achieved through the end of FY 1998, towards the goal of achieving a 20 percent reduction by the end of FY 2000 as compared to 1985 energy use. Preliminary data indicates that agencies had achieved a 17 percent reduction at the end of FY 1997.*

**Results:** Preliminary data shows that agencies reduced their energy use by 20.7 percent at the end of FY 1999, one year ahead of the 2000 goal, saving taxpayers billions of dollars since 1985 (Over \$2 billion net from FEMP direct, and over \$19 billion gross government-wide).

**Assessment:** Exceeded Goal



## DOE Decision Unit: Industry Sector

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Industry Sector	EE	18	Industrial Technology	161	163

### Description:

The mission of the Office of Industrial Technologies (OIT) is to improve the energy efficiency, environmental performance, and productivity of energy-intensive industries by rapidly developing and delivering advanced science and technology options that will: 1) lower raw material and depletable energy use per unit output; 2) improve labor and capital productivity; and 3) reduce the generation of wastes and pollutants.

### DEVELOPING ADVANCED TURBINES FOR COGENERATION (ER 2-9)

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.

#### *FY 2000 Targets and Results:*

M *Demonstrate two advanced industrial turbine system engines at end-user sites.*

**Results:** Solar Turbines has initiated six field test demonstrations this year of the Mercury 50. The demonstration at Rochelle Municipal Utilities has accumulated over 1,800 hours of service as part of a 24,000 hour field test. Other ATS demonstrations include nearly 15,000 hours of continuous service of an advanced ceramic-composite combustion liner by Solar turbines; 1,000 hours of continuous service for ceramic turbine blades also by Solar Turbines, Pratt & Whitney and Siemens-Westinghouse are demonstrating two advanced thermal barrier coatings; and Howmet and PCC have demonstrated a low sulfur melt process.

**Assessment:** Met Goal.

#### *FY 1999 Targets and Results:*

M *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

### IMPROVING EFFICIENCY OF ENERGY INTENSIVE INDUSTRIES (ER 3-2)

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.

#### *FY 2000 Targets and Results:*

M *Initiate 12 solicitations with industry in support of the roadmaps developed in the Industries of the Future program.*

**Results:** Thirteen solicitations were initiated: Forest Products: [1] 1 solicitation in FY 2000 with award announcements anticipated July 1, 2000 Aluminum: [3] 3 solicitations issued starting 8/99 two others have been issued and will close 7/00. Metal Casting: [1] 1 solicitation Steel: [2] 1 solicitation closed in December 1999 out and 1 is planned to be issued in the middle of June 2000. Petroleum: [1] one solicitation awarded in FY 2000 Agriculture [2] issued in FY 2000 with solicitations closing June 6th

and June 20th. Chemicals [1] CBD notification in April 2000 of OIT's intent to release an RFP in June 2000. Mining [1] solicitation planned in FY 2000 Glass: [2] 2 solicitations have been issued and one planned for later in FY 2000 Sensors and Controls: [1] 1 solicitation was issued targeted to Industries of the Future (IOF) needs.

**Assessment:** Exceeded Goal

M *Establish partnerships with 50 Industries of the Future plants to provide integrated delivery of tools and technical assistance to target motors, steam, compressed air, and combined heat and power system opportunities.*

**Results:** Completed a Plant Wide Assessment in April 2000 which supported 50 percent cost shared energy assessments for Industries of the Future manufacturing plants. Implemented 15 Plant Wide Assessments with IOF plants and completed five additional assessments associated with Showcase Demonstration plants. Formalized a partnership with the Hydraulic Institute to deliver OIT products and services to IOF customers. Signed on 15 new Allied partners to assist OIT in the integrated delivery of products and services. Over 50 partnerships were established by the end of the reporting period.

**Assessment:** Met Goal

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

**Results:** 350 site visits completed as of April 30, 2000. Completed recompetition of program participants is planned for FY 2001. Over 750 assessments had been conducted by the end of the program year.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 IOF 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

M *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

## DOE Decision Unit: Transportation Sector

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Schedule of Net Cost Item	FY 2000 Net Costs	FY 1999 Net Costs
Transportation Sector	EE	18	Transportation Technology	262	277
Solar and Renewable Energy	EE	18	Power Technologies	-*	-*

\*Transportation Sector costs from Solar and Renewable Energy are shown in the Decision Unit for Solar and Renewable Energy.

### Description:

The mission of the Transportation sector is to support the development and use of advanced transportation vehicles and fuels which will reduce energy demand, particularly petroleum; reduce criteria pollutant and greenhouse gas emissions; and enable the United States transportation industry to sustain a strong competitive position in domestic and world markets.

### DEVELOPING ALTERNATIVE TRANSPORTATION FUELS AND MORE EFFICIENT VEHICLES

(ER 1-4)

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 5 percent.

#### *FY 2000 Targets and Results:*

M *Demonstrate conversion of agricultural wastes to ethanol at a small commercial scale using a genetically engineered fermentative microorganism.*

**Results:** A pilot plant in Louisiana is using sugar and rice agricultural wastes to produce ethanol in batch runs (small commercial scale) that under continuous production could produce 50,000 gallons per year.

**Assessment:** Met Goal

M *Complete testing of baseline prototype, 50-volt high power lithium-ion modules for use in hybrid vehicles.*

**Results:** 50 volt module has been provided to INEEL and is under test. End year result is the performance and characterization testing of prototype 50-volt modules have been completed and met performance expectations.

**Assessment:** Met Goal

M *Launch two projects that will lead to 100 percent penetration of alternative fuel vehicles in selected niche applications such as a local taxi fleet or the busses for a particular school.*

**Results:** Several Clean Cities partners have already reached 100 percent, such as American Livery Company in Orange County, CA (105 CNG taxis); Yellow-Checker-Star in Las Vegas, NV (200 LPG taxis); Massport Terminal Shuttle, Boston, MA (32 CNG Shuttles); and Santa Fe Transit in Santa Fe, NM (28 CNG buses).

**Assessment:** Exceeded Goal

#### *FY 1999 Targets and Results:*

M *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 ten large metropolitan areas.

**Assessment:** Met Goal

M *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

M *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

## **DESIGNING AND DELIVERING THE VEHICLES OF THE FUTURE (ER 3-1)**

Develop and deploy vehicles, fuels, and systems of the future contributing significantly to the Partnership for a New Generation of Vehicles (PNGV) goal to develop, by 2004, prototype mid-sized cars capable of 80 miles per gallon that will reduce CO<sub>2</sub> emissions by two-thirds compared to the 1993 new car average without compromising safety, comfort, and cost.

### ***FY 2000 Targets and Results:***

M *Work with three domestic automakers to incorporate the most promising Partnership for a New Generation of Vehicles (PNGV) technologies in concept vehicles with up to three times the average fuel economy of 1993 Taurus, Lumina, and Concorde models.*

**Results:** Exceeded performance and delivery Goals. DaimlerChrysler, Ford and General Motors introduced advanced concept vehicles that each achieve three times the gas mileage of today's typical family sedan on March 30, 2000 event.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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

## DOE Decision Unit: Energy Information Administration

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Energy Information Administration	EI	18	Energy Information Administration	74	72

### Description:

As an independent statistical/analytical agency, Energy Information Administration (EIA) has two principal roles. First, its primary responsibility is to conduct the functions required by statute. This responsibility consists of the development and maintenance of a comprehensive energy database and the publication of reports and analyses for a variety of customers in the public and private sectors. There are also specific reports that are required by law. Second, EIA responds to inquiries for energy information. The primary customers of EIA services are public policymakers in the Department of Energy and the Congress. Other customers include other agencies within the Executive branch and the independent agencies of the Federal Government, state and local governments, the energy industry, educational institutions, the news media, and the public.

### EXPANDING PUBLIC ACCESS TO ENERGY INFORMATION

(ER 5-1)

Develop and expand public access to energy data, forecasts, analyses, and educational materials.

#### *FY 2000 Targets and Results:*

M *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020.*

**Results:** Annual Energy Outlook was published in December 1999; International Energy Outlook was published in March 2000

**Assessment:** Met Goal

M *Achieve a growth rate of at least 20 percent per year; through 2002, in the average number of unique monthly users of the Energy Resources Board Web Site (from about 71,000 per month in 1997).*

**Results:** EIA has experienced a growth rate in excess of 150 percent in the average number of unique monthly users from the previous year. (FY 1999: 152,200 FY 2000: 385,400)

**Assessment:** Exceeded Goal

#### *FY 1999 Targets and Results:*

M *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 Sites was 348,528 users per month. This represents an increase in excess of 100 percent from the previous year.

**Assessment:** Exceeded Goal

M *Publish domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020.*

**Results:** EIA published the Domestic Annual Energy Outlook in December 1998. An International Energy Outlook was published in March 1999.

**Assessment:** Met Goal



## DOE Decision Unit: Power Marketing Administrations

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Elements in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Power Marketing Administrations	PMA	18	Power Marketing Administrations	(265)	(150)

### Description:

The Power Marketing Administrations' (PMAs) mission fulfills the requirements of Section 5 of the Flood Control Act of 1944, Section 9 of the Reclamation Projects Act of 1939, the Bonneville Project Act of 1937, and various other acts by marketing and reliably delivering cost-based Federal hydroelectric power with preference given to publicly-owned electric utilities. This is accomplished by charging rates for Federal power that are as low as possible while recovering all costs, including repaying the Federal investment in power facilities in a timely manner.

The PMAs' programs help achieve the Department's Energy Resources goal through the strategic objectives of reducing the vulnerability of the U.S. economy to disruptions in energy supplies, and helping ensure that reliable electricity generation is in place in several regions of the country that can deliver adequate and affordable supplies of power.

### TAKING MEASURES TO AVOID DOMESTIC ENERGY DISRUPTIONS (ER 1-6)

Take measures to avoid, but when needed, respond to domestic energy disruptions.

#### ***FY 2000 Targets and Results:***

M *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:** Bonneville, Southeastern, Southwestern, and Western have passed the performance standard for NERC.

**Assessment:** Met Goal

M *Meet planned repayment of principal on power investment.*

#### **Results:**

- Met Goal - Bonneville
- Nearly Met Goal - Southeastern
- Met Goal - Southwestern
- Nearly Met Goal - Western Area

**Assessment:** Nearly Met Goal

M *Achieve a safety performance of 3.3 or fewer recordable accident rate for recordable injuries per 200,000 hours worked or the Bureau of Labor Statistics' industry rate, whichever is lower. (PMAs)*

**Results:** "On-track" - Bonneville; "On-track" - Southeastern; "On-track" - Southwestern; "On-track" - Western

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

M *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

# National Nuclear Security

**Strategic Goal for FY 2000: *Further strengthen national security, and reduce the global danger from weapons of mass destruction.***

The following pages contain detailed information on the results achieved for performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President for the National Nuclear Security Business Line.

For each performance measure and indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

"Exceeded Goal" means the results were *significantly* more than planned.

"Met Goal" means the results *met the target* performance level or were slightly more than the target, but not significantly more.

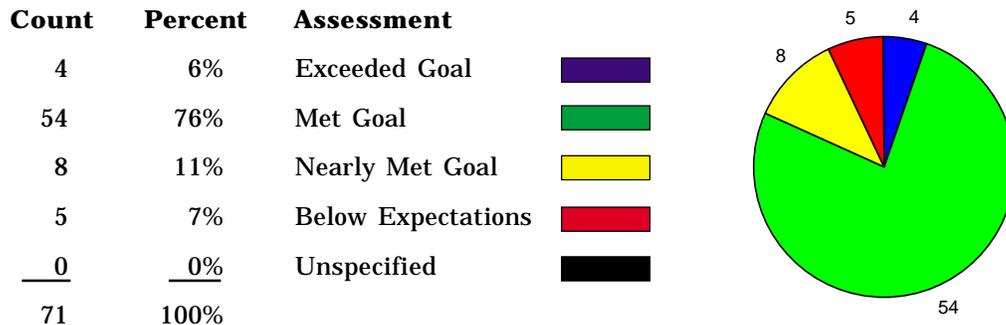
"Nearly Met Goal" means the performance was less than the target level but *not significantly less*.

"Below Expectations" means the results were *significantly less* than the target.

"Unspecified" means that the end of year results were not available at the time of printing.

When performance was less than "Met Goal," a "Plan of Action" is included after the assessment.

There were 71 performance measures in FY 2000 for this business line. The overall results are:



**Program Evaluations Conducted During FY 2000:**

GPRA defines program evaluation as “an assessment, through objective measurement and systematic analysis, of the manner and extent to which Federal programs achieve intended objectives.” Program evaluation, therefore, covers a broad range of evaluative activities. DOE’s three major categories of program evaluations are discussed in the introduction to the detailed performance results. The major evaluations within this business line that were conducted during FY 2000 are listed below. Through these evaluations, the Department was able to re-assess its programs and reorient them or apply additional resources in order to ensure that they achieved their intended objectives as part of the strategic planning process conducted in FY 2000.

- Nov. 1999 **“30-Day Review”**: A comprehensive internal review of the Stockpile Stewardship Program. ([http://www.dp.doe.gov/dp\\_web/public\\_f.htm](http://www.dp.doe.gov/dp_web/public_f.htm))
- Feb. 2000 **DOE Research and Technology Against the Threat of Weapons of Mass Destruction: Review of the Department of Energy Office of Nonproliferation Research and Engineering (NN-20)**: A comprehensive review of R&D programs by the Nonproliferation and National Security Advisory Committee. (<http://www.nn.doe.gov/pubs.htm#nonpro>)
- Feb. 2000 **National Security Research and Development Portfolio**: Volume 3 of a 4 volume R&D Portfolio provides an analysis of the complete set of R&D investments supporting National Security. (<http://www.osti.gov/portfolio>)
- Jun. 2000 **A Strategic Approach to Integrating Long-Term Management of Nuclear Materials**: A consolidated account to Congress and the public of DOE’s unclassified inventory of nuclear materials and a description of how and where they are managed. Includes an examination of opportunities for greater integration, and a description of next steps toward realizing those opportunities. (<http://www.policy.energy.gov/nmsi.html>)
- Jun. 2000 **The Stockpile Stewardship Plan**: Documents the result of a corporate-level, program review required by the National Defense Authorization Act for FY 1998 (P.L. 105-85). ([http://www.dp.doe.gov/dp\\_web/public\\_f.htm](http://www.dp.doe.gov/dp_web/public_f.htm))

## DOE Decision Unit: Defense Programs

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Stockpile Stewardship	DP	19	Stockpile Stewardship	1,818	1,789
		19	Stockpile Management	1,737	1,837
Secure Transportation Asset	DP	19	Secure Transportation Asset	436	73

### Description:

The DOE Stockpile Stewardship Program maintains confidence in the safety, reliability and performance of the nuclear weapons in the nation's stockpile without underground nuclear testing. The program develops and maintains the world class scientific, engineering, manufacturing and experimental capabilities needed to achieve weapons stockpile certification for the long term. It ensures the vitality of the DOE national security enterprise, including the physical and intellectual infrastructure for the three defense national laboratories, the Nevada Test Site, and the Kansas City, Pantex and Y-12 production plants and Savannah River Tritium facilities. Achieving confidence in our ability to certify without underground nuclear testing that the nuclear weapon stockpile remains safe and reliable for the long term requires capable and experienced people working on significant scientific and engineering challenges to develop and advance specialized knowledge, tools and techniques. Success requires appropriate integration and balance of these three elements in meeting current and future mission: carrying out the directed stockpile workload as well as maintaining the program's infrastructure and developing capabilities needed in the future. To implement the FY 2000 legislation establishing the National Nuclear Security Administration (NNSA), Defense Programs (DP) is proposing a major change in program management strategy, and supporting planning, budgeting and organizational structures.

In the past year, DPs reintegrated under a single manager the research and development programs and the Accelerated Strategic Computing Initiative, one of many recommendations from a high level Task Force looking at integration issues across DP. We have undertaken intensive joint efforts with Management and Operation (M&O) contractors at all levels of the program to identify and exploit opportunities for integration, and have proposed to move key missions and capabilities within the laboratory complex to create centers of excellence while eliminating non-essential duplication, and to better balance the Stockpile Life Extension Program workload. However, much work remains to transfer specific programs, projects, and assets to the new NNSA, and the Administration will continue to work on this during FY 2000.

Beginning in FY 1999, we have articulated an integrated approach to Stockpile Stewardship program management, built upon three elements: Directed Stockpile Work, Campaigns, and Readiness in Technical Base and Facilities. We plan to update the DP's objectives in the DOE Strategic Plan to reflect this change.

### MAINTAINING THE ENDURING STOCKPILE (NS 1-1)

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.

#### *FY 2000 Targets and Results:*

M *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 establishment of an annual process for the review and certification of the safety and reliability of the nuclear weapons stockpile was directed by the President on August 11, 1995. 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 (NWC). The fourth Annual Certification was submitted to the President on April 5, 2000 and the fifth Annual Certification process is on schedule. The first draft DOE laboratory assessments of the various types of warheads in the enduring stockpile were completed March 27, 2000. DOE interlab and Albuquerque Operations Office/Headquarters review and comment on these drafts were completed April 13, 2000. The final DOE lab reports were published in late July 2000, and distributed during August. The letters from the Laboratory Directors to the Secretaries of Defense and Energy are being completed: The Sandia letter was signed on September 12, 2000; the LLNL and LANL letters are expected during October 2000. This completes the DOE contribution to the process, with the exception of the DOE role in the NWC process leading up to the submission of the Fifth Annual Certification memorandum from the Secretaries of Defense and Energy to the President, anticipated this winter.

**Assessment:** Met Goal

M *Meet all annual weapons alteration and modification schedules developed jointly by DOE and DoD.*

**Results:** Weapon alterations and modifications are crucial to upgrade the stockpile to meet higher safety standards, replace faulty components, meet changed military requirements, or extend the life of a weapon. Although no modifications were required this fiscal year, eleven alterations are underway: five for the B61, one for the W76, one for the W78, two for the B83, and two for the W87. Six of the eleven alterations are behind schedule:

W87 Alt 342: DOE made the first delivery on schedule to the Air Force in May 1999 but missed two subsequent monthly shipments in 1999 due to operational problems at Pantex. A recovery plan was established with additional shipment quantities for FY 2001-02. Further operational difficulties in 2000 at Pantex caused reduced shipment quantities and delayed deliveries in May-June and August-September. The recovery plan was modified to increase delivery rates such that Alt 342 will be completed on schedule in FY 2004.

B61 Alt 335: The B61 alteration has been delayed due to findings in flight testing and production testing. A stop work was initiated in early FY 2000, but production was restarted in the last quarter of

FY 2000. The projected completion of this alteration has slipped from FY 2002 to FY 2003. This new completion date is acceptable to DoD.

B61 Alt 339: This B61 alteration has continued on units already retrofitted with Alt 335, but a delay in installation on units without Alt 335 has occurred while awaiting the restart of Alt 335. The projected completion of Alt 339 has slipped from FY 2002 to FY 2003. This new completion date is acceptable to the DoD.

B61 Alt 350: This B61 alteration has been delayed due to production problems and a stop work which occurred on the Common Radar being built for the B83 program. The start of the B61 Alt 350 has slipped from late FY01 to the second quarter of FY 2003. This new start date has been coordinated with the DoD.

B83 Alt 750/752: A stop production notice on the Common Radar for this B83 effort was issued in December 1999, delaying completion of these alterations. A limited restart of the radar production was issued in July 2000. The delay in production has caused a slip in the completion of Alt 750/752 from the end of FY 2001 to the first quarter FY 2003. This new completion schedule has been coordinated with the DoD.

**Assessment:** Below Expectation

**Plan of Action:** Revised schedules have been negotiated with the DoD that will meet their operational needs.

M *Complete an internal comprehensive review of the Stockpile Stewardship Program.*

**Results:** The "U.S. Department of Energy Stockpile Stewardship Program 30-Day Review" was completed November 23, 1999, and released to the public by the Secretary on December 10, 1999. The comprehensive internal review of the stockpile stewardship program was chaired by the Under Secretary of Energy, and engaged an external group of senior technical advisors with long experience in the Nation's national security programs. The review's scope included the health and status of the nuclear weapons complex; and the status of recruitment, retention and training of top scientists and engineers needed to sustain stockpile stewardship. The assessment concludes that the program, which began in 1993, is sound and developing the science, technology, and production capabilities needed to maintain the long-term safety, security and reliability of the Nation's existing nuclear weapons without underground nuclear testing. The principal finding of the review is that stockpile stewardship works, both in terms of specific science, surveillance, and production

accomplishments and in terms of developing a program management structure that integrates the span of program activities. The review's findings will be used to help shape future decisions in the program and prioritize investments, schedules and resources. In particular the review emphasizes the need for greater investments in people to assure capability and stability at the production plants and the research environment at the laboratories. The review also identified the need for the Department of Defense and the Department of Energy to refine their process for determining the scheduling of stockpile refurbishments over the next several decades to take into consideration military, human and budgetary needs. The Secretary ordered the implementation of some fifteen specific actions that emerged from the report's finding. These actions have all been completed.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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 the President and is crucial to this 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. The Sandia National Laboratory, the Los Alamos National Laboratory and the 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

M *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 modifications but there were eleven weapon alterations ongoing, either 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 the DoD and DOE is meeting the new revised schedule.

## **DEVELOPING A REPLACEMENT SOURCE OF TRITIUM (NS 1-4)**

Provide a reliable source of tritium as required for the nuclear weapons stockpile by FY 2005 based on the selection of commercial light water reactor technology.

### *FY 2000 Targets and Results:*

M *Begin implementation of the commercial light water reactor technology to provide a reliable source of tritium.*

**Results:** 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. In December 1998, the Secretary announced his decision for producing tritium in commercial reactors and 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. The Commercial Light Water Reactor Project is meeting the milestones of its baseline schedule which calls for the irradiation of tritium-producing burnable absorber rods in the TVA reactors in early FY 2004 and the delivery of tritium gas to the nuclear weapons stockpile in mid-fiscal year 2006. Achievements since the beginning of FY 2000 are as follows: (1) An interagency agreement be-

tween DOE and TVA is in effect and TVA is proceeding on schedule with preparations to request the Nuclear Regulatory Commission to amend the licenses of TVA's reactors to permit tritium production; (2) Non-destructive examinations of tritium-producing rods previously irradiated in a TVA reactor have been completed; (3) Site preparation is proceeding on schedule for the Tritium Extraction Facility (site excavation has been completed); and (4) DOE has awarded a contract for commercial, long-term fabrication of tritium-producing rods for irradiation.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 commenced. 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 radio frequency 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

## **REPLACING UNDERGROUND TESTING WITH SCIENCE**

### **(NS 2-1)**

By FY 2004, develop the advanced simulation and modeling technologies necessary to confidently mitigate the loss of underground testing.

### ***FY 2000 Targets and Results:***

M *Demonstrate a computer code capable of performing a three-dimensional analysis of the dynamic behavior of a nuclear weapon primary, including a prediction of the total explosive yield, using an Accelerated Strategic Computing Initiative (ASCI) computer system.*

**Results:** In December 1999, the first-ever three-dimensional simulation of a nuclear weapon "primary" explosion was successfully completed at NNSA's Lawrence Livermore National Laboratory using an ASCI supercomputer. Modern nuclear

weapons consist of two main components, a primary, or trigger, and the thermonuclear reaction which is called the secondary. Demonstrating the ability to computationally visualize and analyze what happens to the primary is the first critically important step taken in simulating an entire nuclear weapon explosion and is visual proof that key advances are being made in our science-based methods to secure the safety and reliability of our nuclear weapons without underground testing. In addition, the NNSA signed a contract with Compaq for the next supercomputer, a 30-teraop machine.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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 of Energy'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 a possible Comprehensive Test Ban Treaty. The ASCI Blue-Pacific system at the 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 the Sandia National Laboratory is operating at 3.15 trillion operations per second and the ASCI Blue-Mountain system at the 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

## **DEVELOPING NEW EXPERIMENTAL CAPABILITIES FOR UNDERSTANDING WEAPONS SCIENCE (NS 2-2)**

Develop new nuclear weapons physics experimental test capabilities.

### ***FY 2000 Targets and Results:***

M *Continue construction of the National Ignition Facility (NIF) and rebaseline future construction, total costs, and schedules by June 2000. (FMFIA milestone)*

**Results:** The NIF remains a cornerstone requirement of the Stockpile Stewardship Program. It is the only facility that will allow the experimental study of fusion burn in the laboratory. This capability is an essential element of our ability to maintain our nuclear deterrent into the future.

Late in FY 1999, the project notified the Department that delays in completing the design of the laser and support equipment, coupled with additional costs for clean room quality assembly of the laser infrastructure, were projected to affect significantly project cost and schedule. Congress directed that the Secretary complete and certify a new cost and schedule baseline and submit it to the Congress by June 1, 2000. An interim report was made to Congress on June 1, 2000 with the final certification for the revised cost and schedule baseline submitted September 14, 2000. The revised cost estimate of NIF construction is \$2.25 billion with an additional \$1.25 billion required for other related operational activities. The project will be completed by September 2008 with initial operation in June 2004.

Construction of the NIF continued during FY 2000. The NIF building conventional construction is more than 90 percent complete and the 33-foot diameter target chamber has been installed in the building. Installation of the laser system infrastructure is underway, as is procurement of laser glass and large optical components. The design of the laser and target area special equipment is nearing completion and procurement of the hardware to outfit the 192 beamlines has started.

**Assessment:** Met Goal

M *Begin execution of the Defense related project management campaign implementation plan. (FMFIA milestone)*

**Results:** The Project Management Campaign is essential to restoring Congressional and GAO confidence in DPs' construction project management abilities. By reducing both the frequency and magnitude of cost and schedule overruns on projects, DP will be able to more effectively accomplish its strategic goals. While the Campaign has a planned duration of three years to complete, meaningful results are already being seen from the actions initiated this fiscal year. Most of the systematic problems that have hindered DPs' project performance have now been identified and subjected to root cause analyses. New policies and procedures are being developed to permanently correct these problems. If problems are detected during the course of the newly initiated DP Energy Systems Acquisition Advisory Board Equivalent reviews, adjustments will be made at that time. Priority is being placed on the adoption of proven best practices, such as improved pre-project planning, and the use of Integrated Project Teams, that are commonly employed in other organizations.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 DPs' management has responded with an action plan. The Secretary has directed that aggressive inquiries be made by the Department, by outside experts, and by LLNL, 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.

## CONDUCTING EXPERIMENTS TO ADVANCE OUR UNDERSTANDING OF WEAPONS BEHAVIOR (NS 2-3)

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.

### *FY 2000 Targets and Results:*

M *Conduct further subsets of the subcritical experiment begun in FY 1999 (Oboe) and one additional subcritical experiment at the Nevada Test Site to provide data on the behavior of nuclear materials during the implosion phase of a nuclear weapon.*

**Results:** Data from subcritical experiments make a significant contribution to stockpile stewardship and to maintaining nuclear test readiness, required by a Presidential Decision Directive. Subcritical experiments planned for FY 2000 were Thoroughbred and a continuation of the Oboe series begun in fiscal year 1999. The Oboe series of subcritical experiments are designed to improve our understanding of the complex behaviors of metal surfaces and sub-surfaces resulting from high-explosive shock conditions. Oboe 2, a radiography experiment, was conducted on November 9, 1999; Oboe 3, a holography experiment, was conducted on February 3, 2000; Oboe 4, a holography experiment was conducted on April 6, 2000; and Oboe 5, a holography experiment, was conducted on August 18, 2000. The Thoroughbred subcritical experiment, conducted on March 22, 2000, was the second subcritical experiment which compared ejecta production between wrought and cast plutonium.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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.

**Assessment:** Met Goal

## Downsizing and Modernizing the National Security Enterprise (NS 3-1)

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.

### *FY 2000 Targets and Results:*

M *Ensure that all facilities required for successful achievement of the Stockpile Stewardship Program remain operational.*

**Results:** The LANL nuclear production facilities, TA-55 and the Chemistry and Metallurgy Research (CMR) building, remain operational. However, operations have been severely restricted due to the March 16, 2000, Pu-238 intake accident and the resulting compensatory and corrective actions. In addition, the Cerro Grande Fire, in May 2000, caused significant disruption to all Laboratory activities. At the end of the fiscal year, operations in TA-55 were just beginning to return to normal with the resumption of pit manufacturing development activities.

**Assessment:** Below Expectation

**Plan of Action:** LANL is proceeding with projects needed to maintain safe and reliable operations, and to recapture a pit manufacturing capability. The CMR Upgrades project will allow continued safe operations in the facility until 2010. The project's last year of funding is FY 2001, with an expected completion in FY 2002. Seven subprojects have been completed since rebaselining the project in Septem-

ber 1999. All have been completed on or ahead of schedule and under budget. The Cerro Grande Fire and other work stoppages have delayed some of the remaining subprojects, but should not have a significant impact on the overall project completion.

It will be necessary to replace the capabilities provided by the CMR facility within the next ten years. However, pre-conceptual planning for a CMR replacement capability was placed on hold in February 2000, awaiting additional funding. The need to replace CMR combined with the requirement for capital investment to upgrade the aging TA-55 plutonium facility, and the need to relocate the TA-18 critical experiments facility drive the need for long-term strategic planning.

*M Meet the established schedules for downsizing and modernizing our production facilities.*

**Results:** The Department nearly met its established schedules for downsizing and modernization our production facilities during FY 2000. 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. The Kansas City and Pantex SMRI projects are both on schedule and within cost. The Savannah River SMRI project was evaluating a potential \$20 million cost overrun at the end of the year. The Y-12 SMRI project was still behind the established schedules at the end of the year and was projecting a cost overrun.

**Assessment:** Nearly Met Goal

**Plan of Action:** Delays in FY 2000 will be reflected in schedules for out years.

### ***FY 1999 Targets and Results:***

*M Ensure that all facilities required for successful achievement of the Stockpile Stewardship Plan remain operational.*

**Results:** Two key activities are underway 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, eleven of thirty 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 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

*M 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 of 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 FY 1998 and FY 1999. Construction funds for the Kansas City and Pantex SMRI projects were received in FY 1999; 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

## MAINTAINING READINESS FOR NUCLEAR OR OTHER EMERGENCIES (NS 3-5)

Maintain nuclear test readiness and enhance emergency management capabilities to address any nuclear weapons, radiological, or other emergency in the United States or abroad.

### *FY 2000 Targets and Results:*

M *Ensure that the capability to resume underground testing is maintained in accordance with the Presidential Decision Directive through a combined experimental and test readiness program.*

**Results:** The Department continues to meet its goal in maintaining the capability to resume underground nuclear testing, which requires: (1) exercising nuclear testing skills of personnel at the three nuclear weapons laboratories and the Nevada Test Site (NTS), (2) maintaining test facilities and equipment at the NTS, and (3) providing 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 defined, designed, and developed at Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) and conducted at the NTS. These experiments and specially designed test readiness exercises maintain laboratory and NTS personnel test readiness skills including nuclear design, weapons engineering, test integration, containment, security, assembly, storage and transportation, insertion and emplacement, timing and control, arming and firing, diagnostics, and test control center activities. One complex subcritical experiment, Thoroughbred, and four additional experiments of the Oboe series of subcriti-

cal experiments begun in FY 1999 were conducted during FY 2000. Furthermore, thirty-five high-explosive experiments were conducted in FY 2000 at the NTS. An active program of experiments is crucial to managing equipment and facilities essential to conducting an underground nuclear test, resulting in many of the assets being in day-to-day use. However, many unique assets are not in use and must be deliberately afforded some degree of protection to enable a realistic reconstitution capability at time of need. Currently, there are no significant shortfalls when comparing requirements to inventory or obtainable assets. For the purpose of maintaining access to experienced personnel through knowledge capture and archiving, 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. Although five subject matter expert video tapings were planned for this fiscal year, only two were completed. The remaining three were LANL subjects that, due to the Los Alamos fire, had to be postponed to the next fiscal year. Over 14,500 images were scanned and indexed into the Document Management and Archive Records System this fiscal year. Logging data was converted and migrated to a more stable and accessible platform. Seismic records were secured from further deterioration, inventoried, and data conversion begun. Borehole Photography archiving began with an inventory of all sets of photography. In the first half of FY 2000, 2 new CD ROMs were created, and over 8,200 images related to underground tests were scanned into the Document Management and Archived Records System.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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 and 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.- 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 Conse-

quence 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

M *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 its 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 (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 & 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

## REDUCING THE WEAPONS STOCKPILE (NS 4-1)

Safely and securely dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.

### *FY 2000 Targets and Results:*

M *Adhere to approved schedules for the safe and secure dismantlement of nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.*

**Results:** As of September 30, 2000, 100 percent of the FY 2000 dismantlement quantity was completed with no safety or security concerns. This cumulative percentage is a combination of: W56 Minuteman II warhead and W79 Artillery-Fired Atomic Projectile warhead dismantlements, and Quality Assurance/Miscellaneous dismantlements.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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.



## DOE Decision Unit: Arms Control and Nonproliferation

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Arms Control and Nonproliferation	NN	19	Arms Control and Nonproliferation	269	253

### Description:

Arms Control and Nonproliferation is the focal point within the Department for activities that support the President's arms control and nonproliferation policies, goals and objectives, as well as statutorily-mandated activities. The major functional areas of the program include: Policy and Analysis; Reduced Enrichment Research and Test Reactor (RERTR); International Safeguards; Export Control Operations; Treaties and Agreements; International Security; and International Materials Protection, Control, and Accounting (MPC&A). The program provides leadership and representation for the Department in the international arms control and nonproliferation community and the U.S. Government's interagency process, as well as for the U.S. Government in national and international arms control and nonproliferation negotiations, agreements and interactions. The Department provides policy and technical leadership for national and global nonproliferation efforts to reduce the continuing and new global nuclear dangers.

### STRENGTHENING THE NUCLEAR NONPROLIFERATION REGIME (NS 5-1)

Strengthen the nuclear nonproliferation regime through support of treaties and international agreements.

#### *FY 2000 Targets and Results:*

M *Support the Comprehensive Test Ban Treaty implementation and ratification activities.*

**Results:** DOE's participation in the Comprehensive Test Ban Treaty (CTBT) has contributed significantly to implementing the CTBT's verification provisions, particularly in drafting its Operations Manual for onsite inspections (OSI). DOE also participated actively in the work of Working Group B (the Preparatory Commission's committee to implement the Treaty's verification provisions) and many other related activities—workshops, training sessions, onsite inspection tabletops, and field exercises. DOE has drafted numerous chapter sections to be used as U.S. contributions to the OSI Operations Manual, most of them highly technical in nature. DOE engages in the process of clearing chapters drafted by other U.S. Government agencies. The DOE national

laboratory expert has served as U.S. point of contact for Working Group B, and another laboratory employee has recently served as the U.S. representative to an editing effort to produce a consolidated draft Manual. DOE has contributed significantly to bilateral efforts with Russia and Israel to resolve CTBT verification issues. DOE's work to implement a potential CTBT is essential as part of the process of seeking ratification. This is particularly true regarding verification, which is a critical and politically sensitive aspect of obtaining ratification.

**Assessment:** Met Goal

M *Support U.S. Government lead negotiations on the Fissile Materials Cut-off Treaty and the Biological Weapons Convention.*

**Results:** DOE provided essential support to U.S. Government participation in negotiations on the Protocol to the Biological Weapons Convention (BWC), the only ongoing multilateral arms control negotiation. The importance of this effort is that the Protocol will provide transparency in the fulfillment of BWC parties' commitments under the Convention, thereby reducing incentives to acquire biological weapons and increasing international security. DOE participated in U.S. Government backstopping meetings, providing the delegation's technical advisor and a delegation member to all four Protocol negotiating rounds in Geneva during FY 2000, drafting policy papers and Protocol language and ensuring

that the impact of potential Protocol provisions on DOE facilities is taken into account in formulating U.S. Government positions. As part of the latter function, DOE contributors began work on an “equities study,” designed to collect information on relevant activities at DOE facilities. DOE worked with the interagency community and industry representatives to help prepare for trial visits and investigations of relevant U.S. facilities, as required under U.S. law. Negotiations in the Conference on Disarmament on the Fissile Material Cutoff (FMCT) Treaty did not commence during FY 2000. Requirements for support were limited. However, some work was carried out that will help prepare the U.S. Government for the time when such negotiations do move forward. This includes the drafting of a comprehensive paper summarizing the status of all FMCT issues.

**Assessment:** Met Goal

M *Implement a nuclear spent fuel maintenance plan by continuing technical dialogue with the Democratic Peoples Republic of Korea (DPRK).*

**Results:** In FY 2000, DOE’s spent fuel team completed seven months of spent fuel canning and maintenance work at the 5 MW research reactor in Nyongbyon, DPRK. The U.S. Spent Fuel Team (USSFT) completed the canning of all accessible fuel rods, bringing the total to nearly 8,000 rods canned and placed under International Atomic Energy Agency (IAEA) safeguards. This was a significant milestone to meeting the actions described in the Agreed Framework for the safe storage of the spent fuel and meeting the U.S. and DPRK agreement to work together to strengthen the international nuclear nonproliferation regime. The team completed repairs to two spent fuel canisters that were previously identified as leaking, an activity that will become prominent during the maintenance phase of the project. Continuous maintenance and repair of canning equipment, diesel generators, and support systems was also completed. These maintenance and repair activities completed during the spent fuel canning phase are important for defining the expectations and requirements prior to implementing a spent fuel maintenance plan. The USSFT presence in DPRK provided for a continuous technical dialogue between the United States and DPRK. In addition, two technical meetings were held in the DPRK. The U.S. delegation, consisting of representatives from DOE and the Department of State met with DPRK officials in March and September 2000 to discuss and agree to project priorities including the maintenance and repair activities to be conducted prior to implementation of a long-term spent fuel maintenance plan.

**Assessment:** Met Goal

M *Lead, via the Joint Chairmanship, the inter-agency task force on warhead and fissile material to implement by July 2000 the START III concept for warhead elimination.*

**Results:** The U.S. delegation tabled the inter-agency-cleared draft protocol to provide a transparency regime for counting and confirming locations of those warheads with active forces as well as those warheads awaiting dismantlement in high-level meetings with the Russian Federation in March 2000. Implementation of the proposed protocol, which was co-drafted by the Departments of Energy and Defense, is currently under discussion with the Russian side.

**Assessment:** Met Goal

M *Provide equipment, technologies, and expertise to the IAEA and the United Nations Special Commission (UNSCOM) to support their nuclear inspections in North Korea and Iraq.*

**Results:** NNSA completed technical assessments in support of the Agreed Framework and for U.S. negotiations with the DPRK as recommended in the Perry report to the President. Support has focused on technical topics in the area of nuclear verifications necessary for successful implementation of the Agreed Framework and in assessments for negotiations with the DPRK on resolving the nuclear issue on the Korean Peninsula. Increased technical support will be needed through FY 2001 to assure that U.S. commitments under the Agreed Framework are met on schedule with the Korean Peninsula Energy Development Organization construction of the light-water reactors in North Korea. DOE provided ultra-sound equipment to detect leakage of canisters containing DPRK spent fuel and equipment to measure the fuel in the canisters. DOE provided the IAEA Iraq Action Team a computerized Comprehensive Inspection Planning System. NNSA also provided ultra-sound equipment to detect leakage of canisters containing DPRK spent fuel and equipment to measure the fuel in the cannister.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *Support U.S.-led negotiations on the Fissile Material Cut-Off Treaty at the United Nations multi-lateral conference on disarmament in Geneva.*

**Results:** The goal was met of supporting the U.S.-led negotiations on the FMCT at the United Nations multilateral Conference on Disarmament in Geneva. 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

## MINIMIZING THE RISKS OF PROLIFERATION (NS 5-2)

Work with the states of the former Soviet Union and others to minimize the risks of proliferation.

### *FY 2000 Targets and Results:*

- M *Ensure safe, secure storage of spent nuclear fuel at the BN-350 Reactor in Aktau, Kazakhstan. Complete canning of the fuel onsite, including existing core. Begin work on the long-term disposition program.*

**Results:** The objective of the BN-350 Fuel Disposition Program is to provide long term, safe, and secure storage for spent nuclear fuel assemblies residing at the BN-350 breeder reactor at Aktau, Kazakhstan. This program is described in three phases: packaging, transportation, and storage which are supported by physical security and safeguards projects. The goal to complete the onsite spent fuel packaging phase was met. Approximately 3,400 reactor fuel elements were processed from the spent fuel storage pool and the reactor core and sealed in approximately 480 stainless steel canisters for long-term secure storage. Significant progress was also accomplished for the transportation and final long-term storage phases. The BN-350 Cooperative Assessment for Secure Storage (BCASS) project was completed. The BCASS project was a cooperative effort between DOE experts and the National Nuclear Center of the Republic of Kazakhstan (ROK) to evaluate and rate prospective locations selected by the Kazakhstan Atomic Energy Committee for storing the BN-350 spent fuel. The evaluation methods, site data, and selection results were documented in a final report. The primary areas of concern on which the evaluation was based are Security; and Licensing, Environment, and Safety. In addition, the cost, schedule, and feasibility of constructing a storage facility, implementing state-of-the-art nuclear material safeguards systems, and transporting the spent fuel were developed, estimated, and analyzed for each of the prospective sites through supporting studies. The final report was approved by DOE and ROK representatives and has been sent to the ROK President for site approval.

**Assessment:** Met Goal

- M *Continue to install MPC&A upgrades in Russia for defense-related sites, civilian sites, Russian Navy projects, and the transportation sector.*

**Results:** In cooperation with Russian officials, physical security and accountancy upgrades were underway on approximately 763 MTs of weapons-usable material at the end of the year, and comprehensive MPC&A upgrades have been completed on about 137 MTs of this material. This work is prioritized by the level of material attractiveness at 95 sites including Navy, MinAtom Weapons Complex and Civilian sites.

**Assessment:** Met Goal

- M *Begin consolidation of weapons-usable material in Russia into fewer buildings and fewer sites, and eliminate 200 kilograms of weapons-grade nuclear material by converting it to non-weapons grade form thereby improving security and reducing overall cost.*

**Results:** In FY 2000, we exceeded our original goal for the year and eliminated a total of 700 kg of highly enriched uranium (HEU), and cumulatively, the Material Consolidation and Conversion (MCC) initiative has successfully eliminated 770 kg of HEU. Furthermore, in the past year, the consolidation effort has closed 4 storage rooms at Lytkarino, eliminating the need for costly upgrades. The Material Consolidation and Conversion Project maintains the responsibility for developing and implementing plans for inter-site consolidation of highly-enriched uranium for the MPC&A Program. The objective of MCC activities is to reduce the number of buildings, and ultimately, the number of sites in Russia that house weapons-usable HEU. In addition, whenever possible, the project converts HEU to low-enriched uranium. The MCC initiative significantly contributes to U.S. and Russian national security interests and nonproliferation objectives by dramatically reducing the proliferation attractiveness of Russian non-weapons HEU. MCC activities are valuable to both the U.S. and Russia by providing more secure storage for nuclear materials at fewer sites and at a lower cost and by rendering a significant amount of such material not directly usable in nuclear weapons.

**Assessment:** Exceeded Goal

M *Further the Nuclear Cities Initiative by promoting cooperation with the closed cities in the Russian nuclear weapons complex to improve the prospects for defense conversion and employment of former weapons scientists.*

**Results:** Major progress has been made in Sarov at the Avangard Plant in creating an Industrial Park where former weapons scientists are employed in commercial peaceful endeavors. A business partnership for medical technologies has been successfully established. More than 200 former weapons workers are currently employed, with the opportunity for up to 500 workers projected for the near term. In addition, over 500,000 square feet of floor space has been converted from defense to commercial purposes, downsizing the Avangard Electrochemical Plant. The Snezhinsk Open Computing Center, has been funded and is expected to employ over 100 weapons scientists by the end of FY 2001, with the potential to employ hundreds of additional scientists and engineers within the next two years. The Nonproliferation Analysis Center in Snezhinsk has been funded and employs 30 additional persons. Over 200 micro- and small-business loans have been made by the European Bank for Reconstruction and Development under a partnership with NCI providing entrepreneurial opportunities in the closed cities. Medical and health care exchanges and business training programs supporting economic diversification and jobs creation have been established and are ongoing in the nuclear cities. Two International Development Centers supporting business outreach and marketing have been established in Snezhinsk and Zheleznogorsk. Each center serves an average of 40 visitors per month with a total of 15 additional jobs for residents of the closed cities.

**Assessment:** Exceeded Goal

M *Equip 2 to 3 Russian sites and conduct 2 joint training sessions under a Second Line of Defense Initiative.*

**Results:** Three sites were equipped in the DOE/Russian Customs, Second Line of Defense program during FY 2000 using Department of State, Nonproliferation and Disarmament Fund money. U.S.-Russia Second Line of Defense cooperation in nuclear export control enforcement training during November 1999 to October 2000 included the development of new curricula for two joint training events, one at the Vladivostok location and the other at the Lyubertsy location of the Russian Customs Academy. Fundamentals of nuclear materials detection and response was focused on frontline Customs officers, while the nuclear fuel cycle fundamentals curriculum was focused on non-tariff Customs specialists to aid them in examining proposed exports. These achieve-

ments are first steps toward widely available training for front line officers responsible for discovery of attempts to smuggle nuclear materials and non-tariff specialists concerned with assuring compliance with national and multinational controls for nuclear and nuclear-related dual use commodities.

**Assessment:** Met Goal

M *Cooperate with Russian Federation Customs to block nuclear smuggling at Russian border posts by providing nuclear detection equipment.*

**Results:** In addition to DOE and Russian Customs agreeing upon six sites for FY 2000 to equip with monitoring equipment, Russian Customs has proposed 17 others. The six sites were provided nuclear detection equipment.

**Assessment:** Met Goal

M *Engage approximately 2,000 scientists, engineers, and technicians at nuclear NIS institutes, and approximately 800 scientists, engineers, and technicians at NIS chemical/biological institutes in 50 projects to provide long-term commercial employment.*

**Results:** In FY 2000, the Initiative for Proliferation Prevention (IPP) approved 29 new projects and approved continuation of 14 ongoing projects. Twenty-six of the new projects involved nuclear-related institutes, and three of these projects involved biological institutes. These projects are engaging over 3,300 scientists, engineers, and technicians, of which 600 are engaged at chemical and biological institutes. Seven projects have achieved commercial status and are generating annual sales at the rate of \$9.4 million. These projects have created 260 new jobs for Russians. IPP is in full compliance with the requirements of Section 3136 of the National Defense Authorization Act for FY 2000 regarding avoidance of taxation of its payments to Russia and also for percentage of funds spent at the national laboratories. In FY 2000, 57 percent of IPP funds were committed for payment to the NIS.

**Assessment:** Met Goal

M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Mission Critical Staffing. (FMFIA milestone)*

**Results:** The request for an increase of 52 additional Office of Nonproliferation and National Security (NN) employees and \$6 million of Program Direction funding to meet expanded program requirements and improve program efficiency in key arms

control and nonproliferation initiatives in the DOE NN was approved by Congress in August 2000 at \$5.3 million. In order to meet the expanded program requirements and achieve improvements, NN will federalize functions presently performed by 15 Headquarters (HQ) technical support service contractors and 12 Management and Operating technical support personnel on assignment to HQ from National laboratories; restructure operations at the Moscow Embassy and hire an additional 25 Federal employees to perform critical functions not presently being performed because of increased programmatic requirements.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 two additional sites to the 55 locations and initiating additional projects to meet performance targets.

**Assessment:** Exceeded Goal

M *Further the Nuclear Cities Initiative (NCI) 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 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



## DOE Decision Unit: Nonproliferation and Verification R&D

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Cost Item	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Nonproliferation and Verification R&D	NN	19	Nonproliferation and Verification R&D	224	239

### Description:

The Department of Energy Nonproliferation and Verification Research and Development Program is devoted to conducting applied research, development, testing, and evaluation of science and technology for strengthening the U.S. response to National Security threats and threats to world peace posed by the proliferation of nuclear, chemical, and biological weapons and special nuclear material diversion. Activities are focused on the development, design, prototype construction and production of operational sensor systems needed for proliferation detection, deterrence, nuclear test monitoring, and chemical and biological nonproliferation.

### ADVANCING NONPROLIFERATION TECHNOLOGY (NS 5-3)

Develop technologies and systems for detection of nuclear weapons proliferation and for nuclear explosion monitoring.

#### *FY 2000 Targets and Results:*

M *Develop improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking.*

**Results:** Developed improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking. This includes the development of a counter nuclear smuggling tool for user evaluation at U.S. borders, development of an advanced prototype nuclear detector using cadmium zinc telluride (CZT), and the development of a mass spectrometer for real-time analysis of effluents.

**Assessment:** Met Goal

M *Launch the Multispectral Thermal Imager (MTI) small satellite to demonstrate temperature measurement from space for the passive detection and characterization of proliferant activities.*

**Results:** The MTI small research satellite was successfully launched on March 12, 2000. Initial research operations began in late spring FY 2000 as per plan.

**Assessment:** Met Goal

M *Deliver three improved sensor systems for treaty nuclear explosion monitoring to the U.S. Air Force.*

**Results:** As part of the general program restructuring due to Global Positioning System (GPS) modernization, our customer, the U.S. Air Force, has made major changes to the specifications for these satellite sensor systems. To fit their new integration schedule, the Air Force has rescheduled these deliveries to FY 2004. The FY 2000 effort that would have been expended producing the three originally planned systems, which were already designed, was redirected to research and engineering to enable redesign according to the new Air Force specifications.

**Assessment:** Met Goal

M *Deliver to the U.S. National Data Center 60 percent (Release 4) of an operational knowledge base that can be accessed by automated processing systems and human analysts to provide monitoring and verification confidence.*

**Results:** The information products included in Release 4 were reviewed independently and the delivery of Release 4 occurred in the first week of July 2000.

**Assessment:** Met Goal

M *Test a first generation prototype hand-held detector for enhanced detection of chemical agents.*

**Results:** Live agent tests were successfully completed. System performed as anticipated.

**Assessment:** Met Goal

M *Complete architecture development to protect a "special event" from biological attacks.*

**Results:** Architecture is complete, and validation of system is in progress.

**Assessment:** Met Goal

M *Develop and test a prototype subway protection system that integrates chemical sensor and predictive models into an emergency response information system.*

**Results:** Chemical detection test bed is in place, and the development and testing of the system, including plans for integration of modeling tools, are proceeding on schedule. Progress in FY 2000 was consistent with the multiyear plan.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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

M *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

## DOE Decision Unit: International Nuclear Safety

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
International Nuclear Safety*	NN	19	International Nuclear Safety and Highly Enriched Uranium Transparency	111	94

\*Excludes Highly Enriched Uranium work which is included in its own Decision Unit. Total net costs are shown here.

### Description:

The mission of the International Nuclear Safety and Cooperation program is to support national security by activities in international safety and cooperation. The goal is to reduce the national security and environmental risks of nuclear power plants and nuclear facilities worldwide, especially Soviet-designed reactors, and to assist the host countries to implement self-sustaining nuclear safety improvement programs capable of reaching internationally accepted safety practices. Project activities address significant safety issues primarily in Ukraine, Russia, Armenia, and Kazakhstan.

The activity improves nuclear safety through participation in international organizations and by development of international nuclear safety centers.

### ENHANCING THE SAFETY OF SOVIET-DESIGNED REACTORS AND PROMOTING INTERNATIONAL NUCLEAR SAFETY (NS 7-1)

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.

#### ***FY 2000 Targets and Results:***

M *Complete the installation of Safety Parameter Display Systems to improve operator response to emergencies in Russia and at South Ukraine Unit 2, Rivne Unit 3, and Zaporizhzhya in Ukraine.*

**Results:** The safety parameter display system has been completed at all three plants.

**Assessment:** Met Goal

M *Complete a full-scope simulator for Kola Unit 4 and Balakovo Unit 4 in Russia, and for South Ukraine Unit 3 in Ukraine.*

**Results:** All three simulators have been completed.

**Assessment:** Met Goal

M *Complete a probabilistic risk assessment for Kola Unit 4 in Russia and for South Ukraine and Rivne plants in Ukraine.*

**Results:** Probabilistic risk assessments for Kola unit 4 and for South Ukraine are completed. For the Rivne plant, we have completed the database, the thermohydraulic models, and the probabilistic calculations.

**Assessment:** Nearly Met Goal

**Plan of Action:** For the Rivne plant, finalization of report was in progress at the end of the year and was scheduled for December 2000. The schedule was based on Ukraine's manpower allocation to complete its part of the joint project.

M *Establish a Ukrainian Center for Nuclear Fuel and Reactor Core Design and collect information that will be used to design and test nuclear fuel.*

**Results:** A Ukrainian Center for Nuclear Fuel and Reactor Core Design has been established and information has been obtained that will be used to design and test nuclear fuel.

**Assessment:** Met Goal

- M *Obtain final design approval for the Chornobyl Heat Plant, and complete delivery of major equipment to the construction site.*

**Results:** The design for the Chornobyl Heat Plant has been approved, and major equipment has been delivered, with installation in progress.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

- M *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 1) Strengthening Nuclear Safety in Eastern Europe (June 14-18, 1999), and 2) 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

- M *Complete the installation of Safety Parameter Display Systems to improve operator response to emergencies at Leningrad-Unit 4 and Novovoronezh-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

- M *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 Khmelnytsky Nuclear Power Plant (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 Khmelnytsky 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

- M *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.

M *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 were completed for the plants by September 1999.

**Assessment:** Met Goal

M *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



## DOE Decision Unit: Highly Enriched Uranium Transparency Implementation

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Highly Enriched Uranium Transparency Implementation	NN	19	International Nuclear Safety	-*	-*

\*Total net costs for the Highly Enriched Uranium work is shown in the Decision Unit for International Nuclear Safety

### Description:

The Highly Enriched Uranium (HEU) Transparency Implementation program is responsible for ensuring that the nonproliferation aspects of the February 1993 HEU Purchase Agreement between the United States and the Russian Federation are met. This Agreement covers the purchase over 20 years of low enriched uranium (LEU) derived from at least 500 metric tons of HEU removed from dismantled Russian nuclear weapons. Under the Agreement, conversion of the HEU components into LEU is performed in Russian facilities. The purpose of the program is to put into place and implement those measures agreed to by both sides, that permits the United States to have confidence that the Russian side is abiding by the Agreement. The program also requires the United States to support comparable monitoring activities by the Russian Federation representatives at U.S. facilities subject to the Agreement.

### REDUCING INVENTORIES OF SURPLUS WEAPONS-USABLE FISSILE MATERIALS WORLDWIDE IN A SAFE, SECURE, TRANSPARENT AND IRREVERSIBLE MANNER

(NS 4-2)

Dispose of surplus 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 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.

#### *FY 2000 Targets and Results:*

- M *Monitor the conversion of 30 metric tons of HEU from dismantled Russian nuclear weapons into low enriched uranium (LEU) for purchase by the United States Enrichment Corporation.*

**Results:** Contract between USEC and Tenex for CY 2000 deliveries of LEU derived from dismantled nuclear weapons HEU was implemented. The 30 metric tons of HEU material has been converted into LEU for delivery to USEC. Actual LEU deliveries were on schedule.

**Assessment:** Met Goal

- M *Conduct up to 24 special monitoring visits to 4 Russian facilities.*

**Results:** US Transparency monitoring program has conducted 22 of the 24 monitoring trips planned. Two trips were cancelled per mutual DOE /Minatom understandings.

**Assessment:** Nearly Met Goal

**Plan of Action:** Two trips were cancelled per mutual DOE/Minatom understandings. Therefore, there are no plans to make up the missed trips.

- M *Install permanent monitoring equipment at the Zelenogorsk blending facility.*

**Results:** Permanent monitoring equipment needs to be installed at the Zelenogorsk facility to monitor HEU to LEU blending. Minatom has prevented such work.

**Assessment:** Below Expectation

**Plan of Action:** Meetings with Minatom representatives at the Ministerial level were occurring to address this topic at the end of the year. Discussions on decision points were conducted January 15-16, 2001. This will be pursued in FY 2001.

M *Maintain and monitor the  $UF_6$  flow and enrichment measurement equipment installed at the blend points at a Russian HEU dilution facility.*

**Results:** Blend Down monitoring System equipment was installed at UEIP in February 1999. Equipment is collecting flow and enrichment data. However, we have yet to complete calibration tasks to completely adjust equipment to plant operating conditions. Minatom approval of work was obtained in October 2000 meeting.

**Assessment:** Below Expectation

**Plan of Action:** Special Monitoring team scheduled to arrive at Urals facility November 12, 2000 to implement detailed work plan to adjust equipment and replace decayed radioactive sources. Minatom has delayed this action again for unilateral reasons, which we were attempting to resolve at the end of the year. Re-scheduling the work plan implementation for later in November 2000.

M *Compile and analyze collected data and information into an assessment of confidence of compliance with the nonproliferation objectives of the HEU Agreement.*

**Results:** Monitoring data has been collected and compiled into a database, and pertinent information has been provided to the U.S. Highly Enriched Uranium (HEU) transparency interagency group to take under advisement.

**Assessment:** Met Goal

M *Conduct Russian technology demonstrations to further warhead dismantlement or transparency measures.*

**Results:** During the week of August 14-17, 2000, the Departments of Defense and Energy sponsored an unclassified Fissile Material Transparency Technology demonstration visit for a Russian Federation delegation at Los Alamos National Laboratory. This demonstration was hosted by the Defense Threat Reduction Agency under the Cooperative Threat Reduction program in connection with the Mayak Fissile Material Storage Facility project. On Wednesday, August 16, 2000, the Russian delegation observed a demonstration of measurements on several radioactive sources using an attribute measurement system with information barrier. In addition to measurements on several unclassified authentication

samples, the U.S. delegation demonstrated to the Russian delegation measurements on a classified plutonium nuclear weapons component (a pit) removed from a dismantled U.S. nuclear weapon, in a sealed container, using the information barrier system to protect classified information

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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

## DOE Decision Unit: Fissile Materials Disposition

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Fissile Materials Disposition	NN	19	Fissile Materials Disposition	130	110

### Description:

The Fissile Materials Disposition Program is responsible for implementing a path forward for disposing of surplus U.S. weapons-usable fissile materials, including highly enriched uranium and plutonium, providing key negotiation and technical support for efforts to attain reciprocal actions for disposing of surplus Russian plutonium, and storing surplus U.S. fissile materials pending disposition. These efforts contribute to the Administration's goal to reduce the nuclear danger and the threat of proliferation by disposing of U.S. surplus plutonium and highly enriched uranium, and helping Russia dispose of their surplus plutonium.

### REDUCING INVENTORIES OF SURPLUS WEAPONS-USABLE FISSILE MATERIALS WORLDWIDE IN A SAFE, SECURE, TRANSPARENT AND IRREVERSIBLE MANNER

(NS 4-2)

Dispose 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.

#### ***FY 2000 Targets and Results:***

M *Complete Title I design of the MOX Fuel Fabrication Facility required for submittal of a license application to the Nuclear Regulatory Commission.*

**Results:** The Department's design contractor, the consortium team of Duke Engineering & Services, COGEMA, Inc., and Stone & Webster (DCS), was conducting design work on the MOX Fuel Fabrication Facility at the end of the year. Due to delays in issuing the Surplus Plutonium Disposition Record of Decision (January 2000) and selecting the actual location for the facility at the Savannah River Site,

Title I design will not be completed until December 2000.

**Assessment:** Nearly Met Goal

**Plan of Action:** Design work on the MOX Fuel Fabrication Facility is ongoing and the Department expects to submit a license application for construction of the facility to the Nuclear Regulatory Commission in February 2001.

M *Ship 4MT (8 percent of 50MT) of surplus U.S. HEU to the United States Enrichment Corporation.*

**Results:** The Department planned to ship 4 metric tons (MT) of U.S. surplus highly enriched uranium (HEU) to the United States Enrichment Corporation (USEC) for downblending to low enriched uranium and subsequent sale in FY 2000. By the end of FY 2000, DOE shipped only 1.5 MT of HEU to USEC. The delay in shipment of this material was caused by a safety stand-down at the Y-12 plant in Oak Ridge, Tennessee (where the HEU is stored) for most of the year. Planned deliveries will catch up during FY 2001. A total of 50 metric tons of surplus HEU will be transferred to USEC by 2005.

**Assessment:** Nearly Met Goal

**Plan of Action:** As part of an agreement with USEC, the Department has been shipping surplus HEU to USEC vendors since 1999. Shipment is dependent on several factors, including the ability to perform packaging and shipping operations at the shipping facility. Since planned shipments will catch up during FY 2001, the inability to ship the full 4 MT of HEU to USEC during FY 2000 will not adversely impact the agreement with USEC.

- M *Begin to implement a bilateral agreement with Russia for plutonium disposition. (FMFIA milestone)*

**Results:** In September 2000, Russian Prime Minister Kasyanov and U.S. Vice President Gore signed an Agreement for disposing of 68 metric tons of weapon-grade plutonium—34 metric tons in each country. Signature of the Agreement has enabled the U.S. and Russia to begin preliminary design of industrial-scale plutonium conversion and MOX fuel fabrication facilities in Russia.

**Assessment:** Met Goal

- M *Issue the Record of Decision on a site(s) for three plutonium disposition facilities. (FMFIA milestone)*

**Results:** Following release of the final Surplus Plutonium Disposition Environmental Impact Statement in November 1999, the Department issued a Record of Decision (ROD) on January 4, 2000 naming Savannah River as the site for three key plutonium disposition facilities (pit disassembly and conversion, immobilization, and MOX fuel fabrication). The ROD also announced that DOE plans to immobilize up to 17 metric tons of surplus plutonium and to dispose of up to 33 metric tons of surplus plutonium as mixed oxide fuel.

**Assessment:** Met Goal

- M *Complete Title I design of the Pit Disassembly and Conversion Facility.*

**Results:** The Department's design contractor, Washington Group International (formerly Raytheon Constructors and Engineers), was conducting design work on the Pit Disassembly and Conversion Facility at the end of the year. Due to delays in issuing the Surplus Plutonium Disposition Record of Decision (January 2000) and selecting the actual location for the facility at the Savannah River Site, as well as the identification of significant site and facility specific issues that had not been anticipated in the initial scope of work, Title I design will not be completed until June 2001.

**Assessment:** Below Expectation

**Plan of Action:** Design work on the Pit Disassembly and Conversion Facility is continuing and the Department expects to complete Title I design in June 2001.

### ***FY 1999 Targets and Results:***

- M *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

- M *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

- M *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

- M *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

## DOE Decision Unit: Naval Reactors

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Naval Reactors	NR	19	Naval Reactors	693	638

### Description:

Naval Reactors is responsible for all Naval nuclear propulsion work, beginning with technology development, continuing through reactor operation and, ultimately, reactor plant disposal. The Program's efforts have ensured, and continue to ensure, the safe operation of the many reactor plants in operating nuclear powered submarines and aircraft carriers, and have fulfilled the Navy's requirements for new reactors to meet evolving national defense demands.

### PROVIDING SPECIAL NUCLEAR POWER SYSTEMS FOR NATIONAL SECURITY

(NS 6-1)

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.

#### *FY 2000 Targets and Results:*

M *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 120 million miles steamed without a reactor accident over the life of the Program.

**Assessment:** Met Goal

M *Develop new reactor plants, including the next generation submarine reactor, the design of which will be 90 percent complete by the end of FY 2000, and complete initial development efforts on a reactor plant for the next generation aircraft carrier.*

**Results:** Development of the next generation reactor for the Navy's New Attack Submarine (the

VIRGINIA Class) is more than 90 percent complete. Development work has been completed on most reactor plant components. Confirmatory life testing and shock testing have been completed on the control drive mechanisms (CDMs), and confirmatory testing is on schedule for the new concept steam generator (NCSG). The VIRGINIA Class reactor plant manual was issued as planned in August 2000.

Planned initial development efforts were completed on a new reactor plant for the next generation aircraft carrier (CVNX). The design requirements for the propulsion plant have been set and the conceptual design was completed this year. Initial reactor manufacturing development has started at the core vendor and is progressing on schedule. General arrangements of the reactor plant, engine room and auxiliary spaces have been determined. Preliminary design work is nearing completion on the major propulsion plant components and detailed design is beginning.

**Assessment:** Met Goal

M *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. Naval Reactors' facilities all operated within prescribed Federal, State and local limits, with no significant adverse regulatory findings, no significant accidental releases and no radiation exposure to personnel exceeding official limits.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

M *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

M *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

## DOE Decision Unit: Intelligence and Counterintelligence

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Intelligence	IN	19	Intelligence	35	38
Counterintelligence	CN	19	Counterintelligence	35	13

### Description:

The Intelligence Program provides the Department, other U.S. government policymakers, and the Intelligence Community with timely, accurate, high impact foreign intelligence analyses in the following core areas: nuclear proliferation and weapons; nuclear energy, safety, and waste; science and technology; and energy security. In addition, this program provides support to the Department's counterintelligence objectives. The Intelligence Program also provides quick turnaround, specialized technology applications and operational support to the intelligence, special operations, and law enforcement communities.

The Counterintelligence program provides the Department, other U.S. Government policymakers, and the Intelligence Community with the capability to successfully identify, neutralize, and deter intelligence threats directed at the Department's facilities, personnel, information, and technologies.

### PROTECTING NUCLEAR MATERIALS, FACILITIES AND INFORMATION (NS 3-3)

Ensure the security of the Department's nuclear materials, facilities, and information assets. Provide DOE-related intelligence and threat assessment support to members of the national security community.

#### ***FY 2000 Targets and Results:***

M *Improve the Department's ability to identify foreign intelligence targeting against Departmental facilities, personnel, information, and technologies through better exploitation of all-source intelligence information.*

**Results:** Analysis Program – DOE placed analysts at Headquarters, LLNL and PNNL; participated in joint analytical projects with the Field Intelligence Elements at Sandia National Laboratory, LLNL, LANL, PNNL and BNL; participated in several briefings describing the foreign intelligence threat to DOE to both DOE management and the Intelligence Community; and developed and distributed five Foreign Intelligence Threat Summaries and one case study that educate Counterintelligence (CI) professionals on the latest threat data.

Inspections Program – Presidential Decision Directive 61 (PDD-61) requires the Director of the CI to conduct internal inspections to review annually DOE's CI Program for adherence to the PDD as well as other requirements. Between October 1999 and September 2000 the CI Inspections Program conducted eleven (14) inspections at the following sites: LANL, SNL, AL Operations Office, Amarillo Area Office, PANTEX, OR Operations Office, ORNL, CH Operations Office, ANL-East, Fermi National Laboratory, New Brunswick Laboratory, RL/PNNL, ID/INEEL and, BHG/BNL. Re-inspections were conducted at LANL, AL/SNL and Pantex.

Training Program – DOE provided both in-house and Intelligence Community-sponsored training to CI personnel, to insure and enhance their mission capability and spearheaded CI Awareness efforts within DOE, using a variety of formats to help insure all personnel are aware of the foreign intelligence threat and their role in countering that threat. During this period, the Training Program conducted two entry-level CI courses for new Chief Information Officers; two CI Awareness courses for DOE Security Professionals; and provided program-tailored and generalized CI Awareness briefings and materials to DOE personnel.

CI-Cyber Program – DOE placed one CI-Cyber Technical Expert at LANL, PNNL, SRS, ORNL, INEEL, PANTEX, and SNL. CI-Cyber Analysts were

placed at LANL and SNL as well. Continued work on the CI-Cyber Pilot Program's deployment and implementation of the E-Mail Analysis Capability and Inquiry Management and Analysis Capability designed to aid in protecting DOE from cyber espionage. DOE also continued work on examining the extent of a known vulnerability at SNL, began active monitoring of cyber intrusions into DOE facilities, and began work on restructuring current network architecture of OCI's information assets.

**Investigations Program** – The Department of Energy, Office of Counterintelligence (DOE/OCI) has established a formalized Collection Operations Management program to enhance its collection and dissemination of counterintelligence information supporting both investigations and operations as well as supporting DOE's briefing and debriefing program. Establishment of the Collection Operations Management Program and its associated DOE Collection Requirements will allow DOE/OCI to make significant contributions of counterintelligence information to the counterintelligence and intelligence community via Intelligence Information Reports (IIR).

**CI Evaluations Board** – DOE spearheaded the development and implementation of 10 CFR 709, 710, and 711, "Polygraph Examination Regulation" that describes DOE's use of polygraph examination and became effective January 18, 2000 and began development of a financial investigations program.

**Assessment:** Met Goal

M *Complete the Counter Intelligence Implementation Plan's recommendations. (FMFIA milestone)*

**Results:** In response to weaknesses in the Department's Counterintelligence Program, in February 1999 the Secretary approved a Counterintelligence Implementation Plan to put into effect reforms required by Presidential Decision Directive/NSC (PDD-61). The Plan includes 46 concrete recommendations to develop effective monitoring of foreign visitors to DOE facilities, to staff field counterintelligence elements by experienced CI professionals, to develop a counterintelligence polygraph program to screen current and potential employees in DOE high-risk programs, to enhance CI professional and CI awareness training, and to develop a robust CI analysis and investigate capability to assess the foreign intelligence threat to DOE and effectively detect and deter hostile intelligence activities. By the end of FY 2000, 42 of the 47 (91 percent) recommendations and 100 percent (24 of 24) of the most important (Tier I) recommendations had been successfully completed and it is expected that the remaining recommendations will be implemented by mid FY 2001. The reason the Department has not

implemented the remaining 4 recommendations is that the Department was (and remains) in the process of establishing CI policy for DOE (a Counterintelligence Order) at the end of the year. A couple of the un-implemented recommendations are tied to this policy process. The two other recommendations require Secretarial action. Late in FY 2000, actions were proposed to the Secretary on these initiatives.

**Assessment:** Nearly Met Goal

**Plan of Action:** The remaining recommendations will be implemented by mid FY 2001.

### ***FY 1999 Targets and Results:***

M *Implement the DOE Counterintelligence 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 1999, 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 Counterintelligence (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

## DOE Decision Unit: Worker and Community Transition

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Worker and Community Transition	WT	19	Worker and Community Transition	52	50

### Description:

The mission of the Office of Worker and Community Transition (WT) is to minimize the social and economic impacts of changes in the Department's activities and encourage disposition of the Department's unneeded assets.

The principle functions of the Office are to: (1) establish policy and provide funding for contractor work force restructuring activities; (2) develop policy for contractor labor relations, oversee the collective bargaining process, and assist the Department's Field organizations in labor/management relations; (3) establish policy for community transition and allocate funding to mitigate economic impacts; (4) assist field organizations to reduce the operating costs associated with maintaining the Department's infrastructure; and (5) provide information and opportunities for participation in the decision-making process affecting the contractor work force and adjacent communities.

### MANAGING CONTRACTOR WORK FORCE RESTRUCTURING (NS 3-6)

Mitigate the impacts on workers and communities from contractor work force restructuring and assist community planning.

#### *FY 2000 Targets and Results:*

- M *Limit involuntary termination of employment at Department of Energy defense nuclear facilities to between 30 and 60 percent of positions eliminated.*

**Results:** Based upon end-of-year results, approximately 70 percent of the FY 2000 separations were voluntary with the complement of 30 percent involuntary.

**Assessment:** Met Goal

- M *Achieve annual recurring costs savings from separated workers that is at least three times the one time cost of separation.*

**Results:** Based upon costs incurred through the end of FY 2000, this target has been met.

**Assessment:** Met Goal

- M *Support local community transition activities that will create 3,000 to 5,000 non-Federal jobs during FY 2000, bringing the total non-Federal jobs created to between 20,000 and 25,000 by the end of FY 2000.*

**Results:** Jobs created or retained as of the end of FY 2000 exceeded 24,500.

**Assessment:** Met Goal

#### *FY 1999 Targets and Results:*

- M *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

- M *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

M *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

## DOE Decision Unit: Security and Emergency Operations

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Security and Emergency Operations	SO	19	Nuclear Safeguards and Security	119	105
	SO	19	Emergency Management / Preparedness	27	35
	SO	19	Emergency Response	78	91

### Description:

This new Security and Emergency Operation (SO) office consolidates functions and budgets from several DOE offices to develop and promulgate safeguards and security policy, oversee all security-related functions in the Department, and centralize cyber-security and emergency operations throughout the DOE complex.

### DOWNSIZING AND MODERNIZING THE NATIONAL SECURITY ENTERPRISE

(NS 3-1)

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.

#### ***FY 2000 Targets and Results:***

No performance measures established for FY 2000.

#### ***FY 1999 Targets and Results:***

M *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 (9) safeguards and security oversight reviews.

**Assessment:** Met Goal

M *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 amount 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

M *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 INSTSE 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

## PROTECTING NUCLEAR MATERIALS, FACILITIES AND INFORMATION (NS 3-3)

Ensure the security of the Department's nuclear materials, facilities, and information assets. Provide DOE-related intelligence and threat assessment support to members of the national security community.

### *FY 2000 Targets and Results:*

M *Reinforce security awareness through a Department wide campaign.*

**Results:** Several initiatives were undertaken in support of this goal. These included:

- Visits by the Director of the Office of Security and Emergency Operations to DOE field sites to review security measures and to emphasize their importance.
- Security stand-down days during which site employees participated in briefings and other security related activities designed to emphasize and improve the security awareness message.
- Development of crosswalk papers which describe security lessons learned and which are distributed throughout the complex.
- Development of enhanced security measures promulgated by the Secretary designed to reduce the probability of security incidents. These measures included handling procedures for encyclopedia data formats, vault protection procedures, and increased accountability for electronic media containing certain sigma information.
- Expansion of the security awareness program, including the development of monthly, ready-to-display posters that are distributed throughout the complex.
- Implementation of a Security Incident Tracking and Reporting Program to measure the effectiveness of daily security activities and practices across the DOE complex. The program also supports the performance of trend and impact analyses, and the development of performance metrics.

**Assessment:** Met Goal

M *Implement a Zero Tolerance Policy for unauthorized disclosure of classified safeguards and security information.*

**Results:** A memorandum implementing a zero tolerance program was signed and issued by the Secretary in June 1999. The zero tolerance program has been included in the revised draft of DOE O 470.1, Safeguards and Security Program.

**Assessment:** Met Goal

M *Develop a streamlined Site Safeguards and Security Plan process.*

**Results:** A Process Improvement Team was formed by the Under Secretary and developed a new process, resulting in a memorandum from the Director of the Office of Security and Emergency Operations, with Under Secretary concurrence, which was issued in October 1999. This memorandum formally established the new Site Safeguards and Security Plan process. A guide on the format and content of the Site Safeguards and Security Plans was prepared and issued in March 2000.

**Assessment:** Met Goal

M *Develop policies to safeguard DOE nuclear materials, classified matter, and facilities on a graded basis.*

**Results:** Two revised orders were published in final form. An additional two draft orders were published and distributed for comment. Three manuals were published in final form. An additional four manuals were published in draft and distributed for comment. Eight notices were published. Two of the notices extended the effective date of two orders to allow time for the incorporation of comments and the publication of the final orders.

**Assessment:** Met Goal

M *Consolidate the Personnel Security Assurance Program and the Personnel Assurance Program into a single departmental Human Reliability Program.*

**Results:** Our goal to merge the Personnel Security Assurance Program (PSAP) and the Personnel Assurance Program (PAP) into one single departmental human reliability program has nearly been met. The PAP is a nuclear explosive safety program designed to ensure that all employees assigned to nuclear explosive duties do not have emotional, mental, or physical conditions that could result in an accidental or unauthorized detonation of nuclear explosives. The PSAP is an access authorization program that requires initial screening and periodic

evaluation of individuals who apply for or occupy positions that are critical to the national security. Included are positions (1) that afford direct access to Category I quantities of special nuclear material (SNM) or have direct responsibility for transportation or protection of Category I quantities of SNM; (2) that afford direct access to the control areas of a nuclear material production reactor; and (3) with the potential for causing unacceptable damage to national security.

A draft of the new program called the Human Reliability Program (HRP) has been forwarded to all affected program offices at DOE for formal coordination. The next step is publication of the HRP in the Federal Register as a Notice of Proposed Rulemaking (NPR).

**Assessment:** Nearly Met Goal

**Plan of Action:** Following publication of the NPR in the Federal Register, there is a 60-day public comment period. Public hearings will be held in Amarillo, Texas; Oak Ridge, Tennessee; Albuquerque, New Mexico; and Livermore, California. The final step is to publish the HRP in the Federal Register as a Final Rule. The Rule will then become effective 30 days following publication.

M *Finalize revision to the DOE Protective Force Order (DOE Order 473.2) to include specific directions that address security planning, training, and exercises to prepare for a weapon of mass destruction event.*

**Results:** Specific policy addressing the planning, training, and exercises for a potential weapon of mass destruction was developed in coordination with Field elements through the Office of Safeguards and Security Quality Panel process. The revised policy was incorporated into DOE O 473.2. The revised order was formally coordinated with all DOE organizational elements through the DOE directives process. The goal was completed with the publication of the Protective Force Order on June 30, 2000.

**Assessment:** Met Goal

M *Implement advanced safeguards and security technologies to reduce DOE facilities' vulnerabilities to chemical and other threats.*

**Results:** In coordination with the Field sites, potential protective equipment was identified. Tests of the equipment were performed to determine which equipment was the most effective and cost efficient. Specifications for the selected equipment were developed and provided to procurement.

**Assessment:** Nearly Met Goal

**Plan of Action:** Procurement of the specified equipment for all protective forces is expected to be completed by the end of the 2nd quarter of FY 2001. The Central Training Academy is developing training for the proper wear and use of the equipment. This training will be available when the equipment has been procured.

M *Initiate efforts to implement and maintain core material control and accounting software to standardize nuclear material accounting throughout DOE.*

**Results:** As of September 2000, the Local Area Network Materials Accounting System (LANMAS) is the official core accountability system at nine DOE sites with an additional three Naval Reactor Sites scheduled for implementation in FY 2001. LANMAS supports improved nuclear material accounting and standardized safeguards reporting requirements throughout DOE. In April 2000, an enhanced LANMAS software application was released. It included additional functionality in the area of user authorizations, improved user interface, and some major technical upgrades in the database and client/server components to improve application performance. Two LANMAS User meetings were conducted as scheduled to discuss and identify proposed changes to existing and future software functionality. LANMAS representation was provided to various DOE groups working on improving the Department's corporate information system infrastructure in the area of nuclear information systems. Quarterly reviews of the LANMAS project are provided to the DOE Chief Information Officer and staff. In addition, quarterly integration-planning meetings between the Nuclear Materials Management and Safeguards System (NMMSS), the national database, and LANMAS were initiated in FY 2000. Three meetings have been conducted to date. Discussions focus on potential compatibility and interface-related issues between LANMAS and NMMSS and identification of functions that can be jointly designed and developed. Compatibility of LANMAS and NMMSS was discussed in a recent Materials Control and Accountability (MC&A) Special Study conducted by the Office of Independent Oversight and Performance Assurance. In addition, a recent draft report released by the Office of the Inspector General noted that DOE organizations were developing and implementing site-level nuclear material tracking systems that duplicated functions found in LANMAS and recommends stronger controls in DOE to actively manage information technology investments and avoid funding duplicate development efforts.

**Assessment:** Met Goal

M *Continue material control and accountability upgrades at DOE facilities with weapons-usable material.*

**Results:** The Office of Safeguards and Security provided approximately 5.6 million dollars in funding for materials control and accountability (MC&A) technology development through 43 projects at DOE national laboratories and sites. With the exception of the LANMAS, none of these projects directly provided money for implementation of improved MC&A technologies. Funding for implementation of new technologies and upgrades is provided through program offices and is managed through line organizations. Nevertheless, progress has been made in upgrading MC&A technology at DOE facilities. Savannah River has added more storage capacity for special nuclear materials including continuous item monitoring for one of these areas. It has also added the capacity to make accountability measurements on certain types of spent fuel. Lawrence Livermore has added capacity for more accurate uranium measurements. Hanford is conducting pilot projects to test more effective materials surveillance technology. Los Alamos is developing new approaches to materials control and accountability - continuous inventory inspections, new monitoring and inventory concepts for material in working vaults. They have also taken measure to enhance the security of its MC&A measurement data and data generating equipment as well as the security of its system for moving materials within its major plutonium facility. By the close of FY 2000, nine sites had adopted LANMAS by close of FY 2000. Oak Ridge, with the assistance of measurements experts from Los Alamos, has conducted much of the SNM inventory necessary for the successful restart of Y-12. Y-12 is also in the process of upgrading its computerized materials control and accountability system.

**Assessment:** Met Goal

M *Expand forensic analysis for improved cyber security for classified and sensitive unclassified information systems.*

**Results:** Several initiatives were undertaken in support of this goal. These include:

- Completion of the draft Notice RANDOM INSPECTIONS FOR CLASSIFIED INFORMATION ON UNCLASSIFIED GOVERNMENT-OWNED COMPUTERS REMOVED FROM GOVERNMENT FACILITIES is completed and submitted forward for Departmental review.
- New Computer Forensic Systems have been ordered. These systems will be utilized from

Germantown to enhance this office's computer forensic capability and allow quicker response to this need.

- The Computer Forensic Laboratory (CFL) has moved into larger operating space with enhanced security features. The newly acquired space increases CFL's capability to conduct computer forensics with systems that contain classified information.
- CFL completed and published a "First Responders" manual and is distributing them though out DOE. This manual provides vital information informing authorized System Administrators, Inquiry Officials, and Investigators, who to contact and what to do with electronic media that needs to be preserved as evidence.
- CFL is providing instruction material to the National Security Institute regarding the proper preservation of electronic media for evidence. The institute is planning on constructing an instruction module for use in several classes being offered there, such as, Conduct of Inquiries.

**Assessment:** Met Goal

M *Initiate the correction of DOE infrastructure vulnerabilities identified by the President's Commission on Critical Infrastructure Protection.*

**Results:** DOE has initiated the correction of internal infrastructure vulnerabilities. The Office of Security and Emergency Operations has signed an Interagency Agreement with the Department of Commerce Critical Infrastructure Assurance Office to support the implementation of PDD-63 on Critical Infrastructure Protection within the Department. Project Matrix, a three-step process that supports infrastructure protection of the Nation, will identify critical assets as well as their security status (physical and cyber assessments, security plans status, and COOP/COG applicability). The National Security Council endorsed Project Matrix as the method for accomplishing this goal in their letter of July 19, 2000.

The Department has launched the implementation of Step 1 that identifies, evaluates, and prioritizes Federal department's assets in terms of their role in fulfilling national security, national economic security, or public health and safety missions in correspondence dated September 8, 2000. This is accomplished through the identification of physical and cyber assets and the application of a questionnaire.

Approximately 2,500 physical and cyber assets were identified. After the application of stringent screening criteria, this list was reduced to approximately 350–400 assets.

The Department already has programs evaluating physical and cyber security threats and implementing mitigation measures. The results from Project Matrix systematically support the Department's identification of any additional critical assets or the potential reprioritization of existing critical assets.

**Assessment:** Met Goal

M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Security.*

**Results:** All critical milestones in the FY 1999 FMFIA corrective action plan for the Departmental challenge of Security have been completed.

1. Identify and implement a process to assess Information Security programs, including Technical Surveillance Countermeasures, Incident Reporting systems, and the protection of sensitive and classified matter.

Closed. Assessment of programs has been completed. Consolidation of Technical Surveillance Countermeasures activities, and new DOE Orders addressing information security programs, incident reporting systems and the protection of OOU, UCNI, and other sensitive information have been proposed.

2. Identify Safeguards and Security funding required to support expanded security missions and functions.

Closed. Funding has been identified. Implementation of consolidated Safeguards and Security budget is in process.

3. Implement the Department's Security Reform Initiatives and the Office of Security and Emergency Operations Campaign Initiatives to restore DOE security to a level that gains confidence of the Congress and the public.

Closed. This planned milestone is completed. The Office of Safeguards and Security has supported the Security Reform Initiatives as well as the Campaign Initiatives. Enhanced protection measures were put in place at the laboratories, zero-tolerance policies were established, Department-wide security awareness was reinforced, and the integrated safeguards and security management initiatives were developed in the Office of Safeguards and Security's effort to regain the confidence of the Congress and the public.

4. Complete backlog of background investigations and initiate background reinvestigations.

Closed. This planned milestone is completed. The Office of Safeguards and Security will continue to monitor the investigations workload and effectively and efficiently continue its program of both investigation and re-investigations in a timely manner.

5. Implement process to assess cyber threats, including piloting intrusion detection at five DOE sites.

Closed. The Office of Counterintelligence, in coordination with the Office of the Chief Information Officer (OCIO), established the Inquiry Management and Analysis Capability. The effort will establish a uniform intrusion detection capability across the DOE complex. This effort is currently being piloted at 12 DOE sites.

6. Develop a process for implementing safeguards against new cyber threats.

Closed. On July 27, 2000, OCIO issued a draft of its Cyber Security Architecture Guide (DOE G 205.1-X) for comment. The comment process closed September 27, 2000, and the Office is analyzing comments and modifying the Architecture Guide where appropriate. This Guide supplements DOE N 205.1, Unclassified Cyber Security Program, issued July 26, 1999, by providing a common framework for DOE activities to tailor their local cyber security program to the unique mission and technology environments at their site.

7. Develop measures to evaluate the effectiveness of cyber protection capabilities.

Closed. Since January 2000, a variety of metrics have been collected to measure DOE site compliance with Departmental cyber security policy, Defense Laboratories compliance with the Secretary's Nine Point Plan and Six Enhancements, and the incident reporting to the Department's Computer Incident Advisory Capability. The metrics provide the OCIO with the data to evaluate policy compliance and cyber security program maturity within Departmental organizations.

8. Complete declassification of documents subject to Executive Order 12958 and search for inadvertently commingled nuclear design information.

Closed. Congress enacted P.L. 105-261, Section 3149, to reduce the risk that Restricted Data will be inadvertently released through declassification of other-agency records under the requirements of Executive Order 12958. The P.L. 105-261 implementation plan mandates that no other agency records be declassified unless they are determined to be highly unlikely to contain Restricted Data (RD). Furthermore, the plan gives the Department of Energy

responsibility to audit all other records for the presence of RD before they are declassified. Therefore, the Executive Order's declassification deadline is no longer a Departmental challenge.

**Assessment:** Met Goal

M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental Challenge of Mission Critical Staffing.*

**Results:** The newly established Office of Security and Emergency Operations (SO) lacked sufficient salary dollars to hire the number of employees needed to accomplish its mission. Supplemental funding for SO's program direction account in the amount of \$4 million was requested in February 2000. The Department received \$3 million of that request in the FY 2000 supplemental which was signed into law on July 13, 2000. The FY 2001 Conference Report includes full funding of the Congressional request for SO program direction funds. Using the monies received in the supplemental, SO has hired 40 individuals over the course of the last year.

#### FY 2000 COMPLETED CRITICAL MILESTONES

1. Request supplemental funding for 25 additional Security Operations staff.

Closed. The FY 2000 supplemental funding for the SO program direction in the amount of \$4 million was requested February 2000. The Department received \$3 million of that request in the FY 2000 supplemental which was signed into law on July 13, 2000.

2. Request funding for another 15 additional Security Operations staff.

Closed. The FY 2001 Congressional request was submitted to the Congress in February 2000. The FY 2001 Conference Report includes full funding of the Congressional request for SO program direction.

**Assessment:** Met Goal

#### ***FY 1999 Targets and Results:***

M *Issue timely technical reports and threat assessments regarding potential domestic and/or foreign proliferant risks.*

**Results:** Accomplishments through March 31, 1999:

Threat Assessment US Department of Energy Pantex Plant - October 1998

Threat Assessment Lawrence Livermore National Laboratory - December 1998

Threat Assessment US Department of Energy Nevada Test Site - February 1999

Planned Accomplishments:

Threat Assessment US Department of Energy Hanford Site- May 1999

Threat Assessment Idaho National Engineering Laboratory - July 1999

Threat Assessment Los Alamos National Laboratory - September 1999

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

M *Implement advanced technologies to prevent the theft or diversion of special nuclear materials, including the unattended, online 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 of the neutron counting system technology to a commercial manufacturer; and providing a cost-effective technique for rapid nonde-

structive assay of plutonium in residues and impure materials.

**Assessment:** Met Goal

M *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 the Nuclear Materials Management and Safeguards System (NMMSS) was developed 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. This system is the 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 of the current NMMSS system.

M *Further the protection of all U.S. origin nuclear materials in the U.S. 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

M *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

M *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

## MAINTAINING READINESS FOR NUCLEAR OR OTHER EMERGENCIES (NS 3-5)

Maintain nuclear test readiness and enhance emergency management capabilities to address any nuclear weapons, radiological, or other emergency in the United States or abroad.

### *FY 2000 Targets and Results:*

M *Demonstrate improvement of a comprehensive management system to ensure effective Departmental response to all DOE emergencies.*

**Results:** The Office of Security and Emergency Operations (SO) has demonstrated improvement of the Department's Comprehensive Emergency Management System through effective response to real events and through the conduct of numerous preparedness-related activities designed to ensure effective response to emergencies involving DOE facilities and activities.

Accomplishments through September 30, 2000:

- Performed effective responses to the wildfires affecting Los Alamos National Laboratory, Idaho National Engineering and Environmental Laboratory and Hanford, the Y2K rollover, and support to the Tokaimura criticality incident in Japan.
- Conducted five technical assistance visits at: Los Alamos National Laboratory (February 2000); Lawrence Livermore National Laboratory (March 2000); Brookhaven National Laboratory (April 2000); Oak Ridge National

Laboratory (September 2000); Waste Isolation Pilot Plant (August 2000).

- Conducted eight focused no-notice exercises at: Lawrence Livermore National Laboratory; Nevada Operations Office; Hanford; Pantex; Savannah River Site; Brookhaven National Laboratory; Rocky Flats Environmental Technology Site; and, Headquarters.
- Established Emergency Operations Training Academy to consolidate training efforts; conducted the following courses: Emergency Operations Integration (February 2000); Executive Overview of DOE Emergency Exercise Program (March 2000); Introduction to Emergency Exercise Control (April 2000); Violence in the Workplace (May 2000); Introduction to Emergency Exercise Evaluation (May 2000); Emergency Management Hazards Assessment (May 2000); Roles and Responsibilities of Initial Responders: Enhancing Initial Response Effectiveness (June 2000); Roles and Responsibilities of Initial Responders – Practical Exercise (June 2000); Cerro Grande Fire – Lessons Learned (June 2000); Spokesperson and the Media Training (July 2000); Integration of Emergency Events into the Occurrence Reporting System (August 2000); Crisis Management for Senior Officials (August 2000); Enhancing Initial Response Effectiveness – Transportation Event Practical Exercise (August 2000); Enhancing Initial Response Effectiveness – Security Event Practical Exercise (August 2000); Categorization and Classification of Operational Emergencies Course (August 2000); Emergency Public Information Overview (September 2000); Consequence Assessment Overview (September 2000); and Emergency Classification Decision Making Imperfect Information Workshop (September 2000).
- Supported the conduct of major emergency response exercises at sites throughout the DOE complex.
- Conducted quarterly meetings of the Emergency Management Advisory Committee.
- Conducted a DOE complex-wide information-sharing meeting on emergency management activities, focusing on corrective actions to issues raised by oversight organizations (May 2000).
- Participated in numerous interagency emergency planning meetings associated with the Federal Response Plan, the Federal

Radiological Emergency Preparedness Plan, the National Contingency Plan, and Continuity of Operations/Continuity of Government Plans.

- 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.

**Assessment:** Met Goal

M *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 Offices of Security and Emergency Operations and Defense Programs have continued to maintain robust emergency response assets. The Department of Energy'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 weapon laboratories. The seven radiological emergency response assets are: Aerial Measuring System (AMS), Atmospheric Release Advisory Capability (ARAC), Accident Response Group (ARG), Federal Radiological Monitoring and Assessment Center (FRMAC), Nuclear Emergency Search Team (NEST), Radiological Assistance Program (RAP), and Radiation Emergency Assistance Center/Training Site (REAC/TS). These capabilities are maintained primarily through participation in international, national, state and local operations, exercises, and training. Asset performance in training, exercises, and real-world events continues to justify our reputation as the Nation's premier nuclear and radiological technical emergency response capability

The Department's emergency response program performed at an Exceeded Goal level for Fiscal Year 2000. This rating is based upon the successful deployments of the Department's radiological assets in support of the Lead Federal Agency, U.S. Ambassadors abroad and Special Events. Highlights of these activities for FY 2000 are as follows:

DOE radiological assets participated in several full field exercises and numerous real-world events ( i.e., SONGS IPX, Southern California (FRMAC, ARAC) Pantex Dust Devil Exercise, (ARAC), Pantex site and FRMAC exercise EMEX00-Z Pantex Plant, Texas

(FRMAC, ARAC). RAP no-notice exercise: Nellis AFB, NV (RAP, ARAC), Dingo Dawn, Bangor, Washington. (ARG, FRMAC, RAP, ARAC, REAC/TS) DIRECT FOCUS, (ARG). National-level exercises: ELIGIBLE RECEIVER, (All), NCR2000/TOPOFF, (All), and ELLIPSE FOXTROT-00. Continued to support intra- and inter-agency training including DOE training events, specialized training for DoD special mission units, and the Nunn, Lugar, Domenici-legislated Domestic Preparedness First Responder training effort. Participated in DOE, local, interagency, and international exercises. Major exercises included the Pennsylvania Emergency Management Agency exercise, TOPOFF/National Capitol Region-2000 exercise, and several Nuclear Regulatory Commission exercises. Supported real-world emergency responses including the Tokaimura Nuclear Fuel Processing Facility in Japan, National Security Special Events, Event in Cambodia, and the Cerro Grande and Richland fires. REAC/TS responded to international calls for medical assistance for over 100 individuals and provided radiation accident management training to over 150 health care professionals. In addition, REAC/TS and RAP personnel participated in Domestic Preparedness Training in support of Nunn, Lugar, Domenici Legislation. This program positioned nuclear/radiological technical crisis response assets in the National Capital Area to respond to a terrorist Weapon of Mass Destruction incident during National Security Special Events at the request of the National Security Council. All exercise objectives were successfully met. Phnom Penh Cambodia - At the request of the host country, U.S. Embassy Department of State (DOS) and the DOE responded to a real world radiological concern. Ramstein AFB, Germany - Deployed with DOS and the Nuclear Radiological Advisory Team in support of Y2K potential concerns. Deployed the Nuclear Radiological Advisory team to Australia to support the Sydney Olympic Games and follow on Para-Olympic games. The Office of Emergency Response at the request of the Department of State has successfully participated in 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.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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 FY 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.- 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 50<sup>th</sup> 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

M *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 techni-

cal 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 interagency 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 these 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

M *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 its 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 (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 & 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

## PROTECTING NUCLEAR NATIONAL SECURITY INFORMATION (CM 2-3)

Protect nuclear national security information in the interest of national security and releasing to the public information not warranting protection.

### ***FY 2000 Targets and Results:***

M *Implement all declassification actions concurred in by DoD that were recommended by the Fundamental Classification Policy Review and other internal DOE reviews, within six months of final DoD approval.*

**Results:** In FY 2000, 21 changes to classification guides have been issued and implemented within six months of final DoD approval. The 21 changes constituted all those concurred in by the DoD, recommended by the Fundamental Classification Policy Review and other internal DOE reviews. Classification guide changes are the main mechanism to keep the DOE and DoD nuclear community up to date as to changes in classification policy. Classifiers throughout the DOE rely on accurate and up to date guidance when making classification decisions. Classification guidance updates notify classifiers of new classification policy or changes in order to prevent mis-classification.

**Assessment:** Met Goal

M *Conduct three onsite reviews of the Restricted Data implementation programs of other agencies to evaluate their implementation of requirements contained in 10 CFR Part 1045 or the Special Historical Records Review Plan required by Public Law 105-261, Section 3161.*

**Results:** The Office of Nuclear and National Security Information (ONNSI) conducted three more onsite reviews than projected for FY 2000, completing a total of six reviews of other- agency Restricted

Data programs under the Special Historical Records Review Plan. We significantly exceeded our original goal to further reduce the risk that records containing Restricted Data and Formerly Restricted Data would be inadvertently released during declassification by other agencies under Executive Order 12958. The Reviews were conducted for the following agencies: National Security Council, Joint Chiefs of Staff, Department of Justice, Department of State, Department of Navy, and Defense Advanced Research Project Agency. The onsite reviews ensure that the process for reviewing and identifying sensitive nuclear weapon design information for proper protection is handled consistently throughout the government, minimizing the risk that such critical information is not inadvertently made available to nuclear proliferants.

**Assessment:** Exceeded Goal

M *Issue two updated classification guides in the streamlined guidance format.*

**Results:** In FY 2000, two major guide projects were completed. The guides integrate and streamline several older guides to provide guidance in a much more concise manner. The result will be higher efficiency in derivative classifier reviews throughout the DOE complex.

**Assessment:** Met Goal

M *Reduce by 15 actions the processing backlog of requests for classified documents submitted under the Freedom of Information Act and Executive Order 12958 mandatory review provisions.*

**Results:** As of the end of fiscal year 2000, the backlog increased by 44 actions. The original goal was predicated on increasing the number of reviewers in the Statutory Reviews Program. Although the number of reviewers increased, the new reviewers did not complete their training early enough in the fiscal year to have a significant effect on the backlog of FOIA and Mandatory reviews. Additionally, we experienced a sharp (five-fold) increase in the number of high priority reviews this year which drew resources originally planned to work on FOIA and Mandatory reviews away from their intended assignments. Of these special reviews, the most significant were those related to a high profile prosecution in Albuquerque. We have also experienced a significant increase in the number of high priority reviews relating to other investigatory actions and allegations of improper handling/processing of classified information. The unforeseen increase in these higher priority actions has prevented the Statutory Reviews Program from achieving its planned reduction in the

backlog of FOIA and Mandatory Review actions.

**Assessment:** Below Expectation

**Plan of Action:** The Office of Nuclear and National Security Information has dedicated a document reviewer to perform quality assurance reviews and eliminate a significant bottleneck in the review process. In addition, the Federal staff has doubled and adopted a cross-tasking approach to allow concentration of assets, when possible, to reduce the FOIA and Mandatory backlog. The document reviewers added in FY 2000 have completed their formal training and are now performing document reviews. Based on current staffing and assuming no further increase in workload, we expect the backlog to decrease by the end of FY 2001.

M *Audit documents declassified by other agencies implementing section 3.4 of Executive Order 12958 to ensure that nuclear weapon design information is not inadvertently released.*

**Results:** The Office of Nuclear and National Security Information (ONNSI) has examined over 138 million pages of documents out of the estimated 260 million pages of documents declassified under E.O. 12958 and currently made available to the public. (The number of estimated pages was originally reported as 330 million pages, due to revised count by the National Archives and Records Administration.) Restricted Data (RD) and Formerly Restricted Data (FRD) information has been found in these documents and is being reported to Congress in accordance with P.L. 105-261, Section 3161. The documents containing RD and FRD information have been withdrawn from public availability, and have been safeguarded. ONNSI is on track to meet National Security Council staff direction to complete all publicly available records by August 2001.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *Implement 10 CFR Part 1045 through reviewing 100 percent of other agency classification guides submitted, and by conducting five onsite 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 onsite reviews under the regulation this fiscal year which focus primarily on classification programs, the Department conducted onsite reviews under the aforementioned statute focusing on other-agency declassification programs. 10 CFR Part 1045 onsite visits will resume in FY 2000. The onsite 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 onsite review program. Therefore, the Department did not have sufficient resources to conduct five onsite 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 onsite 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.

M *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

M *Implement the fundamental Classification Policy Review recommendations and issue 40 classifica-*

*tion 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 six months of final approval. Already in FY 2000, seven guide revisions and two new guide issuances have been accomplished.

## ENSURING DEPARTMENT'S INFORMATION SYSTEMS ARE BASED ON COST EFFECTIVE TECHNOLOGY SOLUTIONS (CM 5-1)

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.

### *FY 2000 Targets and Results:*

M *Complete all FY 2000 milestones in the Corporate Management Information Program (CMIP) plan.*

**Results:** In FY 1998, the Department established CMIP to support the reform of common and cross-cutting business processes and the modernization of their associated support systems. The Program strengthens linkages of corporate IT investments to business objectives to increase returns and reduce risk; consolidates systems that support the same business functions; improves data quality and integrity by eliminating redundancy of information across multiple systems; and refreshes obsolete systems and technologies to improve operating efficiencies and ensure Department-wide interoperability.

Over time the program has evolved and management oversight of initiatives has been established for two

groups of modernization efforts. Corporate Business Systems, such as financial and human resource systems, are funded directly through CMIP and are subject to investment decision making by the CMIP Investment Review Board. In addition, other systems that are corporate in nature, but primarily support program missions and functions, also come under the oversight of the CIO via the CMIP review processes. The extension of CMIP oversight and processes beyond those initiatives funded by the CMIP program ensures that all corporate systems are subject to similar requirements for business case development and investment review.

CMIP is comprised of nine projects; each project has separate performance measures. The following projects met nearly all project performance measures:

- Business Management Information System – Financial Management (BMIS-FM);
- Technology Supported Learning On Line Learning Center (OLLC);
- Procurement Modernization (EC-Web);
- Foreign Travel Management System (FTMS);
- Information Architecture/Corporate Systems Information Architecture (CSIA);
- Capital Planning and Information Technology Investment; and
- Strategic Information Management Program.

The Corporate Human Resource Information System (CHRIS) met all project performance measures except for Thrift Savings Plan (TSP) updates to the CHRIS Employee Self Service module that were deferred due to delays by the TSP Board in implementing its new investment features. Transaction processing for the Thrift Savings Plan in the CHRIS Employee Self Service module was completed November 15, 2000 and 40 percent of the Thrift Savings Plan transactions processed in December were done via CHRIS ESS. The modernization of DOE's wide area network (DOENet) met all project performance measures except for providing ATM connectivity to all thirty eight DOE sites due to the carrier's inability to deliver connectivity circuits to the Carlsbad Area Office until January 2001. The circuits will be in place by April 2001.

**Assessment:** Nearly Met Goal

**Plan of Action:** Modify performance measures for CHRIS and DOENet to reflect new completion dates due to external situations beyond the control of the project managers identified in the results.

M *Satisfy all program office computing/telecommunications requirements in Working Capital Fund Service agreements.*

**Results:** The Office of the CIO business lines contained in the Working Capital Fund (WCF) are Telephones, Networking and Desktop (Desktop - with sub components of Workstation Infrastructure, Technology Training and Workstation Maintenance). Together, these three business lines provide corporate computing/telecommunications support to DOE Headquarters.

The Working Capital Fund Service agreements are contained in the "Blue Book" which provides a detailed description of the general policies, organization, financial policies and procedures, billing, and a detailed description of the business lines product and services, including service standards. The Blue Book is located on the Internet at <http://www.hr.doe.gov/wcf/Bluebook.pdf>.

The total estimated revenue for the Telephone business line for the 36 program offices at Headquarters in FY 2000 was \$6,995,259; Networking estimated revenue was \$3,259,968; and Desktop estimated revenue was \$1,604,589 for a combined total estimated revenue of \$11,859,816. The number of internal telephone lines supported at headquarters was 12,010; networking connections were 7,793, and the number of workstations supported through the infrastructure was 7,738. Actual FY 2000 combined revenue for the three business lines was \$11,709,335, which was very close (within 1.3 percent) to the estimated revenue.

All three of the business lines met their respective service standards. The WCF has a formal dispute resolution process which was established to resolve disputes between WCF customers and the Fund Manager. There were no disputes for any of the CIO business lines in FY 2000. There were no significant backbone service outages or disruptions attributable to any of the business lines.

Based upon the above information, the results indicate that the computing/telecommunications infrastructure support provided to the Headquarters program offices by the CIO in FY 2000 provided outcomes that made a significant contribution to the Department, meeting all service standard goals.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

- M *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

- M *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 FY 1999 with planned completion by the second quarter of FY 2000.

**Assessment:** Met Goal

- M *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 across 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

- M *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 its 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 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

M *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

## DOE Decision Unit: Independent Oversight & Performance Assurance

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element Schedule of Net Cost Item	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Independent Oversight and Performance Assurance	OA	.*	.*	.*	.*

\*Net costs were included with those of Environment, Safety and Health Decision Unit.

### Description:

The Office of Independent Oversight and Performance Assurance (OA) is a corporate resource that performs independent oversight to verify that DOE security interests are protected and that DOE can respond to emergencies. The Office is committed to excellence and continuously strives for improvement by conducting independent oversight of safeguards and security performance across the complex. The hallmark and highest priority of all Independent Oversight and Performance Assurance activities is daily excellence in the protection of the workers and the Nation. OA activities are all covered in one decision unit: Independent Oversight and Performance Assurance.

### INSTITUTING A SOUND ES&H CULTURE (CM 1-1)

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.

#### ***FY 2000 Targets and Results:***

M *Conduct oversight special reviews, assessments, evaluations, and inspections addressing emergency management, safety management, and accidents.*

**Results:** Conducted comprehensive investigations of ES&H concerns with historical or current operations at the Department's three Gaseous Diffusion Plants (Secretarial initiative). Produced investigation reports, coordinated with other Federal Agencies including EPA, the FBI, and the Department of Justice, participated in public meetings and Congressional hearings, and supported Workman's Compensation Legislation. These investigations contributed to improvements in ES&H programs and culture and to accelerated cleanup of legacy environmental contamination and waste. Conducted special reviews of criticality safety concerns at five DOE sites in response to the Japanese criticality accident (Secretarial initiative).

Conducted investigation of the Fuel Pool Leak at the Sandia National Laboratory Gamma Irradiation Facility (GIF) including a recommendation to accelerate removal of spent fuel and cobalt 60 sources and the draining and repair of the pool. Special review of the Pantex Plant Authorization Bases Management and processes.

Two Type A investigations of serious accidents and worker injuries or exposures at the Oak Ridge Y-12 Plant and the TA-55 Facility at the Los Alamos National Laboratory were also conducted.

**Assessment:** Met Goal

#### ***FY 1999 Targets and Results:***

M *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

## Environmental Quality

**Strategic Goal for FY 2000: *Aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, minimize future waste generation, safely manage nuclear materials, and permanently dispose of the Nation's radioactive wastes.***

The following pages contain detailed information on the results achieved for performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President for the Environmental Quality Business Line.

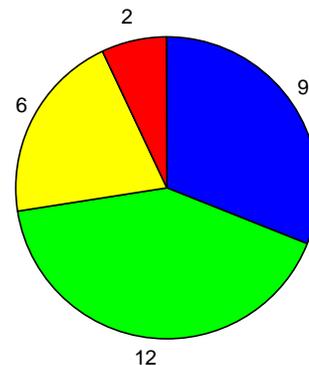
For each performance measure and indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

- "Exceeded Goal" means the results were *significantly* more than planned.
- "Met Goal" means the results *met the target* performance level or were slightly more than the target, but not significantly more.
- "Nearly Met Goal" means the performance was less than the target level, but *not significantly less*.
- "Below Expectations" means the results were *significantly less* than the target.
- "Unspecified" means that the end of year results were not available at the time of printing.

When performance was less than "Met Goal" a "Plan of Action" is included after the assessment.

There were 29 performance measures in FY 2000 for this business line. Of these, 5 are funded by, and their details presented with, Energy Resources Decision Units of the Office of Nuclear Energy, Science and Technology (NE) as shown in the cross-walk table. The overall results are:

Count	Percent	Assessment
9	31%	Exceeded Goal
12	41%	Met Goal
6	21%	Nearly Met Goal
2	7%	Below Expectations
0	0%	Unspecified
<u>29</u>	<u>100%</u>	



**Program Evaluations Conducted During FY 2000:**

GPRA defines program evaluation as “an assessment, through objective measurement and systematic analysis, of the manner and extent to which Federal programs achieve intended objectives.” Program evaluation, therefore, covers a broad range of evaluative activities. DOE’s three major categories of program evaluations are discussed in the introduction to the detailed performance results. The major evaluations within this business line that were conducted during FY 2000 are listed below. Through these evaluations, the Department was able to re-assess its programs and reorient them or apply additional resources in order to ensure that they achieved their intended objectives as part of the strategic planning process conducted in FY 2000.

Feb. 2000 ***Environmental Quality Research and Development Portfolio***: Volume 2 of a 4 volume R&D Portfolio provides an analysis of the complete set of R&D investments supporting Environmental Quality activities. (<http://www.osti.gov/portfolio>)

Mar. 2000 ***Status Report on Paths to Closure***: Updates the June 1998, *Accelerating Cleanup: Paths to Closure* study and introduces additional analyses that offer new insights into the long-term scope of the Environmental Management program. (<http://www.em.doe.gov/closure/fy2000/index.html>)

## DOE Decision Unit: Environmental Management

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Site/Project Completion (Defense and Non-Defense)	EM	20	Site Project Completion	1,181	1,156
Site Closure (Defense and Non-Defense)	EM	20	Defense Facilities Closure Projects	1,407	1,410
Post 2006 Completion (Defense and Non-Defense)	EM	20	Post 2006 Completion	2,606	2,524
EM Science & Technology	EM	20	Technology Development	258	294
Defense EM Privatization	EM	20	EM Privatization	372	-
Uranium Enrichment D&D Fund	EM	20	Uranium Enrichment Decontamination and Decommissioning	124	116
EM Science & Technology	EM	20	Civilian Research and Development	10	-

### Description:

The Environmental Management (EM) program budget structure categorizes projects according to their specific appropriation: Defense Environmental Restoration and Waste Management, Defense Facilities Closure, Defense Environmental Management Privatization, Non-Defense Environmental Management, and the Uranium Enrichment Decontamination and Decommissioning Fund. The structure of the EM budget continues to be based on the grouping of activities into projects at the various Departmental sites, a crucial step in accelerating work and lowering the cost of carrying out the EM mission.

EM's three budget program accounts reflect near-term goals and emphasis on completion:

- M *Site Closure provides funding for completing cleanup and closing down facilities with no enduring Federal presence onsite, except for stewardship activities. The Department has established a goal of completing cleanup at the sites in this account by the end of 2006.*
- M *Site/Project Completion funds those projects for which EM has established a goal of completion by 2006 at 1) EM sites where overall site cleanup will not be fully accomplished by 2006; and 2) DOE sites where EM has set a goal of completion of all EM projects by 2006 (except for long-term stewardship activities), but where there will be a continuing Federal workforce at the site to carry out enduring non-EM missions.*
- M *Post 2006 Completion funds projects that are expected to require work beyond 2006 and includes efforts at the Department's largest sites, where operations have been carried out over a long period of time and associated cleanup will take longer to complete. It includes Multi-Site activities, such as Pollution Prevention, Environmental and Regulatory Activities, Transportation and Packaging, Emergency Preparedness, and National Analytical Management Program activities.*

The EM budget structure also includes accounts for Program Direction (i.e., provides support to the Federal work force responsible for the overall direction and administrative support of the EM program) and Science and Technology (i.e., provides resources and capabilities from basic research through development, demonstration, and technical and deployment assistance).

## REDUCING WORKER, PUBLIC, AND ENVIRONMENTAL RISKS

### (EQ 1-1)

Identify and fund projects to reduce the most serious risks first and prevent further increases in relative risk at all sites.

#### *FY 2000 Targets and Results:*

- M *Move 35.1 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF) to dry storage. This will complete transfer of 2 percent of MTHM of SNF that will be moved to dry storage between FY 1998 and life-cycle completion.*

**Results:** 2.656 MTHM of the 35.1 MTHM planned was moved to dry storage. The largest portion of the performance measure was based upon completing the planned 17 Three Mile Island-2 (TMI-2) fuel transfers from Test Area North to the new TMI-2 dry storage facility at the Idaho Nuclear Technology and Engineering Center (INTEC). However, only one transfer was completed because of multiple operational and regulatory issues.

**Assessment:** Below Expectation

**Plan of Action:** Having resolved the operational and regulatory issues, the remaining TMI-2 fuel transfers are expected to be completed during FY 2001.

- M *Stabilize 400 containers of plutonium metals/oxides, 41,000 kilograms bulk of plutonium residues, and 130 handling units of other nuclear material in other forms. This will complete stabilization of about 10 percent of the containers of plutonium metals/oxides, 70 percent of the kilograms bulk of plutonium residues, and 3 percent of the handling units of other nuclear material in other forms that will require stabilization between FY 1998 and life-cycle completion.*

**Results:** This measure has been broken down into its three components—since the beginning of FY 2000: (1) 574 containers of plutonium metals/oxides have been stabilized—this component exceeded the goal of 400 containers; (2) 29,460 kilograms bulk of plutonium residues have been stabilized—this component is below the expected target of 41,000 kilograms; and (3) 224 handling units of other nuclear material in other forms have been stabilized—this component exceeded the goal of 130 units.

Based on the fact that two components “Exceeded” the established goal while the remaining component was classified as “Below Expectation,” the overall status of this measure was assigned a rating of “Nearly Met”

**Assessment:** Nearly Met Goal

**Plan of Action:** With respect to being “Below Expectation” on stabilizing kilograms bulk of plutonium residues, this was caused by work stoppage for site-wide inventory at Rocky Flats which was noted in the mid-year report and the effects of which continued into the second half of the year. Additional delay occurred as a result of several plutonium facilities being shutdown due to unacceptable trends in safety issues. Recovery plans are being developed to meet DNFSB Recommendation 2000-1 Implementation Plan commitments for stabilization of all remaining residues.

#### *FY 1999 Targets and Results:*

- M *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.

- M *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), ~ 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 containers. 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

## ACCELERATING AND COMPLETING GEOGRAPHIC SITE CLEANUP (EQ 2-1)

Complete clean up at 24 of the Department's 44 remaining sites by 2006. Continue cleanup at the 20 remaining sites, including the 5 largest sites, scheduled for completion in the post 2006 time-frame.

### ***FY 2000 Targets and Results:***

M *Complete remediation at 2 geographic sites, increasing the total completed to 71 of 113 geographic sites. (FMFIA milestone)*

**Results:** Remediation of two geographic sites was completed during FY 2000: Monticello Remedial Action Project in Utah and Columbus Environmental Management Project - King Avenue in Ohio. At the King Avenue site, additional work scope was identified which may require remediation.

**Assessment:** Met Goal

M *Complete 378 release site assessments.*

**Results:** Completed 326 release site assessments during FY 2000. A number of release site assessments which were planned as "No further Actions," and thus would have been considered complete, in fact were delayed due to an extension for public review of the proposed plans, thereby preventing the Office of Environmental Management from meeting its FY 2000 target. However, with the completion of 326, the EM program was able to demonstrate an increase of approximately 15 percent over last year's figure of 288 completed assessments. Taking into consideration the factors discussed, the overall assessment for this measure was determined to be "Nearly Met."

**Assessment:** Nearly Met Goal

M *Complete 252 release site cleanups. This will bring the number of completed release site cleanups to 4,730 out of a total inventory of approximately 9,700 release sites.*

**Results:** Completed 208 release site cleanups during FY 2000. An additional 72 release sites, which were assumed would be completed as "No Further Actions" in FY 2000 when the target of 252 was established, actually will require additional verification prior to being classified as complete. This unanticipated result was the only reason preventing the EM program from exceeding its established target for FY 2000. Coupled with the fact that the 208 cleanups in FY 2000 is an increase of approximately 30 percent from the 161 release site cleanups completed in FY 1999, the overall assessment for this measure was determined to be "Nearly Met."

**Assessment:** Nearly Met Goal

M *Complete 64 facility decommissioning assessments.*

**Results:** A total of 74 facility assessments have been completed to date. The goal for assessments has been exceeded for FY 2000.

**Assessment:** Exceeded Goal

M *Complete 82 facility decommissionings. This will bring the number of completed facility decommissionings to 640 out of a total inventory of approximately 3,300 facilities.*

**Results:** Seventy seven facility decommissionings were completed.

**Assessment:** Nearly Met Goal

M *Monitor field activities and participate in reviews at the Savannah River Operations Office to ensure adherence to project costs and schedules. (FMFIA milestone)*

**Results:** Conducted FY 2000 mid-year and year-end onsite reviews of technical and fiscal progress on all EM programs at the Savannah River Site. Also conducted a detailed review of DNFSB 94-1 project costs and schedules (May 2000).

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 thereby achieving 115 percent of the performance target.

**Assessment:** Exceeded Goal

M *Complete 120 facility decommissioning assessments.*

**Results:** Results indicate that 109 facility decommissioning assessments were completed during FY 1999 or approximately 90 percent of the performance target.

**Assessment:** Nearly Met Goal

M *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 Laboratory in California.

**Assessment:** Met Goal

M *Complete 310 release site assessments.*

**Results:** Results indicate that 289 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

M *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 162 release site cleanups were completed during FY 1999. The year-end status equates to 98 percent of the performance target.

**Assessment:** Nearly Met Goal

## **DEVELOPING AND DEPLOYING INNOVATIVE CLEANUP TECHNOLOGIES (EQ 2-4)**

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.

### ***FY 2000 Targets and Results:***

M *Accomplish 60 innovative technology deployments.*

**Results:** Two hundred and two innovative technology deployments have been completed.

**Assessment:** Exceeded Goal

M *Demonstrate 30 alternative technology systems that meet the needs identified by the Site Technology Coordination Groups.*

**Results:** Thirty seven demonstrations (full scale) of alternative technology systems have been completed.

**Assessment:** Exceeded Goal

M *Make 30 alternative technology systems ready for implementation with cost and engineering performance data.*

**Results:** Thirty innovative technology systems are ready for implementation.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *Accomplish 60 innovative technology deployments.*

**Results:** The field has reported 125 first time innovative technology deployments.

**Assessment:** Exceeded Goal

- M *Demonstrate 22 alternative technology systems that meet the performance-specification based needs as identified by the Site Technology Coordination Groups.*

**Results:** 27 Full scale demonstrations of innovative technologies have been completed in FY 1999

**Assessment:** Exceeded Goal

- M *Make 40 alternative technology systems ready for implementation with cost and engineering performance data.*

**Results:** 40 innovative technologies were made ready for implementation as reported by the Focus Areas as documented with Innovative Technology Summary Reports.

**Assessment:** Met Goal

## DISPOSE OF WASTE GENERATED DURING PAST AND CURRENT DOE ACTIVITIES (EQ 3-1)

Safely and expeditiously dispose of waste generated during past and current DOE activities. Continue shipment of transuranic (TRU) waste for disposal at the Waste Isolation Pilot Plant (WIPP).

### *FY 2000 Targets and Results:*

- M *Ship 1,200 cubic meters of TRU waste to WIPP for disposal. This will bring the total TRU waste shipped to 1,550 cubic meters, which is about 1 percent of the total TRU waste that requires disposal between FY 1998 and FY 2034.*

**Results:** FY 2000 Year End Actuals – 369 cubic meters were shipped in FY 2000.

**Assessment:** Below Expectation

**Plan of Action:** From October 1, 1999 to November 8, 1999, only non-RCRA waste was received at WIPP while awaiting approval of the RCRA permit. Due to the wording of the permit, the waste sites had to realign their programs to conform with the requirements. Receipt of waste resumed on March 10, 2000, after a four-month delay.

The Carlsbad Field Office (CBFO), with support and assistance from the HQS WIPP Office (EM-23), is working in several areas to ramp up WIPP to full operating capacity: (1) CBFO is undertaking major efficiency initiatives through the permit modifications process to increase the throughput to WIPP; (2) CBFO is working to address the unique needs of

small quantity generator sites by dispatching mobile vendors to perform onsite waste characterization for those sites where it would not be cost effective to construct new facilities to meet WIPP waste characterization requirements; i.e., CBFO and HQS are currently working with the Mound and Savannah River Site (SRS) facilities to finalize a process whereby Mound TRU wastes are consolidated with similar wastes at SRS for final characterization and shipment to WIPP for disposal; and (3) CBFO is seeking permit modifications for the disposal of remote-handled TRU waste at WIPP.

CBFO has undertaken other major efficiency initiatives to resolve existing barriers to filling the WIPP pipeline including: (1) developing a central waste characterization facility at the WIPP site to accelerate closure and reduce costs associated with waste removal particularly from small quantity sites (This is contingent on approval of a permit mod by the New Mexico Environment Department.) (2) alternatives to shipping waste to WIPP using the TRUPACT-II/truck combination are being reviewed to allow large pieces of equipment/material to be shipped to WIPP without requiring waste generator sites either to repackage or size reduce its transuranic waste; (3) changes are being sought to the WIPP Hazardous Waste Facility Permit and other authorization basis documents to ease restrictions associated with the treatment, characterization, transportation, and disposal of transuranic waste destined for WIPP; (4) equipment is being developed to allow DOE to perform radioassay of large waste containers which will allow waste generator sites to certify large containers to eliminate the need for repackaging; (5) HQS and CBFO, through use of the National TRU Waste Management Plan and meetings with the TRU shipping sites, have established a process where the Site Manager and the Contractor Site Manager must sign up to shipping commitments for FY 2001 and the outyears. Periodic meetings will be held to check on progress and discuss issues with the shipping commitments.

All these initiatives plus others are being pursued to help increase the throughput to WIPP while reducing costs to the complex and to address site closure commitments and compliance agreements and milestones.

- M *Implement the requirements in WIPP's RCRA permit and begin Mixed TRU waste disposal operations in FY 2000. (FMFIA milestone)*

**Results:** The first mixed contact-handled transuranic waste shipment arrived at WIPP from INEEL on 9/9/00.

**Assessment:** Met Goal

M *Dispose of 10,000 cubic meters of MLLW. This will bring the total MLLW disposed of to 35,500 cubic meters which is about 15 percent of the total MLLW that requires disposal between FY 1998 and FY 2070.*

**Results:** Since the beginning of FY 2000, 10,968 cubic meters of MLLW have been disposed. Thus, the Department has exceeded the annual MLLW disposal target for the fiscal year.

**Assessment:** Exceeded Goal

M *Dispose of 40,000 cubic meters of LLW. This will bring the total LLW disposed of to 116,000 cubic meters, which is about 7 percent of the total LLW that requires disposal between FY 1998 and FY 2070.*

**Results:** Since the beginning of FY 2000, 66,409 cubic meters of LLW have been disposed. Thus, the Department has exceeded the annual LLW disposal target for the fiscal year.

**Assessment:** Exceeded Goal

M *Produce 200 canisters of HLW at the Defense Waste Processing Facility at the Savannah River Site, and 5 canisters of HLW at the West Valley Demonstration Project. This will complete about 4 percent of the total canisters that will be produced from FY 1998 to life-cycle completion.*

**Results:** The Defense Waste Processing Facility at the Savannah River Site produced 231 canisters of HLW and the West Valley Demonstration Project in New York produced 10 canisters of HLW.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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

M *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, approxi-

mately 370 cubic meters of TRU waste were made disposal ready, 276 of which were received for disposal at WIPP. The delayed opening of WIPP postponed the preparation of additional waste for disposal.

**Assessment:** Unspecified

M *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

M *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

M *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.

M *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

## PREVENTING FUTURE POLLUTION (EQ 4-1)

Incorporate pollution prevention, including waste minimization, recycling, and purchases of recycled material, into all DOE activities to meet the Department's "Pollution Prevention and Energy Efficiency Leadership (P2E2)" goals and "Greening the Government" Executive Orders.

### *FY 2000 Targets and Results:*

- M *Reduce annual routine waste generation by 50 percent by December 1999, based on 1993 waste generation rates.*

**Results:** At the end of 1999, the Department reduced its generation of radioactive and hazardous wastes from its routine operations by more than 60 percent relative to 1993 levels. This achievement exceeded the DOE-wide Secretarial waste reduction goal of 50 percent established in 1996.

**Assessment:** Exceeded Goal

- M *Prepare pollution prevention plans outlining specific strategies to meet the new Departmental P2E2 goals for 30 DOE sites.*

**Results:** The aggressive target for site plans was not met due to unexpected difficulties in integrating pollution prevention and energy efficiency plans at the site level.

**Assessment:** Nearly Met Goal

**Plan of Action:** The program is now on track and we will meet the original goal at the end of February 2001.

- M *Conduct pollution prevention projects/practices to reduce waste from site cleanup and stabilization activities by 10 percent as compared to the annual planned baseline volumes, and report the results achieved through December 1999 by April 2000.*

**Results:** The Department reduced the generation of wastes from its cleanup and stabilization activities by 27,000 cubic meters. This reduction is equal to 17 percent of the wastes (160,000 cubic meters) that pollution prevention could be applied cost effectively.

**Assessment:** Exceeded Goal

### *FY 1999 Targets and Results:*

- M *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:** Met Goal

- M *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. 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:** Exceeded Goal

- M *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

## CARRYING OUT LONG-TERM STEWARDSHIP

(EQ 7-1)

In conjunction with stakeholders, develop comprehensive land use plans for DOE sites that provide information on alternative uses, ownership, environmental requirements, and implementation schedules, and ensure environmental remedies remain protective.

### *FY 2000 Targets and Results:*

M *By June 2000, produce the draft study on long-term stewardship pursuant to the 1998 PEIS settlement agreement.*

**Results:** Pursuant to the 1998 PEIS Settlement Agreement, the Department completed a scoping period, considered and incorporated relevant scoping comments and produced a draft study by June 2000.

**Assessment:** Met Goal

M *Continue coordination with the National Academy of Sciences/National Research Council on the release of their analyses on long-term stewardship.*

**Results:** National Academy of Sciences/National Research Council (NAS/NRC) released to the public a report entitled "Long-term Institutional Management of US Department of Energy Legacy Waste Sites" in October 2000.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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.) (EQ7-1)*

**Results:** The background report on Long-term Stewardship was published in September 1999.

**Assessment:** Met Goal

M *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. (EQ7-1)*

**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

## INVOLVING STAKEHOLDERS IN THE POLICY- MAKING PROCESS (CM 2-1)

Foster strong partnerships with neighboring DOE communities, regulators, and other stakeholders to determine priorities and create solutions.

### *FY 2000 Targets and Results:*

- *Conduct stakeholder meetings to increase public involvement in crosscutting environmental quality issues. The stakeholders will include advisory board members, State and local governments, Native American Tribes, and others across the country.*

**Results:** DOE's Office of Intergovernmental and Public Accountability assists 11 Site-Specific Advisory Boards (SSABs) across the DOE-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 DOE's Environmental Management 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), National Governors Association (NGA), Energy Communities Alliance (ECA) and National Association of Attorneys General (NAAG). Thus far this year, an estimated 115 stakeholder meetings have already been held.

**Assessment:** Met Goal

- *Respond to an estimated 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:** The Center for Environmental Management Information (CEMI) has been successful to date in meeting this performance measure through the response to the toll-free number, walk-in visitors to the Center, mailing list distributions of EM documents and products, visitors to the CEMI designed EM exhibits, and the distribution of information on the EM website. All inquiries that go directly to CEMI have had a response time of 48 hours. Documents and newsletters provided to the public through the EM webpage have been provided in a timely manner.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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 National Laboratory

**Assessment:** Met Goal

M *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



## DOE Decision Unit: Civilian Radioactive Waste Management

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Performed Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Civilian Radioactive Waste Management	RW	20	Civilian Radioactive Waste Management	1,608	197

### Description:

The Office of Civilian Radioactive Waste Management (RW) implements the Federal policy for permanent disposal of high-level radioactive waste and spent nuclear fuel, in order to protect the public health and the environment. The Department has made substantial progress in characterizing Yucca Mountain, Nevada, to determine its suitability as a geologic repository site for these wastes. A viability assessment drawing on 15 years of study was completed in 1998.

Based on the viability assessment, the Department believes that Yucca Mountain remains a promising site for a geologic repository and that work should proceed toward a decision in 2001 on whether to recommend the site to the President. A draft environmental impact statement was published for public comment in 1999. If the site is recommended for development as the repository site, a final environmental impact statement will accompany the site recommendation.

Under current schedules, the work to support a Secretarial decision on whether to recommend the site to the President will be completed in 2001. This decision will consider the views of the State of Nevada, affected Indian tribes, and the Nuclear Regulatory Commission, as required by the Nuclear Waste Policy Act. In turn, the President will decide whether to recommend the site to Congress. If Congress agrees with the President's recommendation and the site is designated for continued development, the Department could submit a license application to the NRC in 2003 for construction authorization. Under current plans, emplacement of waste in the repository would begin in 2010; however, the Department's schedule remains dependent on adequate program funding levels to meet critical near-term milestones for the Yucca Mountain Site Characterization Project and the planned 2010 waste emplacement date. The Department also continues to face substantial political opposition and legal challenges in implementing its waste disposal mandate under the Nuclear Waste Policy Act, as amended.

### CONTINUING WITH YUCCA MOUNTAIN SITE CHARACTERIZATION (EQ 5-1)

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.

#### *FY 2000 Targets and Results:*

- M Complete public hearings on the Draft Environmental Impact Statement which was published in August 1999.

**Results:** The Nuclear Waste Policy Act requires that an Environmental Impact Statement (EIS) be prepared and submitted to the President with the site recommendation, if the Secretary decides to recommend the site. A draft EIS was published in August 1999. The next step was to hold public hearings and obtain comments from stakeholders and the public, as required by the National Environmental Policy Act (NEPA). The period for commenting on the Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste At Yucca Mountain, Nye County, Nevada commenced on August 13, 1999. A total of 21 public hearings were held across the nation between September 27, 1999 and February 22, 2000. The comment period continued to February 28, 2000. The public hearings were attended by 2,224

individuals, not including DOE and DOE contractor personnel. Of the attendees, 716 submitted comments. During the draft EIS comment period, approximately 2,300 documents with 11,000 individual comments were received.

**Assessment:** Met Goal

M *Select the reference design for site recommendation and license application.*

**Results:** The reference design for site recommendation was selected for the preliminary site suitability evaluation, which will be used to facilitate the statutory hearings on a potential site recommendation. The reference design and operating modes for a potential site recommendation consider comments from stakeholders, including oversight bodies such as the Nuclear Waste Technical Review Board.

**Assessment:** Nearly Met Goal

**Plan of Action:** The preliminary license application design will evolve and may include adjustments to make it more effective and reduce repository cost without affecting safety.

M *Select the reference natural systems models for site recommendation and license application.*

**Results:** The process models for use in the site recommendation were selected. The data were verified, and the model codes were validated. Abstractions of the models were used in a total system performance assessment of the candidate repository. The process models, which are based on the most recently available scientific information, will be updated, as necessary, to support a possible license application, using an integrated process. This process will ensure that our performance assessment capability is fully consistent with additional confirmation data being collected.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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

M *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

## Science

**Strategic Goal for FY 2000: *Deliver the scientific understanding and technological innovations that are critical to the success of DOE's mission and the Nation's science base.***

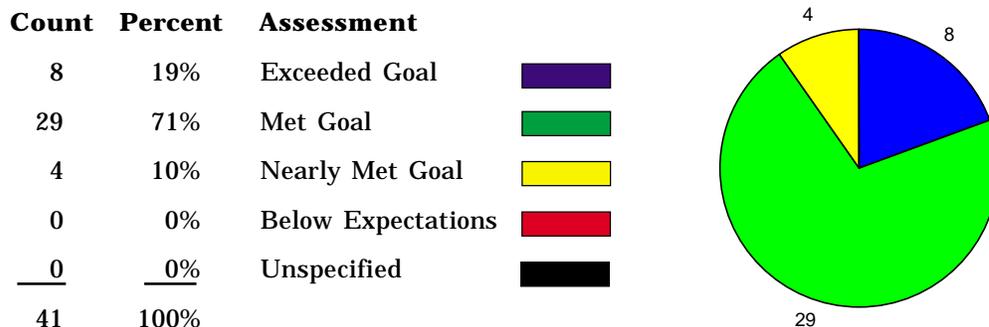
The following pages contain detailed information on the results achieved for performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President for the Science Business Line.

For each performance measure and indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

- "Exceeded Goal" means the results were *significantly* more than planned.
- "Met Goal" means the results *met the target* performance level or were slightly more than the target, but not significantly more.
- "Nearly Met Goal" means the performance was less than the target level, but *not significantly less*.
- "Below Expectations" means the results were *significantly less* than the target.
- "Unspecified" means that the end of year results were not available at the time of printing.

When performance was less than "Met Goal" a "Plan of Action" is included after the assessment.

There were 41 performance measures in FY 2000 for this business line. Of these, 8 are funded by, and their details presented with, Energy Resources Decision Units of the Office Nuclear Energy, Science, and Technology (NE) as shown in the cross-walk table. The overall results are:



**Program Evaluations Conducted During FY 2000:**

GPRA defines program evaluation as “an assessment, through objective measurement and systematic analysis, of the manner and extent to which Federal programs achieve intended objectives.” Program evaluation, therefore, covers a broad range of evaluative activities. DOE’s three major categories of program evaluations are discussed in the introduction to the detailed performance results. The major evaluations within this business line that were conducted during FY 2000 are listed below. Through these evaluations, the Department was able to re-assess its programs and reorient them or apply additional resources in order to ensure that they achieved their intended objectives as part of the strategic planning process conducted in FY 2000.

Feb. 2000 **Science Research and Development Portfolio:** Volume 4 of a 4 volume R&D Portfolio provides an analysis of the complete set of science activities organized around twelve major challenges.  
(<http://www.osti.gov/portfolio>)

Mar. 2000 **Scientific Discovery through Computing:** A plan submitted to the U.S. Congress addressing the broad-based computational needs of the DOE scientific community and corresponding future directions in DOE advanced computational modeling and simulation.  
([http://www.er.doe.gov/production/octr/mics/mics\\_documents.htm](http://www.er.doe.gov/production/octr/mics/mics_documents.htm))

## DOE Decision Unit: High Energy & Nuclear Physics

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
High Energy Physics	SC	21	High Energy Physics	675	677
Nuclear Physics	SC	21	Nuclear Physics	379	327

### Description:

High Energy and Nuclear Physics programs support basic research that provides new insights into the nature of energy and matter and operates large world-class scientific facilities for the Nation. High Energy and Nuclear Physics research is conducted by over 3,000 researchers and over 1,000 graduate students from over 100 universities and the National Laboratories.

### PROVIDING NEW INSIGHTS INTO THE FUNDAMENTAL NATURE OF ENERGY AND MATTER (SC 1-2)

Provide new insights into the fundamental nature of energy and matter.

#### *FY 2000 Targets and Results:*

M *Move the newly upgraded D-Zero and CDF detectors at Fermilab into position in the Main Injector tunnel and begin commissioning in the third quarter of the fiscal year.*

**Results:** Both the CDF and D-Zero detectors are making rapid progress toward completion. Earlier schedules had to be adjusted to account for significant delays, primarily in completing the silicon tracker systems, but both detectors are now on schedule for a March 2001 beginning of Run II. These are complex devices that push the state-of-the-art in particle detection. The CDF detector was rolled into place in September 2000 for a commissioning run in the Fall. The only major system remaining to be completed for the CDF is the Silicon Tracker which is expected to be completed in time for the scheduled start of Collider Run II in March 2001. In the case of the D-Zero detector, the Scintillating Fiber Tracker has been completed, representing a major success in the application of a new technology. The Silicon Tracker is now nearly on schedule, and its completion is expected for the scheduled start of Run II.

**Assessment:** Nearly Met Goal

**Plan of Action:** Both detectors have developed extensive plans to respond to any possible last minute delays, virtually assuring a successful start-up of Run II on the present schedule of March 2001. In the case of D-Zero, the plan calls for the installation of a partial Silicon Tracker system, if necessary to hold the schedule, which would be augmented during a Collider shutdown at a later date. This scenario would allow the D-Zero detector to be efficiently commissioned although full physics capability would be delayed by up to six months.

M *Further the progress on achieving luminosity and operational efficiency for the Tevatron at Fermilab in its new mode of operation with the recently completed Main Injector.*

**Results:** The Tevatron was operated successfully with the Main Injector during the Fixed Target run that was completed in January 2000. This run was very successful in providing data to two experiments on CP violation. The Fermilab accelerator complex, including the Main Injector, was then converted for operation in collider mode. Commissioning is underway, and collisions have been observed by the CDF detector. Collider Run II is scheduled to begin in March 2001.

**Assessment:** Met Goal

M *Advance knowledge from experiments at the Relativistic Heavy Ion Collider to see possible evidence of the predicted quark-gluon plasma; a high temperature, high density state of nuclear matter that may have existed a millionth of a second after the "Big Bang."*

**Results:** Construction of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory (BNL) was completed on schedule in August 1999 and commissioning of the superconducting collider proceeded during the summer of 1999. After shutdown to implement some repairs and improvements during the 1st Quarter of FY 2000, commissioning resumed in February 2000. On June 12, 2000, gold beams were accelerated to 26 GeV per nucleon in each ring and first collisions were observed. All four detectors began taking data. Beam energies were increased to 70 GeV per nucleon followed by four weeks of data taking. The planned goal of reaching 10 percent of the design luminosity (collision rate) was achieved in September 2000. All four detector collaborations presented initial results at the APS Division of Nuclear Physics Meeting in October 2000. Two papers have thus far been submitted for publication, of which one has been published. The ring magnets were successfully energized to operate at the planned design energy of 100 GeV per nucleon by the end of the fiscal year. The full physics capability for the experimental program should be available by the FY 2001 running period.

**Assessment:** Met Goal

M *Operate the B-factory at the Stanford Linear Accelerator Center; the Main Injector for the Tevatron at Fermilab, the Thomas Jefferson National Accelerator Facility, and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, and deliver on the FY 2000 U.S./DOE commitments to the international Large Hadron Collider project.*

**Results:** The B-factory continues the phenomenal performance exhibited from its turn-on. The B-factory has exceeded its design goal for peak luminosity of  $3.0 \times 10^{33}/\text{cm}^2\text{-sec}$ . The BaBar detector has logged an integrated luminosity by the end of October of 23.7 fb<sup>-1</sup> against a goal of 15 fb<sup>-1</sup>. The BaBar Collaboration has recorded and analyzed the unprecedented amount of data provided by the B-Factory, pioneering the use of object-oriented programming and an object-oriented data base management system harnessing over 300 computing nodes in a farm arrangement.

**Main Injector:** The Main Injector functioned successfully as the injector for the Tevatron during the Fixed Target run that was completed in January

2000. Commissioning of the Fermilab accelerator complex, including the Main Injector, in collider mode is proceeding on schedule.

**Large Hadron Collider:** The U.S. Large Hadron Collider (LHC) projects—U.S. LHC Accelerator, U.S. ATLAS and U.S. CMS—continue to exercise leadership roles in their respective international collaborations. For U.S. ATLAS, three production sites for Monitored Drift Tube detectors have been commissioned—at Harvard University, at the University of Michigan, and at the University of Washington—to produce equipment for the LHC and ATLAS and CMS experiments. Modules for the extended barrel calorimeter for the ATLAS detector are being completed and shipped routinely from Argonne National Laboratory to CERN. For U.S. CMS, cathode strip chambers are in full production involving nine universities and Fermilab. The U.S. LHC accelerator collaboration has completed prototype beam separation dipoles at BNL and prototype focusing quadrupoles for the interaction regions.

**Assessment:** Met Goal

### *FY 1999 Targets and Results*

M *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

M *Deliver on the 1999 U.S./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

## DEVELOPING SCIENCE TO SUPPORT DOE'S PARTICIPATION IN ENERGY AND OTHER NATIONAL POLICY FORMULATIONS

(SC 1-4)

Develop science to support DOE's participation in energy and other national policy formulations.

### ***FY 2000 Targets and Results:***

M *Continue collaborative efforts with NASA on space science and exploration.*

**Results:** AMS: The Alpha Magnetic Spectrometer (AMS) experiment was designed to detect antimatter in space and was operated on a space shuttle flight in June 1998. The experiment performed well and the data are being analyzed. The detector has been extensively redesigned to improve its resolution. Components are being developed, constructed, and tested. The goal is to launch the upgraded AMS detector to the International Space Station in October 2003.

GLAST: The Large Area Telescope proposal, put forward by the Stanford Linear Accelerator Center (SLAC) in collaboration with Stanford University, was selected by NASA as the principal flight instrument for the Gamma Ray Large Area Space Telescope (GLAST) mission. SLAC is the host laboratory for this international astro-particle physics project. The project team has been assembled and is functioning. A prototype module of the detector has been tested successfully in End Station A at SLAC. A draft Implementation Agreement, under the DOE/NASA Memorandum of Understanding regarding Energy-Related Civil Space Activities, has been drawn up and is circulating within both agencies for comment and approval.

SNAP: The SuperNova Acceleration Probe (SNAP) is a proposal put forward by Lawrence Berkeley National Laboratory (LBNL) for a 2m wide field telescope with a one billion pixel CCD detector in high earth orbit. It would measure thousands of Type 1A supernovas to study the accelerating universe and the possible existence of a new dark form of energy in the universe. This project is in the preliminary conceptual R&D stage.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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



## DOE Decision Unit: Biological and Environmental Research

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Biological and Environmental Research	SC	21	Biological and Environmental Research	397	397

### Description:

The mission of the Biological and Environmental Research (BER) program is to develop the knowledge needed to identify, understand, and anticipate the long-term health and environmental consequences of energy production, development, and use.

### CONDUCTING RELEVANT, HIGH QUALITY, INNOVATIVE RESEARCH THAT RESPONDS TO THE NEEDS OF THE DOE MISSION (SC 1-1)

Conduct relevant, high quality, innovative research that responds to the needs of the DOE mission.

#### *FY 2000 Targets and Results:*

M *Complete the sequencing of 50 million subunits of human DNA and submit to publicly accessible databases in FY 2000.*

**Results:** The Human Genome Project was conceived and launched by DOE/BER by successfully marrying biological, physical, and computational scientific disciplines. BER invested in the basic research that has given birth to the principal engines of discovery in biotechnology. The Department of Energy human genome program (DOE HGP) is now part of a coordinated international effort 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 are 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 the first months of FY 2000, the DOE HGP human DNA sequencing efforts at the DOE Joint Genome Insti-

tute (JGI) produced 243 million subunits of "high quality draft" DNA sequence. In addition DOE sequencing efforts at the JGI, the University of Washington, and Stanford University have combined to produce an addition ~24 million subunits of human DNA sequenced to "Bermuda Standards," the accepted international high quality standard. Thus, we have already greatly exceeded our presidential performance agreement. Technology developments have dramatically decreased the cost of DNA sequencing at the same time they have increased the speed and efficiency of sequencing. The DOE sequencing team can currently produce more DNA sequence in 8 days than it did in 1998, it's first full year of operation. Similarly the cost of sequencing has dropped from over \$2 to less than 10 cents per "finished" base during that same time frame. As a result the DOE is currently producing, with fewer staff and no budget increases, more than 30 times as much sequence as it did in its first year of operation.

**Assessment:** Exceeded Goal

#### *FY 1999 Targets and Results:*

M *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 is 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

## DEVELOPING SCIENCE TO SUPPORT DOE'S PARTICIPATION IN ENERGY AND OTHER NATIONAL POLICY FORMULATIONS

(SC 1-4)

Develop science to support DOE's participation in energy and other national policy formulations.

### *FY 2000 Targets and Results:*

M *Proceed on the development of the next generation coupled ocean-atmosphere climate model, leading to better information for assessing climate change and variability at regional, rather than global scales. This next generation model will change grid size from the current 300-500 kilometers on a side to less than 200 kilometers on a side.*

**Results:** In FY 2000, Version 1 of the Parallel Climate Model (PCM) completed testing and was

employed for climate studies. The PCM is a state-of-the-art coupled atmosphere-ocean general circulation model developed specifically for climate variability and climate change studies on multi-decade to multi-century timescales, including the study of climate changes that may result from increasing concentrations of greenhouse gases. This model resulted from a highly successful and unique collaboration between National Laboratories, university researchers and the National Center for Atmospheric Research (NCAR). Simulations from this model were a primary source of projections for the recently completed draft Intergovernmental Panel on Climate Change (IPCC) Third Scientific Assessment. Because the model was designed to be portable among scaleable parallel computing systems, simulations have been run on the SGI Origin at NCAR, the National Energy Research Supercomputing Center's T3E and IBM SP computers, and the SGI Origin computers at Los Alamos National Laboratory (LANL) and NCAR. Since the completion of the Draft IPCC Assessment, ensemble simulations of climate variability and change using PCM have continued and the results have been made available to a broad research community.

**Assessment:** Met Goal

M *Complete the genetic sequencing of over 10 additional microbes with significant potential for waste cleanup and energy production.*

**Results:** During FY 2000 the DNA sequences of 10 microbes with potential use in waste cleanup or energy production have been completely determined. Among the microbes that have been sequenced and that will be sequenced are organisms that degrade cellulose, convert biomass to energy sources (e.g., methanol, butanol, or ethanol), remediate organic toxicants, reduce or sequester toxic metals, sequester carbon dioxide, degrade dangerous solvents, etc. In addition, during October 2000 (but initially scheduled for September), the DOE Joint Genome Institute determined the DNA sequence of 15 additional microbes.

**Assessment:** Met Goal

M *Develop and implement a comprehensive program within the Climate Change Technology Initiative where the focus areas promise the maximum impact in the area of carbon management.*

**Results:** Sequestration Centers: Two carbon sequestration centers have been established. CSiTE, the DOE Center for Research on Enhancing Carbon Sequestration in Terrestrial Ecosystems, supports research that investigates the enhancement of the natural terrestrial cycle and the potential environ-

mental consequences of enhancing sequestration in the terrestrial ecosystem. The other center, DOCS, the DOE Center for Research on Ocean Carbon Sequestration, investigates enhancing the natural oceanic cycle and the efficacy and impacts of deep carbon dioxide injection. Sequestration research: Research is underway in universities and other academic institutions that support carbon sequestration. Based on solicitations in FY 2000, 11 new grants and contracts have been awarded in the ocean area and 9 new grants and contracts in the terrestrial. Microbial sequencing: The complete genomic sequence of *Chlorobium tepidum* was completed and published. *Nitrosomonas europaea* is nearly complete, with remaining sequence gaps being closed. The genome sequence of *Prochlorococcus marinus* MED4 is complete, and a related ecotype, *Prochlorococcus marinus* MIT9313 nearing completion. *Rhodospseudomonas palustris* and *Nostoc punctiforme* are nearly complete, with remaining sequence gaps being closed. The DOE Joint Genome Institute in California has recently shotgun sequenced additional relevant microbes including *Ralstonia eutropha*, *Sphingomonas aromiticivorans*, *Thermomonospora fusca*, and *Rhodobacter sphaeroides*. Currently, a solicitation is open that encourages carbon sequestration research applications addressing microbial functional characterization, bioinformatics, lateral gene transfers, novel sequencing technologies, and explorations into microbial consortia and difficult-to-culture strains.”

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *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 in 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 workshop 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

M *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 *Shewanella putrefaciens*, an organism that can consume toxic organic pollutants and convert toxic metals and radionuclides to less toxic forms.

**Assessment:** Exceeded Goal

## SUPPORTING EMERGING SCIENCES THAT ARE IMPORTANT TO THE FUTURE OF DOE AND THE NATION (SC 1-5)

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.

### *FY 2000 Targets and Results:*

- M *Determine the molecular structures of proteins with more than 60 percent of the new structures that are published in the peer reviewed literature resulting from data generated at synchrotron user stations.*

**Results:** The most significant new protein structures in the U.S. are published in the journals Science, Biochemistry, and Proceedings of the National Academy of Sciences (PNAS). From October, 1999, through September, 2000, 20 of 33 (61 percent) papers in Science and 36 of 65 (55 percent of papers in PNAS on crystal structures included synchrotron data; while from January 2000 through October 2000, 110 of 174 (63 percent) crystal structure papers in Biochemistry included synchrotron data.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

- M *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 calendar 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

- M *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

## LEVERAGING RESEARCH OPPORTUNITIES (SC 1-6)

Leverage research opportunities through science partnerships and pursue international science collaborations.

### *FY 2000 Targets and Results:*

- M *In cooperation with NASA, NSF, USDA/Forest Service, and the Smithsonian Institution, provide quantitative data on the annual exchange of carbon dioxide between the atmosphere and terrestrial ecosystem from 25 AmeriFlux sites representing major types of ecosystem and land uses in North and Central America. Provide data on environmental factors, such as climate variation, on the net sequestration or release of carbon dioxide and the role of biophysical processes controlling the net exchange.*

**Results:** There are now 42 sites in the AmeriFlux Network, and most have collected net carbon dioxide exchange data for a full year or longer. Scientific results have been reviewed by the AmeriFlux Science Team which confirmed the fact that most of the forests and grasslands being measured are gaining carbon. These observations are important because the AmeriFlux measurement approach represents a full accounting of net carbon change of major components of USA landscapes. The AmeriFlux Network provides scientific underpinning for assessment of terrestrial carbon sinks, and the observed carbon gains provide key support for the hypothesis that N. America is a significant sink for the excess carbon produced from burning fossil fuel.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

No performance measures reported for FY 1999.

## DEVELOPING THE TECHNOLOGIES TO MEET DOE'S ENERGY, NATIONAL SECURITY, AND ENVIRONMENTAL GOALS

(SC 2-1)

Develop the technologies required to meet DOE's energy, national security, and environmental quality goals.

### ***FY 2000 Targets and Results:***

- M *Complete site characterization of the first Natural and Accelerated Bioremediation Research (NABIR) Field Research Center, and commence activities necessary to enable sample collection and distribution to investigators.*

**Results:** The FRC at the Oak Ridge National Laboratory received funding for operations and site characterization in the late spring of calendar year 2000. The funding delay was attributable to an unanticipated delay in the completion of an Environmental Assessment in accordance with the requirements of the National Environmental Policy Act (NEPA). Once the FRC received funding, a Characterization Plan was prepared during the summer and field site characterization efforts were initiated; however, due to the delay in the receipt of funding, both the characterization and sample distribution efforts were delayed. Nevertheless, the FRC initiated activities with NABIR investigators to provide samples. In early September, NABIR Program Managers decided to combine the two previously separate efforts into a combined effort to enable more efficient use of funds and to attract more NABIR investigators to the potential applications of the FRC.

**Assessment:** Nearly Met Goal

**Plan of Action:** As a result of the changes made late in FY 2000, samples will be provided to NABIR investigators during the initial months of FY 2001 for analyses. The results of these analyses will provide baseline characterization information for the field site, and at the same time, will be of use to investigators in their individual projects.

### ***FY 1999 Targets and Results:***

No performance measures reported for FY 1999.

## PURSUING TECHNOLOGY RESEARCH PARTNERSHIPS

(SC 2-2)

Pursue technology research partnerships with industry, academia, and other government agencies and proactively accelerate the transition of technologies to end-users.

### ***FY 2000 Targets and Results:***

No performance measures reported for FY 2000.

### ***FY 1999 Targets and Results:***

- *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.

## MANAGING THE NATIONAL LABORATORIES, SCIENCE-USER FACILITIES, AND OTHER DOE RESEARCH PROVIDERS AND RESEARCH FACILITIES

(SC 3-1)

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.

### ***FY 2000 Targets and Results:***

- M *Continue Atmospheric Radiation Measurement (ARM) accomplishments by conducting five intensive operations periods at the ARM Southern Great Plains site. Obtain data from the second station on the North Slope of Alaska, and make*

*operational the third station in the Tropical Western Pacific, on Christmas Island.*

**Results:** The Southern Great Plains (SGP) site is fully operational and is providing a continuing data set designed to improve climate prediction. ARM has completed all intensive operations periods planned for FY 2000. Data are currently being obtained from the second station of the North Slope of Alaska site. The facility is located at Atqasuk, which is 50 km south of Barrow. This site complements 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. Two of three facilities at the Tropical Western Pacific site are fully operational. The plans for a third Tropical Western Pacific site have been revised. The Christmas Island location was deemed unacceptable since anticipated improvements to basic infrastructure of the island have not occurred and appear indefinite if not improbable. Preliminary plans were based on substantial improvements in the island infrastructure (ability to load and unload ships, ability to transport large heavy loads on the island, etc.) being completed by the Japanese as part of the implementation of their planned project on the island. Due to budget problems, the Japanese have indefinitely delayed this project. A solicitation for the installation of a possible third TWP station was issued on September 30, 2000. Additionally, ARM has established an international (Japanese), interagency (NOAA) agreement to deploy a series of shipboard campaigns in the region. These data will complement the operational TWP island sites.

**Assessment:** Met Goal

## **DEVELOPING AND PROMOTING TECHNOLOGIES AND PROGRAMS THAT DELIVER INFORMATION AND CONTRIBUTE TO LEARNING IN SCIENCE, MATH, ENGINEERING, AND TECHNOLOGY (SC 4-1)**

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.

### ***FY 2000 Targets and Results:***

M *Continue the Global Change Research Education Program to support 15 graduate and 20 undergraduate students conducting DOE-related global change research. Continue to participate in the multi-agency "Significant Opportunities in Atmospheric Research and Science" Program (SOARS).*

**Results:** The number of participants selected was increased to 18 graduate students and 29 undergraduate students. Over 50 percent of the participants are women, and the percentage of minorities has increased slightly. All selected participants are exceptionally well qualified. An orientation workshop was held at Tulane University for all GCEP students at the beginning of the summer. All of the undergraduate participants had summer research assignments at either DOE labs or at NIGEC facilities. An end-of-summer symposium was held at Oak Ridge National Laboratory for students to present their results and for program evaluation. Results from the summer indicate that the students made appreciable contributions to the science of various DOE global change programs and that mentoring relationships are valued by both the students and the mentors.

**Assessment:** Exceeded Goal

- M *Make 4 to 10 appointments in both the Alexander Hollander Distinguished Post Doctoral Fellowship Program and the Historical Black Colleges and Universities Faculty and Student Research Program.*

**Results:** During FY 2000 offers were made for five Alexander Hollander Distinguished Postdoctoral Fellowships, six Minority Institution Faculty Summer Research Program participants, and five Minority Institution Student Summer Research Program participants. In FY 2000, the Historical Black Colleges and University program for faculty and students was changed to a minority institutions program.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results***

- M *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 sixteen awards and the Graduate Research Environmental Fellowships (GREF) program was initiated in FY 1999 with ten 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

- M *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 Hollander Distinguished Post Doctoral Fellowships have been awarded. Four SOARS proteges 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



## DOE Decision Unit: Basic Energy Sciences

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Basic Energy Sciences	SC	21	Basic Energy Sciences	665	670

### Description:

The Basic Energy Sciences (BES) program fosters and supports fundamental research in the natural sciences and engineering to provide a basis for new and improved energy technologies and for understanding and mitigating the environmental impacts of energy use. As part of its activities, BES plans, constructs, and operates major scientific user facilities to serve researchers at universities, national laboratories, and industrial laboratories.

### CONDUCTING RELEVANT, HIGH QUALITY, INNOVATIVE RESEARCH THAT RESPONDS TO THE NEEDS OF THE DOE MISSION (SC 1-1)

Conduct relevant, high quality, innovative research that responds to the needs of the DOE mission.

#### *FY 2000 Targets and Results:*

M *Maintain the high quality and relevance of DOE's science as evaluated by annual peer reviews and advisory committees.*

**Results:** All new projects in FY 2000 have been selected by peer review and merit evaluation. All on-going research activities except those Congressionally mandated undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program and under a similar modified process for the laboratory programs and scientific user facilities. For the latter, the Basic Energy Science Advisory Committee (BESAC) has usually been in charge to conduct the reviews. Recent and forthcoming reviews conducted by BESAC include: the 1999 review of the four BES electron beam microcharacterization centers; the FY 2000 review of the Advanced Light Source; the FY 2000 review of neutron scattering capabilities following the shutdown of the High Flux Beam Reactor; and a forthcoming review of the Intense Pulsed Neutron Source and the Manuel Lujan Jr., Neutron Scattering Center that is planned for late 2000 or early 2001.

**Assessment:** Met Goal

M *Maintain and operate scientific user facilities to serve thousands of researchers from universities, national laboratories, and industry such that the unscheduled downtime is less than 10 percent of the total scheduled possible operating time on average.*

**Results:** In FY 2000, the major scientific user facilities supported by Basic Energy Sciences (BES) were operated under optimum schedules given the FY 2000 appropriated budget 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. During FY 2000, many thousands of scientists conducted experiments at the user facilities, and thousands of other researchers collaborated with these users to analyze the data from the experiments and publish new scientific findings in peer-reviewed journals.

**Assessment:** Met Goal

M *Meet the cost and schedule milestones for upgrade and construction of scientific facilities.*

**Results:** The three BES FY 2000 major ongoing enhancements and maintenance activities of existing synchrotron radiation light sources and neutron scattering sources are on cost and schedule. The projects are (1) fabrication of instrumentation for the short-pulse spallation source at LANSCE, (2) improvements at HFIR undertaken during an extended reactor outage in FY 2000 for the regularly scheduled (approximately every decade) replacement of the beryllium reflector, and (3) a new beam line at the Advanced Light Source at Lawrence Berkeley National Laboratory. Likewise, the Spallation Neutron Source construction project is on cost/schedule. Each Office of Science construction project undergoes

regular technical, cost, schedule and management peer reviews, which are independently conducted by the Construction Management Support Division.

**Assessment:** Met Goal

## SEARCHING FOR AND UTILIZING THE BEST SCIENTIFIC TALENT FROM ALL SOURCES TO PERFORM DOE RESEARCH (SC 1-3)

Search for and utilize the best talent from all sources to perform DOE research.

### *FY 2000 Targets and Results:*

M *Continue Partnerships for Academic- Industrial Research where peer reviewed grants are awarded to university researchers for fundamental, high-risk work jointly defined by the academic and industrial research partners.*

**Results:** Twelve of the sixteen university grants initiated in FY 1998 as a result of Program Notice 97-15, Partnerships for Academic-Industrial Research (PAIR), continued through FY 2000 with a total funding for the year of over \$1 million.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

No performance measures reported FY 1999.

## MANAGING THE NATIONAL LABORATORIES, SCIENCE-USER FACILITIES, AND OTHER DOE RESEARCH PROVIDERS AND RESEARCH FACILITIES (SC 3-1)

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.

### *FY 2000 Targets and Results:*

M *Continue construction of the Spallation Neutron Source, meeting costs and timetables as contained in the Critical Decision II agreement, to provide beams of neutrons used to probe and understand the physical, chemical, and biological properties of materials at an atomic level leading to better fibers, plastics, catalysts, and magnets and improvements in pharmaceuticals, computing equipment, and electric motors.*

**Results:** The cost/schedule baselines for the Spallation Neutron Source (SNS) have been established and were successfully reviewed by an External Independent Assessment contractor (Burns & Roe). They were also peer reviewed by a DOE-led committee in March 2000. Construction work is continuing at six partner laboratories to support completion of the project by mid-2006. Each lab is making progress along a well-defined scope of work for which they are accountable to the central SNS Project Office.

**Assessment:** Met Goal

M *Continue fabrication of instrumentation for the short-pulse spallation source at the Manual Lujan Jr. Neutron Scattering Center at the Los Alamos Neutron Science Center.*

**Results:** Fabrication of two instruments in FY 2000 was successfully completed on-track for the short-pulse spallation source at LANSCE. This instrumentation enhancement project was undertaken concurrently with an accelerator enhancement project funded by the Department's Office of Defense Programs. Together, these enhancements result in a world-class short-pulse spallation neutron source facility. As a result of a BESAC review, LANSCE management improvements in the future will be focused on establishing a truly world-class user program for this facility that meets the requirements set by BESAC for an interim facility to the SNS at least as good as the ISIS facility.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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

## DOE Decision Unit: Advanced Scientific Computing Research

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Advanced Scientific Computing Research	SC	21	Computational and Technology Research	137	144

### Description:

The Advanced Scientific Computing Research program supports research in forefront and diverse applied mathematical sciences, high performance computing, communications, and information infrastructure which spans the spectrum of activities from strategic, longer-term, fundamental research to technology research, development, and demonstration. It links the Office of Science's programs and laboratories to national economic competitiveness by conducting long-term, high-risk industry relevant research and development projects in critical technology areas.

### DEVELOPING THE TECHNOLOGIES TO MEET DOE'S ENERGY, NATIONAL SECURITY, AND ENVIRONMENTAL GOALS

(SC 2-1)

Develop the technologies required to meet DOE's energy, national security, and environmental quality goals.

#### ***FY 2000 Targets and Results:***

M *Develop advanced computing capabilities, computational algorithms, models, methods, and libraries, and advanced visualization and data management systems to enable new computing applications to science.*

**Results:** Important Calculations on a number of important problems have been accomplished including the first accurate calculation of a methane flame, and solution of the Quantum 3 Body scattering problem. --Researchers supported by ASCR have received one R&D 100 award for software in linear equation solvers and shared in another R&D 100 award for the Northwest Chemical Company (NWCHEM) computational chemistry project. -- ASCR funded researchers received Best Paper Award from SC99 Conference.

**Assessment:** Met Goal

M *Continue to fabricate, assemble, and operate premier supercomputer and networking facilities that serve researchers at national laboratories, universities, and industry enabling understanding of complex problems and effective integration of geographically distributed teams in national collaborations.*

**Results:** National Energy Scientific Computing Center (NERSC) accepted initial IBM SC system in March 2000 -- ESnet negotiated new competitive contract with Qwest for network services, transition is on schedule -- Nirvana Blue at LANL achieves 1 Teraflop for Office of Science Computer simulations. NERSC expanded computer room space by innovative lease arrangement within constant spending profile.

**Assessment:** Met Goal

## PURSUING TECHNOLOGY RESEARCH PARTNERSHIPS

(SC 2-2)

Pursue technology research partnerships with industry, academia, and other government agencies and proactively accelerate the transition of technologies to end-users.

### *FY 2000 Targets and Results:*

M *Initiate 7 Laboratory Technology Research projects that address the Department's top priorities for science and technology, through cost-shared research partnerships with industry.*

**Results:** Due to budget constraints, the LTR program was not able to initiate any mid-term (nominally 3-year), cost-shared research collaborations with industry. However, sufficient funds were available in FY 2000 to initiate twelve (12) shorter-term (1-year or less) research collaborations with industry. Although the period of performance and the scope of these collaborations are below originally intended levels, nevertheless, they are in areas that address the Department's top priorities for science and technology. Specifically, the majority of these projects emphasized the applications of fundamental research in advanced computing and applied mathematics. In addition, 16 projects were initiated that provided technical assistance to small businesses, using the unique research capabilities of the SC laboratories.

**Assessment:** Nearly Met Goal

**Plan of Action:** In FY 2001, the LTR program plans to initiate 10 research projects that address the Department's top priorities for science and technology, through cost-shared partnerships with industry, if permitted by the FY 2001 appropriation.

M *Review and select for Phase II funding approximately 80 Small Business Innovation Research (SBIR) proposals that satisfy proof of concept under Phase I funding. In a separate competition, select about 200 SBIR proposals for Phase I funding.*

**Results:** The Department of Energy has chosen 97 projects for award under its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. Twenty five of the 147 companies that applied were first time recipients of a DOE Phase II award. The 97 Phase II awardees are located in 23 states and the awards average about \$711,000 for SBIR and \$490,000 for STTR, for a

period of two years. The projects selected cover a broad spectrum of energy-related research and development in the areas of fossil, nuclear, and renewable energy; energy efficiency; basic energy sciences including materials and chemical sciences; scientific computing; biological and environmental research; high energy and nuclear physics; fusion; environmental management; and nonproliferation and national security. The Department of Energy awarded 221 projects to small businesses in 32 states that will receive Phase I grants up to \$100,000 each for research ranging from small-molecule tumor-targeting agents for breast cancer imaging to the development of a sustained ocean current-driven electric power generating system. Funded under the Department's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, the projects were in 45 technical topic areas that help meet the Department's diverse energy, environmental, and science missions. DOE chose the 221 projects from 1,086 applications received. The companies will use the Phase I grants to explore the feasibility of their innovative concepts. They may apply in FY 2001 for Phase II follow-on grants of up to \$750,000 (\$500,000 for STTR) for the research and development work.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *Provide fundamental research in environmental sciences, biology, molecular sciences, and computational modeling that will underpin the cleanup of contaminated sites.*

**Analysis:** During FY 1999, sampling of both ground-water and sediment was conducted at the Shiprock, NM and Gunnison, CO 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 uranium 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

## IMPROVING THE MANAGEMENT, DISSEMINATION, SHARING, AND USE OF SCIENTIFIC AND TECHNICAL INFORMATION ACROSS DOE (SC 3-3)

Improve the management, dissemination, sharing, and use of scientific and technical information.

### ***FY 2000 Targets and Results:***

M *Meet 75 percent of the requirements of computer facilities and networks users.*

**Results:** In the case of both of the DOE's facilities: the Energy Science Network (Esnet) and the National Energy Scientific Computing Center (NERSC) the demand for computing capabilities far exceeded what current resources are able to provide. The current computers at NERSC provide less than half of the computer resources that were requested this year. The pressure will increase in the future as more applications become ready to move from software testing to use for generating new science. The Esnet facility was only able to accommodate the highest priority items as selected by Esnet Steering Committee.

**Assessment:** Nearly Met Goal

**Plan of Action:** To address this problem, NERSC will continue using peer and focus on SC highest priority research to allocate limited resources to achieve optimum scientific output from the facility. ESnet employs a number of innovative network management and contracting procedures to deliver the maximum amount of service for the minimum cost, as has been repeatedly noted by external review committees.

M *Increase by 25 percent over FY 1999 the availability of peer-reviewed scientific journal literature, preprints, and reports to DOE and the public through collaborations with publishers, data compilers, exchange partners, and R&D programs using Web-based mechanisms.*

**Results:** During FY 2000, four Web-based information systems have been introduced and/or are fully operational, serving both DOE and the public. PubSCIENCE provides access to peer-reviewed journal articles through a collaborative agreement with 36 major publishers and data compilers. The PrePRINT Network provides access to yet-to-be-published research results at over 1,500 sites. These

systems, in conjunction with the DOE Information Bridge that offers full text reports (grey literature) at no charge to the user, make up a trilogy of information systems that provide access to the three main ways in which scientists communicate their findings. In addition, two other products were developed in collaboration with other federal agencies: Federal R&D Project Summaries, providing access to over 240,000 records of research summary and awards data; and GrayLIT Network, providing access to over 100,000 fulltext scientific and technical documents.

As of the end of FY 2000, PubSCIENCE provided access to 1,250 scientific journals and 2 million citations and/or full-text articles; only 165 journals representing 53,000 article citations were covered in FY 1999. During that same time period, the number of participating publishers increased from 20 to 36. The PrePRINT Network provided access to 340,000 scientific documents from 1,500 sites into a single-query access point. The DOE Information Bridge has increased the number of full-text scientific reports from 45,000 in FY 1999 to 60,000 in FY 2000.

Total records and text readily available to scientists, engineers, program and project managers, academia, and the interested public increased by over 2.6 million throughout the Fiscal Year, and information is made more valuable as a result of these innovative mechanisms that herald a new era in information use. Users can now access a multitude of Web sites regardless of where they are located or which forms, formats, or platforms on which they reside with a single search query.

**Assessment:** Exceeded Goal

M *Increase visibility and use of energy-related scientific and technical information by government, academia, industry, and the public through electronic Web-based products that promote scientific advancement, resulting in 15 percent more customer usage over FY 1999.*

**Results:** During FY 2000, there were over 3.4 million accesses to scientific and technical information systems, in comparison to 1.6 million accesses for all of FY 1999, representing a 113 percent increase. The increase is due to the introduction of two new publicly-accessible Web-based information products, PubSCIENCE and The PrePRINT Network, as well as increased usage of existing products.

Downloads of full-text scientific and technical reports containing DOE-sponsored R&D results increased from 98,000 in FY 1999 to 225,000 in FY 2000. This increase more than doubled customer usage of this feature that allows users to acquire full-text documents at no out of pocket costs.

Increased usage of DOE's information products is an excellent indicator that visibility is being significantly enhanced through the development of broad-based systems that make information readily accessible to a wide variety of customer segments. Users are now able to access a vast array of worldwide information and resources at their desktops, and the advantages provided are growing in popularity. Full-text reports that previously could have cost the user \$50 to 100 each are now being downloaded by users at no charge, a tremendous savings to the Department, other government agencies, industry, academia, and the public.

**Assessment:** Exceeded Goal

***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

## DOE Decision Unit: Fusion Energy Sciences

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Fusion Energy Sciences	SC	21	Fusion Energy Sciences	238	224

### Description:

The mission of the U.S. Fusion Energy Science Program is to advance plasma science, fusion science, and fusion technology—the knowledge base needed for an economically and environmentally attractive fusion energy source.

### CONDUCTING RELEVANT, HIGH QUALITY, INNOVATIVE RESEARCH THAT RESPONDS TO THE NEEDS OF THE DOE MISSION (SC 1-1)

Conduct relevant, high quality, innovative research that responds to the needs of the DOE mission.

#### *FY 2000 Targets and Results:*

M *Maintain the high quality and relevance of DOE's science as evaluated by annual peer reviews and advisory committees.*

**Results:** All new projects in FY 2000 have been selected by peer review and merit evaluation. All ongoing research activities except those Congressionally mandated undergo regular peer review and merit evaluation based on procedures set down in 10 CFR 605 for the extramural grant program and under a similar modified process for the laboratory programs and scientific user facilities.

**Assessment:** Met Goal

#### *FY 1999 Targets and Results:*

M *Maintain high scientific quality in the Energy Research Program as judged by the Program Advisory Committees.*

**Analysis:** 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

### PROVIDING NEW INSIGHTS INTO THE FUNDAMENTAL NATURE OF ENERGY AND MATTER (SC 1-2)

Provide new insights into the fundamental nature of energy and matter.

#### *FY 2000 Targets and Results:*

M *Complete and make available for use via the web a new energy transport code framework, based on modern computing techniques.*

**Results:** A framework for a Web-invokable predictive energy transport code based on modern computational techniques has been developed. This Web-invokable code approach is being considered for use by researchers in other programs.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

**SEARCHING FOR AND UTILIZING THE BEST SCIENTIFIC TALENT FROM ALL SOURCES TO PERFORM DOE RESEARCH (SC 1-3)**

Search for and utilize the best talent from all sources to perform DOE research.

***FY 2000 Targets and Results:***

- M *Begin new funding opportunities in basic plasma sciences and junior plasma physics facility development programs provided through competitive announcements.*

**Results:** An announcement of funding opportunities in basic and applied plasma physics was made as part of the NSF/DOE Partnership. More than 160 proposals were reviewed, and awards totaling about \$4M were made to more than 30 principal investigators. Three new Junior Faculty in Plasma Physics development awards were made based on proposals submitted in response to an announcement of opportunity.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

**SUPPORTING EMERGING SCIENCES THAT ARE IMPORTANT TO THE FUTURE OF DOE AND THE NATION (SC 1-5)**

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.

***FY 2000 Targets and Results:***

- M *Operate a novel magnetic fusion confinement device, the National Spherical Torus Experiment, with 0.5 mega-ampere plasma currents approaching 0.5 second pulse lengths and 1 mega-ampere currents for shorter pulses.*

**Results:** This milestone for the NSTX program has been successfully completed ahead of schedule.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

**LEVERAGING RESEARCH OPPORTUNITIES (SC 1-6)**

Leverage research opportunities through science partnerships and pursue international science collaborations.

***FY 2000 Targets and Results:***

- M *Make operational 3 innovative concept exploration experiments in fusion science—the LSX field-reversed configuration and the flow-through Z pinch, both at the University of Washington, and the Pegasus quasi-spherical toroidal plasma at the University of Wisconsin—providing basic scientific understanding of relevant concept phenomena.*

**Results:** All three facilities are operational and data is being collected and analyzed

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

No performance measures established for FY 1999.

## MANAGING THE NATIONAL LABORATORIES, SCIENCE-USER FACILITIES, AND OTHER DOE RESEARCH PROVIDERS AND RESEARCH FACILITIES

(SC 3-1)

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.

### ***FY 2000 Targets and Results:***

M *Operate the DIII-D Tokamak facility to test the feasibility of using increased radio frequency heating power and improved power exhaust capabilities to extend the pulse length of advanced operating modes, a requirement for future fusion energy sources.*

**Results:** The radio frequency heating power and power exhaust systems are being upgraded in phases. About one-half of the new rf sources became available early this year, and these were used in initial experiments in June. These experiments were successful in making progress towards extending the pulse length of advanced operating modes.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

No performance measures established for FY 1999.



## Corporate Management

**Strategic Goal for FY 2000:** *The Department of Energy will strive to demonstrate organizational excellence in its environment, safety and health practices, in its communications and trust efforts, and in its corporate management systems and approaches.*

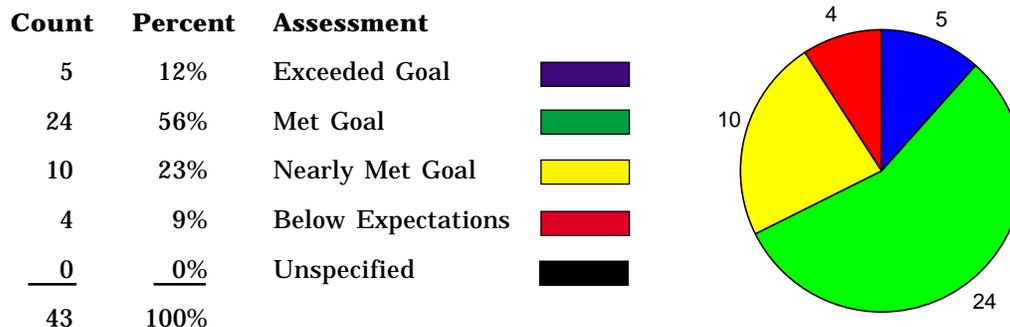
The following pages contain detailed information on the results achieved for performance measures and indicators contained in the Secretary's FY 2000 and FY 1999 Performance Agreements with the President for Corporate Management.

For each performance measure and indicator, the discussion includes an assessment of the Department's performance made by the responsible office, consistent with the Department's performance-based management approach. The terms used for the assessments were developed through discussions with Congressional staff and were used in the FY 1999 report. The terms and their meanings are:

- "Exceeded Goal" means the results were *significantly* more than planned.
- "Met Goal" means the results *met the target* performance level or were slightly more than the target, but not significantly more.
- "Nearly Met Goal" means the performance was less than the target level, but *not significantly less*.
- "Below Expectations" means the results were *significantly less* than the target.
- "Unspecified" means that the end of year results were not available at the time of printing.

When performance was less than "Met Goal" a "Plan of Action" is included after the assessment.

There were 43 performance measures in FY 2000 for this business line. Of these, 7 are funded by, and their details presented with, the National Nuclear Decision Unit of the Office of Security and Emergency Operations (SO) as shown in the cross-walk table. Similarly, there are performance measures funded, and their results presented here that support other business lines. The overall results are:





## DOE Decision Unit: Environment, Safety and Health

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Environment, Safety and Health (Defense and Non-Defense)	EH	22	Facility Safety	62	73
		22	Health Studies	98	91

### Description:

The Office of Environment, Safety and Health (EH) is a corporate resource that provides leadership and Departmental management excellence to protect the workers, the public, and the environment. EH provides corporate policy, guidance, and technical expertise to support and advise the Secretary regarding the line management implementation of environment, safety, and health requirements and programs. EH staff are expert in disciplines such as environmental protection; industrial hygiene; industrial, chemical, and constructions safety; public health; occupational medicine, and risk management. EH activities funded under this decision unit cover both the Energy Supply appropriation and the EH defense activities. Under the Energy Supply appropriation EH funds four major activities: Policy, Standards, and Guidance; and Corporate Programs. This better characterizes EH as a corporate resource to advance the DOE mission while promoting the establishment of effective and efficient environment, safety, and health programs. Under the defense activities EH funds the following four major activities: Oversight, Health Studies, and the Radiation Effects Research Foundation (RERF) and the Gaseous Diffusion Plants activity. Exposure Compensation Activities relate to compensation of workers across the complex for work related illnesses.

### INSTITUTING A SOUND ES&H CULTURE (CM 1-1)

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.

#### ***FY 2000 Targets and Results:***

M *Implement Integrated Safety Management at all DOE sites. (FMFIA milestone)*

**Results:** Nearly every site has successfully completed their Integrated Safety Management (ISM) implementation. The emphasis in ISM at these DOE offices and sites is now focused on sustaining and improving their ISM programs. ISM has not been declared at two sites: the Oak Ridge Y-12 Plant and the Los Alamos National Laboratory. The Field Managers for these sites have established April 2001 as the date for completing the actions necessary to complete their ISM implementation.

**Assessment:** Nearly Met Goal

**Plan of Action:** Plans to fully implement ISM at the two remaining sites were prepared by those sites and are scheduled for completion by April 1, 2001.

M *Prevent fatalities, minimize serious accidents, and minimize environmental releases at Departmental sites.*

**Results:** There were no work-related fatalities during this performance period. Also, DOE contractor performance to prevent releases to the environment which had been steadily improving for several years appeared to have reached steady state, as no further improvement or trend reversal was noted this year. DOE will continue ongoing efforts to ensure the safety of our workers, the public and protect the environment.

**Assessment:** Met Goal

- M *Propose legislation to Congress that would establish a program to compensate:*
- *Current and former Federal and contractor workers and beryllium vendor employees who are ill because of beryllium exposure; and*
  - *Certain workers at the Oak Ridge East Tennessee Technology Park and the Paducah Gaseous Diffusion Plant in Kentucky who have illnesses associated with exposures which occurred during their employment.*

**Results:** The Legislation was proposed and on October 30, 2000, the President signed into law H.R. 4205, the "Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001." Title XXXVI of that law, entitled the "Energy Employees Occupational Illness Compensation Program", provides compensation for current and former Federal and contractor workers and beryllium vendor employees, and for employees of the Gaseous Diffusion Plants in Oak Ridge, Portsmouth and Paducah. In addition, the law provides compensation for DOE workers who develop a cancer determined to be at least as likely as not caused by radiation exposure. The program also establishes within the Department a program to assistance workers with filing occupational illness compensation claims with the appropriate state workers' compensation agencies. Title XXXVI extends the benefits currently provided to uranium miners under previously enacted legislation.

**Assessment:** Met Goal

- M *Provide medical screening to all DOE workers formerly exposed to beryllium during their employment at DOE facilities.*

**Results:** The goal of the program has been to provide medical screening to all DOE workers formerly exposed to beryllium over a period of four years and not in one year as implied in the performance measure. A four year plan was laid out in the December 4, 1998 memorandum to the field offices. The annual goal for FY 2000 was to conduct 2,000 medical screening examinations for beryllium exposed workers. Nearly 4,500 examinations were completed over twice the projected number. Since the inception of the program, over 17,000 workers exposed to beryllium have been provided these screening examinations. Eight additional sites began screening in FY 2000 bringing the number to 17 of the sites actively screening for beryllium disease among its former workers.

**Assessment:** Met Goal

- M *Develop a stronger, more coherent public health agenda for DOE sites.*

**Results:** In January 2000, the DOE and the Department of Health and Human Services jointly published an "Agenda for HHS Public Health Activities at U.S. Department of Energy Sites." This agenda details the health studies and public health activities that have been completed at each site, the ongoing programs that are currently being conducted, as well as any gaps that exist in our knowledge of the health impacts of DOE operations on workers and the surrounding communities.

In response to an FY 1999 congressional mandate, DOE's office of Environment, Safety, and Health (EH) developed the first site-specific public health agenda for DOE sites. EH coordinated with our stakeholders (elected officials, labor leaders, local committees, activist and civic organizations, tribal representatives, and the medical community) to assist in defining the agenda and health concerns. The consolidation of all the public health activities at DOE sites resulted in a stronger, more coherent public health agenda for the DOE sites.

**Assessment:** Met Goal

- M *Accomplish the milestone of the FMFIA corrective action plan to complete the nuclear safety standards upgrade project.*

**Results:** The Nuclear Safety Standards Upgrade was completed with the publication of the Interim Final rule (10 CFR 830) on October 10, 2000. Furthermore, all nuclear safety standards have been upgraded to be comparable to applicable NRC standards and to incorporate appropriate commercial consensus standards. All DOE nuclear safety standards are continuously reviewed through a coordinated process with DOE and contractor personnel, and through the working committees of national and international voluntary consensus standards-setting organizations. Through this process, the DOE nuclear safety standards are reviewed and republished every five years and provide the framework to assure that DOE nuclear activities are accomplished in a sound and safe manner.

**Assessment:** Nearly Met Goal

***FY 1999 Targets and Results:***

M *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



## DOE Decision Unit: Departmental Administration & Hearings and Appeals

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Departmental Administration	SI,MA, CFO,PA, HG,GC, PO,IA, ED,PC	-*	-*	-*	-*
Hearings and Appeals	HG	-* -	*	-*	-*

\*In accordance with OMB Statement of Federal Financial Standards number 4, Managerial Cost Accounting Concepts and Standards for the Federal Government, the Departmental Administration net costs were allocated to the programs and are not reported separately.

### Description:

These Departmental offices often support the strategic objectives of the business lines and corporate management at a level below the reporting threshold of this plan. For example, the Office of Contract Reform and the Board of Contract Appeals both contribute to improve the delivery of products and services through contract reform and the use of business-like management practices. However, responsibility for these goals resides in Management and Administration with the Offices of Procurement Policy and Procurement Operations in the Office of Management and Administration. The Office of Economic Impact and Diversity collaborates with the Energy Information Administration to report on the effects of national energy programs, policies, and regulations of DOE on minorities and minority communities. Examples such as these abound in the Departmental offices. Many of these offices lead Departmental efforts in attaining our strategic goals. A description of these offices follows:

**Office of the Secretary:** The Office of the Secretary provides overall policy direction for the Department of Energy in fulfilling its mission to foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the Nation's nuclear weapons, to clean up our own facilities, and to support continued United States leadership in science and technology.

**Management and Administration:** The Office of Management and Administration provides the Department with the best value, high quality, and timely products and management services. These products and services are provided in the areas of administration, human resources and training, procurement assistance, performance excellence, executive secretariat support, consumer information and aviation management.

**Chief Financial Officer:** The Office of the Chief Financial Officer provides centralized direction and oversight of the full range of financial and planning activities including: strategic planning and program evaluation; project management; budget formulation, presentation and execution; Department-wide oversight of internal controls; Departmental accounting and financial policies, procedures and directives; operation and maintenance of the Department's payroll system and financial information system/Standard General Ledger; and, financial operations (accounting, cash management, and reporting).

**Board of Contract Appeals:** The Board is an administrative tribunal responsible to the Secretary and under law for the fair and impartial trial and adjudication of a variety of disputes. With few exceptions, these disputes are related to the Department's acquisition and financial assistance programs.

**Congressional and Intergovernmental Affairs:** This office promotes Departmental policies, programs, and initiatives through liaison, communication, coordination, and interaction with Congress, State, local, and Tribal governments, other Federal agencies, stakeholders, and the general public.

**Public Affairs:** Public Affairs communicates information about DOE's work in a timely, accurate, and accessible way to the news media and the public.

**General Counsel:** The General Counsel provides comprehensive legal services to the Secretary and the Department.

**Office of Policy:** The Office of Policy leads the Department's efforts to provide accurate and unbiased analysis of existing and prospective energy-related Government policies, and to assess and respond to emerging threats to the economic efficiency and reliability of the Nation's energy sector. Additionally, the Office lends its analytical capabilities to strengthen the Department's leadership in advancing scientific and technology developments.

**International Affairs:** The Office of International Affairs (IA) formulates and develops international energy policy; leads the Department's bilateral and multilateral cooperation with other nations and international organizations, including participation in international negotiations; coordinates the implementation of international cooperative agreements; advances energy, environmental, and nonproliferation policies in international agreements; promotes positive relationships with foreign nations that support U.S. policy goals; and, promotes policy and regulatory reforms in foreign countries that will remove barriers and open energy markets for U.S. firms abroad. IA also coordinates DOE's international energy, science and technology relations with other countries.

**Office of Economic Impact and Diversity:** Economic Impact and Diversity develops and executes Department-wide policies to implement applicable legislation and Executive Orders that strengthen diversity requirements affecting the workforce, small and disadvantaged businesses, minority educational institutions, and historically under represented communities.

**Contract Reform and Privatization Project Office:** This office acts as the principle advisor to the Secretary in the formulation, guidance, and implementation of the Department's privatization and contract reform initiatives. It also represents the Department on these matters in dealings with Congress, other Federal agencies, and various stakeholders.

**Office of Hearings and Appeals:** The Office of Hearings and Appeals (OHA) is responsible for all of the Department's adjudicatory processes, personal security clearance cases, whistleblower complaints, and requests for information under the Freedom of Information and Privacy Acts. In addition, OHA is responsible for resolving or adjudicating all remaining matters stemming from the Emergency Petroleum Allocations Act of 1973. OHA also seeks to resolve all claims of adverse impact emanating from the operations of the Department, including employee claims, public interests, and disputes between offices.

## Office of Management and Administration

### ENSURING EMPLOYEES ARE QUALIFIED IN THEIR ES&H RESPONSIBILITIES (CM 1-3)

Ensure that all DOE employees are appropriately trained and technically competent commensurate with their ES&H responsibilities.

#### *FY 2000 Targets and Results:*

- M *Improve Federal technical workforce capabilities at defense sites by implementing the FY 2000 milestones of the Revised Implementation Plan for DNFSB Recommendation 93-3.*

**Results:** The DNFSB closed Recommendation 93-3 on November 9, 1999, in response to the Department's report on the status of the Implementation Plan's (IP) commitments. Efforts to improve Federal technical capabilities have been institutionalized under the Department's Federal Technical Capability Program (FTCP) which was established as part of the 93-3 IP. The Deputy Secretary established a Federal Technical Capability Panel (Panel) to oversee the implementation of the FTCP. The Panel consists of senior line managers who have been designated as Agents to represent Headquarters and Field Offices with defense nuclear facility responsibilities. The Panel submits an annual report to the Secretary of Energy that summarizes the actions taken to ensure that organizations maintain the critical technical capabilities that are needed to ensure safe operations at defense nuclear facilities. The Panel successfully completed all of the action items in its FY 2000 Annual Plan and submitted its annual report to the Secretary. The report indicated good progress on maintaining and improving technical competencies with specific recommendations to enhance management ownership of the program. Based on the recommendations of that report and an independent assessment of the FTCP, a FY 2001 Annual Plan was prepared and submitted to the Deputy Secretary. The Deputy Secretary met with the Defense Board to review the status of the FTCP on October 12, 2000. The action items in the FY 2001 Annual Plan will govern the Panel's activities during the new fiscal year with the next report to the Secretary at the end of the second quarter of FY 2001.

**Assessment:** Met Goal

#### *FY 1999 Targets and Results:*

- M *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

### IMPROVING COMMUNICATIONS WITH CUSTOMERS AND THE PUBLIC (CM 2-2)

Increase customer and public awareness of DOE's mission areas by improving the quality, timeliness, and sufficiency of information disseminated on the Department's functions, successes, lessons learned, and future activities.

#### *FY 2000 Targets and Results:*

- M *Develop baseline data for the average time it takes to process Freedom of Information Act cases, and make improvements to reduce the average processing time by 5 percent.*

**Results:** Baseline data on processing cases has been collected on a monthly basis from Field FOIA offices and weekly from Headquarters FOIA Division staff from October 1, 1999 to September 30, 2000. Improvements to the process have reduced the average processing time by 22 percent which exceeds the 5 percent goal.

**Assessment:** Exceeded Goal

#### *FY 1999 Targets and Results:*

- M *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.

M *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

## IMPROVING MANAGERIAL PERFORMANCE AND ACCOUNTABILITY (CM 3-1)

Continue to streamline and improve operations, improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities.

### *FY 2000 Targets and Results:*

M *Conduct self-assessments to measure organizational performance using the national performance excellence standard, the Malcolm Baldrige criteria. Evaluate results, measure trends and recommend organizational improvements to senior management.*

**Results:** 19 Departmental Elements (8 Headquarters, 9 Field, and 2 Power Administrations) con-

ducted organizational self-assessments using the Malcolm Baldrige criteria. The seven categories of the criteria include leadership, strategic planning, customer focus, information and analysis, human resources management, process management and business results. The criteria provide a model for organizational management and improvement. The Office of Performance Excellence is reviewing the assessments, analyzing the strengths and opportunities for improvement, and will provide a summary report to the Secretary of Energy in January 2001 for information. Additionally, 5 organizations applied for the Department of Energy Performance Excellence Award (EPEA) Program, and received independent evaluations of their organizational performance. The EPEA uses the Baldrige criteria and provides expert feedback from trained examiners. The average score for the EPEA applicants was 429 compared to the average self-assessment score of 476. While the total possible score is 1,000, excellent organizations score in the 500 – 600 range. The average scores have increased from 279 in 1995 to 434 in 1999, and have remained stable for this year. Improved scores reflect improvements in performance measurement and strategic planning, and a better focus on customers and results. The overall goal of encouraging DOE organizations to conduct self-assessments has been met.

**Assessment:** Met Goal

M *Improve overall efficiency and safety of aviation services by conducting a comprehensive aviation program study by July 2000, including an OMB Circular A-76 analysis and a cost effectiveness evaluation; and, by establishing a review process for the conduct of charter and contract aviation services.*

**Results:** Phase I of the study has been completed. At the end of the fiscal year, DOE was nearing completion of Phase II of the comprehensive study, which will provide data from economic analyses of aviation assets and services and make suggestions for improving existing management structures and processes. The final report, which will incorporate conclusions from Phase I and Phase II, will include recommendations for fleet mix changes (e.g., dispositions and acquisitions) and we expect to complete the study by June 2001. We were unable to meet the July schedule due to complexity of cost analyses and reconciliation of program and field responses. In regard to the review process for the conduct of charter and contract aviation services, we have reached agreement, in principle, with field elements on the requirement and the specific information required. The requirement will be incorporated in the new proposed DOE Order on Aviation, which will

include the data collection system design for vendor information and the associated distribution system to Departmental Elements. Our revised schedule calls for completion by April 2001. We were unable to meet the September 2000 schedule due to organizational changes that effected the development and implementation of the new Order on Aviation Management and Safety and reconciliation of program and field office responses to Draft policy. The stated delays on this action have pushed completion of project back until April 2001.

**Assessment:** Nearly Met Goal

**Plan of Action:** The Office of Aviation Management will continue finalizing the aviation program study and establishing the review process on the conduct of charter and contract aviation services. We will issue the Program study by June 2001, and complete the establishment of the review process by June 2001.

### ***FY 1999 Targets and Results:***

M *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:** Twenty-two out of 28 Federal Departmental Elements 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 1,000. 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 that are in the early stages of developing sound systematic approaches to their management systems.

**Assessment:** Met Goal

## **IMPROVING HUMAN RESOURCE PRACTICES (CM 3-3)**

Implement quality management principles, value diversity, and continue to improve human resources systems and practices.

### ***FY 2000 Targets and Results:***

M *Continue hiring welfare to work recipients to exceed the Presidential FY 2000 goal of 55.*

**Results:** The Department has hired 79 (includes 1 from FERC) former welfare-to-work recipients through September 2000, which exceeds the end of year FY 2000 goal of hiring 55.

**Assessment:** Met Goal

M *Increase the electronic transfer of documents through implementation of paperless workflow and reduce personnel paper transactions by 15 percent.*

**Results:** Implementation of the Corporate Human Resources Information System (CHRIS) has increased electronic transfer of documents and reduced paperwork flow by more than 40 percent for changes made to home addresses, Federal and State taxes, and allotments. In addition to these documents, along with the capability to update education, emergency contacts, licenses and certifications, and locator information, nearly 10,000 transactions were done in the Employee Self Service (ESS) during this fiscal year. Over 68 percent of DOE employees have signed up for ESS. Nearly 800 employees have voluntarily discontinued the mailing of their bi-weekly earnings and leave statements.

**Assessment:** Exceeded Goal

M *Improve workforce skills and reduce training costs by implementing the FY 2000 milestones in the DOE Corporate Education, Training, and Development Plan.*

**Results:** The Corporate Education, Training and Development Business Plan was completed in August 1999. The Plan's main performance objectives have been to improve workforce skills and reduce training costs through implementation of the Business Plan tasks. The Training and Management Development Council (TDMC) reviewed the status of the tasks included in the Business Plan, determined that the tasks were complete and directed closure of the Business Plan. The TDMC directed that a FY 2001 Training Plan be developed that would be used instead of a Business Plan and that Training Plans be

updated on an annual basis. The TDMC approved the major issues that would be included in the Training Plan, including follow-on activities related to work in FY 2000. The FY 2001 Training Plan was presented to the TDMC at a meeting in November for review and approval. The specific action items, including goals and milestones, will be the basis for activities to improve workforce skills and reducing training costs in the future.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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 desk-top-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 to address 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 \$200,000, (2) Re-

gional 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

M *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

M *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

## USING PRUDENT CONTRACTING AND BUSINESS MANAGEMENT PRACTICES

(CM 4-1)

Use prudent contracting and business management approaches that emphasize results, accountability, and competition; improve timeliness; minimize costs; and ensure customer satisfaction.

### ***FY 2000 Targets and Results:***

M *Convert all management and operating contracts awarded in FY 2000 to Performance Based Management Contracts using government-wide standards. [Federal Acquisition Regulations, (48 CFR Part 39) and Office of Federal Procurement Policy letter 91-2].*

**Results:** All DOE Management and Operating (M&O) contracts awarded through September 2000, have been converted to Performance Based Management Contracts using government-wide standards.

**Assessment:** Met Goal

M *Convert one support services contract at each major site to a Performance Based Service Contract (PBSC) using the government-wide standards. [FAR, (48 CFR Part 39) and Office of Federal Procurement Policy letter 91-2].*

**Results:** In FY 2000, for each of the 17 DOE sites that such a support services award requirement exists, the contract has been converted to a Performance Based Service Contract (PBSC) using government-wide standards.

**Assessment:** Met Goal

M *Have 90 percent of contract professionals certified under DOE professional development standards.*

**Results:** Through September 2000, about 85 percent of DOE contract professionals have been certified under the DOE professional standards which nearly met the goal. We were unable to fully meet the 90 percent goal due to the unavailability of Department of Defense certification contracting courses for our contract professionals during the last quarter of the fiscal year.

**Assessment:** Nearly Met Goal

**Plan of Action:** We will continue to train and certify the DOE contract professionals to meet the 90 percent goal.

M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of contract management.*

**Results:** The DOE Office of Management and Administration has successfully completed the three milestones in the Corrective Action Plan for the challenge of contract management. Specific status follows. Milestone #1: Require program office participation in reviews, development, implementation and assessment of Performance-Based incentives (PBI). Status of Milestone 1: This action is complete. Three sites were targeted for Headquarters participation in PBI review and development. In each instance, program office staff assisted the Office of Procurement and Assistance Management during on-site visits in FY 2000. Program office assistance in the PBI review and development process will be extended into FY 2001. Milestone #2: Conduct joint on-site visits to assist Field Offices in development/implementation of PBIs. Status of Milestone 2: This action is complete. All field visits were performed jointly. Milestone #3: Survey other organizations to determine feasibility of using existing models to assess the value of DOE's PBIs. Status of Milestone 3: This action is complete. As conveyed to GAO in response to their recommendation in a recent audit report (and reflected as an action item in the last FMFIA report), we conducted a survey and, in addition, engaged a consultant to survey a number of organizations relating to the development of analytical models to assess the viability of developing objective PBIs for their contracts. It was determined that, due to the nature of PBIs, no one single model could be developed which would be applicable to all sets of requirements in order to assess, in an objective manner, the degree of the PBI's probable success. In addition, given that PBIs may be effectively used as a management tool by which to direct and concentrate the contractors' efforts on varying requirements over several years, no model could be developed which would objectively evaluate, with any degree of reliability, the value of incentives as developed and implemented relative to other incentives and interrelated requirements. What the surveys did indicate was that the organizations interviewed assessed their requirements separately from each other based on risk and complexity, i.e., a weighted guidelines approach. DOE's fee policy addresses incentives using, not only risk, but a myriad of other critical factors which are evaluated and addressed both separately and on the basis of how they relate to the overall requirements of the site. In determining fee for its contractors, DOE's new fee policy requires a greater number of critical factors to be individually and collectively assessed as compared to the more widely used and relatively less objective weighted guidelines approach.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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

M *Award 50 percent of all support service contracts in FY 1999 as performance-based service contracts.*

**Results:** Over 50 percent of DOE support service contracts were awarded as performance-based contracts during FY 1999.

**Assessment:** Exceeded Goal

M *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.

**Assessment:** Exceeded Goal

M *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

# Office of the Chief Financial Officer

## IMPROVING MANAGERIAL PERFORMANCE AND ACCOUNTABILITY (CM 3-1)

Continue to streamline and improve operations, improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities.

### *FY 2000 Targets and Results:*

M *Complete the development of requirements and the creation of a new account structure. Purchase commercial Core Financial System software for 150 users for a pilot implementation at one of the 3 accounting service centers and 2 of its satellite sites. Begin implementation solutions for special DOE requirements.*

**Results:** During FY 2000 the functional requirements and the proposed business structure for the Department's new business management system were completed. The procurement evaluation process was completed and a contract was signed with IBM Global Services to design and implement the new core financial management systems component of business management information system. The prepare phase of the project was initiated which included the purchase and installation of the software and hardware. The newly signed contract required our FY 2000 actions to slightly deviate from our original planned performance targets for a 150 user pilot implementation at one of the three accounting service centers and 2 of its satellite sites to a geographic implementation strategy, by accounting service center; however this will not impact major milestones for the project.

**Assessment:** Met Goal

M *Update and publish the Department's Strategic Plan by April 2000.*

**Results:** The Department's new Strategic Plan was published by the GPRA deadline of September 30, 2000, however, it was behind the original schedule.

The document was updated and released for public and stakeholder comment on February 18, 2000. The public consultation period (with extensions) ended April 10, 2000. Comments were received from

Congress in July and we consulted with the Council for Excellence in Government in August.

**Assessment:** Nearly Met Goal

**Plan of Action:** The performance goal was accomplished during the fiscal year. No further actions are planned.

M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of CFO mission critical staffing.*

**Results:** While the CFO has successfully recruited and hired new staff to strengthen its workforce, mission critical staffing continues to be in areas where the CFO continues to be vulnerable to severe impacts on current operations. The Department is embarking on a 3-4 year initiative to replace its legacy core financial management systems with commercial off-the shelf software. The CFO will commit approximately 4-5 FTEs (Full Time Equivalent employees) to this major system effort, due to the important nature of this project, and the impact it will have on the CFO. The dedication of these FTEs to this major systems initiative will place a significant burden on remaining CFO staff to pick up the additional workload and will leave supervisory staff with much less flexibility due to stretched resources.

**Assessment:** Below Expectation

**Plan of Action:** The CFO will continue to aggressively conduct recruitment workshops and job fairs at local colleges and universities to obtain additional qualified personnel to alleviate critical workforce issues.

### *FY 1999 Targets and Results:*

M *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

- M *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 address 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.

## USING PRUDENT CONTRACTING AND BUSINESS MANAGEMENT PRACTICES

(CM 4-1)

Use prudent contracting and business management approaches that emphasize results, accountability, and competition; improve timeliness; minimize costs; and ensure customer satisfaction.

### *FY 2000 Targets and Results:*

- M *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 1, 2000.*

**Results:** The Department prepared and submitted its FY 1999 Accountability Report to OMB prior to the March 1 due date. The Accountability Report was developed with input from all Department Headquarters and Field organizations and the Departmental Financial Statement received earned an unqualified or "clean" audit opinion on the financial statements from the Inspector General.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

- M *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

## APPLYING BUSINESS-LIKE PRACTICES TO MANAGEMENT OF DOE PROJECTS AND ASSETS (CM 4-2)

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.

### ***FY 2000 Targets and Results:***

- M *By April 2000, implement new project management policies and procedures that strengthen the management of projects, and by July 2000, have new systems in place to verify progress against established project scope, schedule and cost baselines on projects valued at \$5 million or more.*

**Results:** DOE Policy 413.1, Program and Project Management Policy for the Planning, Programming, Budgeting, and Acquisition of Capital Assets was issued on June 10, 2000. DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets, was issued on October 13, 2000. The three major constituents of the order are: 1. Acquisition Executives (AEs) have been defined, such that each PSO is the AE for line item projects in their program, with the exception that the Secretarial AE has this responsibility for all DOE Major Systems (MS) projects. 2. The Energy Systems Acquisition Advisory Board (ESAAB) has been reinstated as the Secretarial AE's advisory board. The ESAAB has been convened to advise the Secretarial AE on MS project critical decisions/rebaselining. In addition, ESAAB equivalent boards have been established in DP, EM, SC, RW, NN and NE to advise their AEs for projects within their purview. 3. Quarterly performance reviews were directed by the order for all line item projects. PSOs are conducting the performance reviews on a regular basis. At this point in time, the quarterly performance reviews are a principal tool for the Secretarial AEs to verify progress against baselines.

**Assessment:** Nearly Met Goal

**Plan of Action:** Implementation of DOE Order 413.3 will commence in Fiscal Year 2001.

- M *Complete all planned External Independent Reviews (EIRs) of projects on schedule, to support both the needs of the project managers and timely delivery of EIR reports, with the programs' corrective action plans, to the Congress.*

**Results:** All planned EIRs were completed.

**Assessment:** Met Goal

- M *Complete the milestones listed in the FMFIA corrective action plan for the Departmental challenge of project management.*

**Results:** The FMFIA corrective action plan (CAP) includes six milestones for the CFO related to project management. Four of the six milestones are complete. The two remaining milestones were completed by the end of calendar year 2000. One milestone involved the preparation of a Report to Congress regarding the implementation procedures for External Independent Reviews of DOE capital asset acquisition projects. The second milestone involved the development of a Project Management Tracking and Control System.

**Assessment:** Nearly Met Goal

**Plan of Action:** a. Implement the procedures for External Independent Reviews in FY 2001. b. Deploy the Project Management Tracking and Control System prototype in FY 2001.

- M *By September 30, 2000 reestablish the Acquisition Executive and ESAAB processes for use on critical decisions for projects of \$5 million or more.*

**Results:** As described above in the first CM4-2 milestone, the Acquisition Executive process (defining AEs in the DOE) and the use of the Energy Systems Acquisition Advisory Board (ESAAB) process for use on critical decisions for projects of \$5 million or more has been reestablished.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

- M *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.

M *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 \$122M to \$293M.

**Assessment:** Met Goal

M *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.

# Office of Economic Impact and Diversity

## MODELING DIVERSITY FOR THE NEW MILLENNIUM

(CM 3-4)

Create an exemplary 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.

### *FY 2000 Targets and Results:*

M *Determine how well the Department's diversity goals are being met by tracking the Department's personnel actions on hiring and competitive promotions against the current Civilian Labor Force statistics.*

**Results:** The Office of Civil Rights routinely provides diversity data to the Office of Management and Administration. That office utilizes that data in producing a quarterly report entitled "Tracking Our Diversity". Several reports have already been submitted to the Office of the Secretary. Those reports contain relevant data on DOE personnel actions (including hirings and promotions), as well as comparable Civilian Labor Force (CLF) statistics. The reports are reviewed by the DOE Executive Steering Committee, which is responsible for monitoring the Department's progress and initiating compliance efforts.

The report compares DOE statistics with those in the Civilian Labor Force and provides a summary analysis of progress. The most recent report contains statistical information for the period March 27, 1999 to June 17, 2000. It contains a summary analysis for the period January 2000 to June 2000. Highlights include:

- Since the last tracking report, DOE has hired 187 individuals (from January 2, 2000 – June 17, 2000). Forty-seven were minorities (25 percent) and 77 were women (41 percent). As a comparison point, minorities and women represent 21.2 percent and 37.4 percent of the total population, respectively.
- Included in the above numbers are 42 new high-graded (GS-14 to SES) employees, of whom 11 are minorities (26 percent) and 13 are women (31 percent).

- While minorities and women represent 47 percent of the Department's workforce, they received 48 percent of the awards (monetary and time off) and obtained 61 percent of the promotions.

As noted in the report, the paucity of new hires adversely impacted the Department's ability to substantially enhance its progress in achieving the goal of full diversity.

**Assessment:** Met Goal

M *Ensure equitable opportunities for minority educational institutions and small, minority, and women owned businesses to compete.*

**Results:** The Department did not meet the SBA assigned goal of 5 percent of total procurement base for prime contracting. In subcontracting, the Department expects to exceed its goals in overall small business and in women-owned categories.

The Department has outlined 5 initiatives to promote small business contracting and strengthen DOE's small business programs to include innovative opportunities for small businesses, procurement tools and guidance, enhancing the Small Business Program and Functions, monitoring and tracking prime contracting and subcontracting performance and outreach to small business. The Department, however, is behind in ensuring opportunities for minority educational institutions. The Department's accomplishments are as follows. The DOE has: facilitated the Field Management Council review and approval of the Departmental minority educational policy that provides the framework for Departmental program offices to develop mission-related partnerships with minority educational institutions that will result in forging additional opportunities for these institutions; coordinated Department-wide support of a cooperative education program in science, computing and engineering with the United Negro College Fund to establish DOE laboratory and facilities research opportunities to support and prepare young people for careers in science; established a comprehensive research and education program with community colleges to facilitate student and faculty opportunities to participate in laboratory research initiatives; coordinated a Department-wide solicitation for tribal colleges and universities to participate in photovoltaic technology initiatives; and encouraged technological advancement in the Department's fossil fuel research programs by selecting seven minority educational institutions to pursue fossil energy research and development projects.

**Assessment:** Below Expectation

**Plan of Action:** The Department has adopted two strategies to strengthen support to small businesses and to minority educational institutions. With respect to small businesses, the Department will identify small business contracting opportunities for a three-year period and develop an Annual Small Business Report to the Secretary that will provide the framework for achieving and increasing the Department's small business contracting goals. With respect to minority educational institutions, the Department will, in FY 2001, fully implement the Minority Educational Institutions Strategy to facilitate increased support to minority educational institutions.

M *Increase employee awareness by publicizing DOE-wide the scope of the employee concerns program, the availability of the ombudsman function, and the DOE employee concerns program offices at the operations and field offices.*

**Results:** The employee concerns program was highly successful during FY 2000. Highlights include: improving the web page to highlight the names and location of the Employee Concerns Managers throughout the DOE complex, and to offer, for the first time, the option of filing an employee concern on-line; issuing an Annual Activity Report to DOE Secretarial Officers; and raising the visibility of the program at the EE0/Diversity Stand Down, which was viewed by 80,000 DOE Federal and contractors employees. The Office of the Ombudsman was elevated to the National level; the existence of the office has been highly publicized; the collaboration with field ombudsman functions, as well as establishing formal collaborative relations with DOE elements, managers, employee groups, federal and non-federal ombudsmen have been very beneficial.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

M *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

M *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

M *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, the Secretary 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.

# Office of Policy

## TAKING MEASURES TO AVOID DOMESTIC ENERGY DISRUPTIONS (ER 1-6)

Take measures to avoid, but when needed, respond to domestic energy disruptions.

### *FY 2000 Targets and Results:*

M *Complete final preparations for a smooth Y2K transition in U.S. energy markets in cooperation with industry organizations and other government agencies. Provide for timely public communication of information regarding readiness status, contingency planning activities, and real-time performance of the Nation's energy infrastructure during the Y2K rollover.*

**Results:** The Office of Policy successfully coordinated the government and electric power industry's preparations for a smooth transition to the year 2000 in the electric power sector. The electric power industry created a system to track and correct common mode failures through the transition period. Together, the Department and the electric power industry provided real time information throughout the transition period, including 24 hour coverage during critical times. Only minor problems were reported and no significant unexpected outages occurred.

**Assessment:** Met Goal

M *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:** Six major actions have been completed.

- DOE worked with the Environmental Protection Agency (EPA) throughout the first quarter of FY 2000 to develop a final rule for Tier II Vehicle Emission Standards and Low Sulfur Gasoline (LSG). That rule was finalized in December and provides for an introduction of LSG that minimizes any negative supply impacts.

- DOE worked closely with EPA and other federal agencies (OMB, CEA, SBA) to develop a proposed rulemaking for ultra low sulfur diesel fuel. That rule was proposed May 16, 2000.
- In response to the request of the Department of Energy, and with active involvement of DOE experts, the National Petroleum Council's Refining Study was completed and approved by the NPC in June 2000. The report was published in July 2000.
- DOE conducted an extensive review, including field visits/investigations, on the June/July 2000 Mid-west gasoline supply/price situation and provided Congressional briefings and testimony on this issue.
- DOE filed detailed and extensive comments on the EPA ultra-low sulfur diesel fuel proposal on September 6, 2000, and has been working closely with CEA, OMB and Treasury staff since then to develop a workable phase-in plan for this new fuel. DOE has also responded to questions and criticism from EPA on the phase-in issue.
- DOE worked with EPA on its proposal to control gasoline benzene content, filed comments on that proposal in September 2000 and has conducted additional analysis of alternative approaches to toxics control at EPA's request.

**Assessment:** Nearly Met Goal

**Plan of Action:** Significant additional work is underway consistent with this performance objective. DOE expects to work with EPA and other agencies throughout the first and second quarters of 2001 to help finalize an acceptable ultra-low sulfur diesel rule as well as a gasoline toxics rule. DOE analysis will continue related to MTBE (issue raised by Congressional legislative efforts and in NPC study) and ultra-low sulfur diesel fuel. DOE is working with EIA, industry organizations (NPRA, API fuels committee), EPA, and other groups on these issues. DOE has also initiated an Atlantic Basin gasoline and diesel fuel import supply study which will be carried out over the 2001 reporting period.

### ***FY 1999 Targets and Results:***

- M *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 the 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

- M *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

## **ESTABLISHING A MORE OPEN, COMPETITIVE ELECTRIC SYSTEM (ER 2-1)**

Advance Congressional action on comprehensive electricity restructuring legislation by incorporating additional elements of the Administration's 1999 proposal during full committee and floor consideration to achieve an outcome that benefits consumers, the economy, and the environment. Also, support administrative actions to promote establishment of a more open, competitive, and reliable electric system, with improved environmental performance.

### ***FY 2000 Targets and Results:***

- M *Use recently enhanced modeling capabilities to demonstrate the impact of provisions to address market power and properly sized regional transmission organizations in support of the legislative process.*

**Results:** The Office of Policy published a report entitled, Horizontal Market Power in Restructured Electricity Markets. This report summarized recent literature on the subject and used the Policy Office Electricity Modeling System (POEMS) to evaluate alternative scenarios to identify factors effecting the ability of firms to profitably raise prices above competitive levels and maintain those prices for a significant time period. This report provided substantive reasoning for the Administration's position on the need for regional transmission organizations and factors that promote competitive electricity markets.

**Assessment:** Met Goal

### ***FY 1999 Targets and Results:***

- M *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

- M *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

## PLANNING FOR ENERGY RELATED GREENHOUSE GAS REDUCTIONS (ER 4-1)

Develop policies, programs, and information to facilitate energy sector reductions in greenhouse gas emissions.

### *FY 2000 Targets and Results:*

- M *Support further development and the adoption of U.S. proposals for guidelines for implementing the flexibility mechanisms included in the Kyoto Protocol.*

**Results:** The Department Of Energy's Office of Policy has worked with the Environmental Protection Agency to develop the U.S. negotiating proposals for the various Kyoto Mechanisms, including for the Clean Development Mechanism (CDM). These proposals have been included in submissions to the United Nations Framework Convention on Climate Change Secretariat in January 2000, March 2000 and August 2000. Negotiations on these proposals concluded by November 24, 2000 at the 6th Conference of the Parties in The Hague, Netherlands.

**Assessment:** Met Goal

- M *Support, through quantitative analysis and international contacts, Administration efforts to obtain meaningful commitments for reducing greenhouse gas emissions from developing countries.*

**Results:** Staff at the Office of Policy (PO) has been developing collaborative study agreements with many developing countries in the first half of 2000. These countries include China, India, Belize, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Bolivia, Argentina, Kazakhstan, and Israel.

The MARKAL-MACRO modeling analytical framework developed by the International Energy Agency's Energy Technology System Analysis Program

(ETSAP) is the primary tool that DOE uses to engage these countries. The modeling framework requires analysts in each country to collect data on energy demand by end-use sector, by fuel type, and by technologies. It also requires information on technologies used to generate electricity and on sources of fossil fuel supply. The established framework will allow DOE analysts to work with analysts in these developing countries to identify technology opportunities in reducing greenhouse gases (GHGs). It will help analysts in these countries understand the potentials of Clean Development Mechanisms (CDM) and the benefits of emissions permit trading under voluntary emissions targets regime. A summary of PO activities in international outreach to promote the understanding of Kyoto Protocol is as follows:

**China:** PO staff and PNNL experts attended an Energy, Economic, and Environment Modeling Workshop in Beijing in March 2000. PO staff presented a paper on CDM and had valuable exchange of ideas on emissions growth targets. PO staff is working with the Tsinghua University in China to build a china MARKAL.

**India:** PO has established a collaborative study project with TaTa Energy Research Institute (TERI) of India and will start technology analysis work in the second half of this year.

**Central America:** PO staff attended a Central America Environmental Ministers Conference in San Salvador, El Salvador in April 2000. Ministers from Belize, El Salvador, Guatemala, Honduras, Nicaragua, and Panama attended this conference.

**Bolivia:** PO staff met several times with officials in Bolivia and is working with high-level Bolivian decision makers to determine an emissions growth target.

**Kazakhstan:** PO staff had meetings with Kazak Officials and is in close contact with senior Kazak analysts to discuss methodologies for the analysis of an emissions growth target.

**Israel:** PO staff met with Israeli officials in Israel in April and is working with officials from the Ministry of Infrastructure to discuss costs and benefits of Kyoto Protocol mechanisms to Israel.

**Other:** PO staff attended a workshop in Manila, the Philippines in December 1999. A paper was presented on the application of the MARKAL model in the analysis of a National Action Plan. The application of the model in the development of emissions targets and in the analysis of CDM was also presented. Representatives from more than 15 developing countries attended the workshop.

Market information is essential to the success of finding economic solutions in the reduction of greenhouse gas emissions and the promotion of energy efficient technologies. Environmentally friendly technologies can find their way in the marketplace if policy makers can identify markets in developing countries and help these countries reap the benefit of economies of scale in production to reduce unit costs. This information can also help U.S. technology manufacturers promote U.S. technologies.

**Assessment:** Nearly Met Goal

**Plan of Action:** Bolivia: PO staff will continue dialogue with officials in Bolivia to discuss an emissions growth target. Israel: PO staff will conduct technical exchanges with Israeli analysts. This workshop will provide the tools Israelis need to identify an emissions target. [This work has been postponed.]

M *Lead U.S. Government technology and climate change strategy development and implementation through:*

- *Chairing and expanding the Annex II countries' Climate Technology Initiative which promotes the objectives of the UN Framework Convention on Climate Change (UNFCCC) by fostering international cooperation for accelerated development and diffusion of climate-friendly technologies and practices for all activities and greenhouse gases;*
- *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:** DOE continues to Chair the Climate Technology Initiative (CTI) on behalf of the U.S. and is scheduled to do so until November 2000. Office of Policy staff continues to provide support and to take a leading role in the formulation and planning of most CTI activities. CTI has received commendation from the UNFCCC Secretariat for CTI's successful capacity building and other activities which support the objectives of the Framework Convention. PO has helped to organize and participated in several regional joint industry seminars on technology diffusion and technology training courses. These have included one for Asia and the Pacific held in the Philippines, January 2000; one for Latin America and the Caribbean held in El Salvador, March 2000; one for Eastern Europe and the Countries of the Former Soviet Union held in Poland, May 2000; and one for North Africa and the Southern Mediterranean held in Italy, May 2000. Additionally, PO helped to organize and participated on behalf of the CTI at side events at the 5th Conference of the Parties in

Germany, October-November 1999, and the 12th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) in Germany, June 2000. Finally, under CTI's awards program to recognize leading organizational and individual accomplishment in the advancement of climate-friendly technologies and practices, five presentations were made at a ceremony at the 5th Conference of the Parties in Germany during November 1999.

PO has continued to play a key role in the development of USG positions on technology issues under the U.N. Framework Convention on Climate Change (UNFCCC). Besides participating in the ongoing dialogue and analyses that takes place among the various USG agencies under the Interagency Working Group on Climate Change (IWGCC), PO played an active role at the 5th Conference of the Parties in Germany during October-November 1999, and the 12th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) in Germany, June 2000. Additionally, PO participated in all of the meetings convened by the UNFCCC Secretariat as part of the consultative process on technology transfer. These included the final two regional workshops in the Philippines and El Salvador in January and March 2000, respectively.

**Assessment:** Exceeded Goal

### ***FY 1999 Targets and Results:***

M *Develop a DOE proposal for guidelines for implementing the flexibility mechanisms included in the Kyoto Protocol.*

**Results:** DOE worked with EPA and State to develop proposed guidelines on CDM baselines, Kyoto Mechanism registries, and on monitoring and reporting of inventories, and CDM/JI projects 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.

M *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

M *Lead the U.S. Government technology and climate change strategy development and implementation through: - 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. - 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, DOE 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-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

# Office of International Affairs

## DIVERSIFYING THE INTERNATIONAL SUPPLY OF OIL AND GAS (ER 1-3)

Diversify the international supply of oil and gas.

### *FY 2000 Targets and Results:*

M *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 the new Russian leadership to obtain a reaffirmation of the PSA legislation, to ensure the new tax code conforms with the PSA laws, and to encourage adoption of normative acts (implementing regulations) for the PSA legislation. 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 effective, independent agency. In FY 2000, the Secretary held meeting with the Energy Minister to discuss these and other issues. U.S.-Ukraine Bi-National Commission: The 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 participated in a meeting of the U.S.-Ukraine Bi-National Commission that took place in the U.S. in December. The Secretary will accompany the President to Ukraine to foster enhanced cooperation. 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. In FY 2000, DOE held workshops in Georgia and Romania to further the work of this initiative. 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 U.S. and Saudi Arabia. In FY 2000, a Saudi Team will visit the U.S. to assess technologies and discuss continued cooperation. The U.S. also is working on a government-to-government effort with the Kingdom of Saudi Arabia to change the environment for western investment in the Kingdom of Saudi Arabia, Egypt, Israel and Palestinian National Authority (PNA): In FY 2000, technical cooperation agreements were signed with the Egyptians and Israelis on solar power and fuel cells; and with the PNA on general energy cooperation. DOE is pursuing policies to encourage energy privatization and U.S. investment in energy projects. In FY 2000, DOE co-sponsored an electric power conference with the Secretary as the keynote speaker. DOE signed clean energy statements with Estonia, Latvia, and Lithuania. DOE signed a technical agreement with Estonia to cooperate on oil shale development.

**Assessment:** Met Goal

### *FY 1999 Targets and Results:*

M *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: The 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 U.S. 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 U.S. and Saudi Arabia. In FY 2000 a Saudi Team will visit the U.S. to assess technologies and discuss continued cooperation. The U.S. also is working on a government-to-government effort with the Kingdom of Saudi Arabia to change the environment for western investment in the Kingdom of Saudi Arabia. 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

## REDUCING EMISSIONS FROM EXISTING FOSSIL FUEL POWER PLANTS AND DEVELOPING CLEAN HIGH EFFICIENCY FOSSIL FUELED POWER PLANTS FOR THE 21<sup>ST</sup> CENTURY (ER 2-4)

By 2015, significantly reduce emissions from currently existing fossil fuel powerplants, and from new plants by: (1) developing market-ready coal power systems with efficiencies over 60 percent (new plants are currently about 35 percent) and near zero emissions; and (2) integrating advanced turbine and fuel cell technology to achieve market-ready gas-fueled powerplants with efficiencies over 70 percent.

### ***FY 2000 Targets and Results:***

- M *Continue coordination of the Russian- American Fuel Cell Consortium (RAFCO) which has as one of its primary goals, the opening up of the Russian market to U.S. manufactured fuel cells.*

**Results:** Work continues on finalizing the fuel cell technology roadmap and the development of a joint venture to manufacture fuel cell balance of plant in Russia.

**Assessment:** Nearly Met Goal

**Plan of Action:** Under Secretary has been briefed on the proposed joint venture and provided a copy of the proposals for the joint venture. The Tennessee Valley Authority has also become interested in the proposal as has the International Science and Technology Center, which is located in Moscow. Continuing cooperation with these organizations will be important.

### ***FY 1999 Targets and Results:***

- M *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

- M *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

## COOPERATING INTERNATIONALLY TO DEVELOP OPEN ENERGY MARKETS (ER 4-2)

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.

### ***FY 2000 Targets and Results:***

- M *Increase U.S. energy-related business internationally by removing policy, legal, and fiscal barriers for U.S. companies by:*
- *Continuing to implement with other APEC economies and the private sector an initiative to promote accelerated investment in natural gas infrastructure and trading networks in the APEC region;*
  - *Implementing 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;*
  - *Continuing to 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;*
  - *Continuing to lead a regulatory reform initiative under the Binational Commission to promote 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: Hosted Fourth APEC Energy Ministers Meeting in San Diego, May 12, 2000, where obtained commitment of all 21 APEC members to an implementation strategy for initiatives and independent power production. Strategy includes program of visits by experts, including the private sector, to facilitate concrete results. Visits are planned to Thailand, Peru, and the Philippines. Ministers also endorsed a Joint Statement on Clean Energy and Sustainable Development and sent a message to APEC Economic Leaders on the important role that energy reform can play in maintaining the momen-

tum for economic development. U.S.-China Forum on Environment and Development: DOE and the State Development Planning Commission co-chair the Energy Policy Working Group under the Forum. The Forum and its working groups have met three times, most recently in January 2000 in Hawaii. Energy activities include a U.S.-China Oil and Gas Industry Forum, which has met twice and has sponsored a natural gas experts visit to China; a wide range of cooperative programs in energy efficiency, including a pilot Motor Challenge program for China and a design study for an energy efficient building demonstration in Beijing; a clean energy program through the U.S. Eximbank; and renewable energy. Activities helped promote China's signing of a joint U.S.-China Statement on Cooperation on Environment and Development in May 2000. Russia: DOE organized several workshops to share information on the development and implementation of transparent and consistent oil and gas pipeline regulations by the Russians Federal Energy Commission that will help attract investment. African Initiative: The Secretary launched an Energy Initiative for Africa on April 1, 1999. Following up on the President'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 addressing environmental concerns by 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 was the U.S.-Africa Energy Ministers Conference, held in Tucson, Arizona on December 13-15, 1999. 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. Multilaterally, DOE is working through regional organizations such as the Economic Community of West African States and the Southern African Development Community to promote regional energy integration through transboundary projects.

**Assessment:** Met Goal

***FY 1999 Targets and Results:***

- M *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 promote 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 of new Business Network (U.S. has 2 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 initiatives. 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 US-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 in 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: the Secretary launched an Energy Initiative for Africa on April 1, 1999. Following up on the President'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 US-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



## DOE Decision Unit: Office of Inspector General

Annual Performance Plan Decision Unit Item	DOE Office	Financial Statement Footnote	Program Element in Schedule of Net Costs	FY 2000 Net Costs (\$M)	FY 1999 Net Costs (\$M)
Office of Inspector General	IG	22	Inspector General	33	31

### Description:

Major statutory responsibilities of the Office of Inspector General (OIG) under the Inspector General Act of 1978, as amended, are to detect and prevent fraud, waste, abuse, and violations of law and to promote economy, efficiency, and effectiveness in the operations of the Department of Energy (DOE), including the National Nuclear Security Administration (NNSA). In addition to the broad provisions of the Inspector General Act, Congress, through OIG oversight and other means, is demanding improvements in the Department's security, intelligence and counterintelligence programs. These concerns add to historic Congressional concerns relating to major DOE activities, such as contract administration and program management, which are reviewed by the OIG.

### PROMOTING THE EFFECTIVE, EFFICIENT, AND ECONOMICAL OPERATION OF THE BUSINESS LINES THROUGH AUDITS, INVESTIGATIONS, INSPECTIONS, AND OTHER REVIEWS (CM 6-1)

#### *FY 2000 Targets and Results:*

M *Complete the required annual financial statement audits by designated due dates in the law.*

**Results:** The OIG completed, by designated due dates in the law, the audit of the Department's consolidated financial statements and rendered an unqualified opinion rather than a qualified opinion as in the previous year, reflecting significant efforts by the Department to improve controls over its environmental liability estimating process. The OIG also reviewed the Department's system of internal controls and compliance with laws and regulations. These actions enabled Department managers, congressional decision makers, and other customers to use and assess the fairness of the Department's financial statements in a timely manner. In addition, the OIG completed the required Federal Managers' Financial Integrity Act (FMFIA) evaluations and implemented Office of Management and Budget requirements. The review disclosed that the Department has continued to carry out its internal control program mandated by the FMFIA.

**Assessment:** Met Goal

M *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:** Each year, as part of the audit planning process, Department management, other interested parties, and the OIG staff are contacted and queried to identify and prioritize audit opportunities. Prioritizing is one method the OIG uses to replace planned audits not started with more significant audits, which identify time-sensitive issues needing review. This method helped the OIG to complete 83 percent of the audits it had planned for the year. These audits included NNSA facilities. The OIG considered past audit work in all audits started in Fiscal Year (FY) 2000. Also, for the audits completed in FY 2000, 93 percent were completed within 12 months to provide timely information to Department management.

**Assessment:** Exceeded Goal

M *Initiate at least 80 percent of inspections planned for the year and replace those not started with inspections having greater potential impact.*

**Results:** The OIG successfully initiated 80 percent of the inspections planned for the year. A total of 42 inspections, 27 of which involved NNSA operations, were initiated in FY 2000, a number of which were in response to issues referred by the Secretary and members of Congress or received via the OIG hotline. Inspection reports issued during the year had significant impact on areas such as safeguards and security and property controls.

**Assessment:** Met Goal

M *Obtain judicial and/or administrative action on at least 35 percent of all cases investigated during the fiscal year.*

**Results:** Of all cases investigated during FY 2000, the OIG obtained judicial and/or administrative action on 58 percent.

**Assessment:** Exceeded Goal

M *Obtain at least 75 percent acceptance rate on criminal and civil cases formally presented for prosecutorial consideration.*

**Results:** The OIG referred 25 cases for prosecution during the year with a 68 percent acceptance rate, slightly below the 75 percent acceptance rate goal. The shortfall may, in part, be attributed to increased prosecutive thresholds, as well as unplanned impacts on resources. For example, two high level inquiries were started in FY 1999. For nearly a 5-month period from March through July, these inquiries consumed over two-thirds of the investigative staff. Residual activity for some staff members continued through October 2000. These inquiries resulted in a slowdown in routine daily operations as well as other high-level, complex investigations being placed on hold. Investigative activities normally completed to facilitate the prosecutive process were delayed. A review of historical data shows that for the past 6 years, the OIG has averaged a prosecutorial acceptance rate of 72 percent. The 75 percent goal was achieved in only one year. Analysis of this trend suggests that the OIG's ability to achieve the 75 percent goal on a recurring basis may be unrealistic.

**Assessment:** Below Expectation

**Plan of Action:** The OIG will continue to expand its liaison and cooperative work with the Department of Justice. The OIG will continue to focus its investigative resources on cases with the greatest potential for positive impact on the Department and prosecutive merit.

### ***FY 1999 Targets and Results:***

M *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

M *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; - 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

M *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

M *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 Highlights .....	44
Audit Report .....	113
Consolidated Financial Statements .....	53

## **Government Performance and Results Act**

### *Report Sections*

Detailed Performance Results .....	A1
------------------------------------	----

## **Federal Managers' Financial Integrity Act**

### *Report Sections*

Message From the Secretary .....	1
Overview .....	3
Message From the Chief Financial Officer .....	43
Results of the System Evaluation .....	49

## **Inspector General Act**

### *Report Sections*

Management's Response to Inspector General Audit Reports .....	41
--	----

# Reference Index

	<i>Page</i>
<b>Audit Report</b> .....	113
Memorandum From the Inspector General .....	114
Independent Auditor's Report .....	116
<b>Business Lines</b> .....	10
Energy Resources .....	10
National Nuclear Security .....	15
Environmental Quality .....	23
Science .....	28
Corporate Management .....	33
<b>Consolidated Financial Statements</b> .....	53
Principal Statements: .....	54
Balance Sheet .....	54
Statements of Net Costs .....	55
Statements of Changes in Net Position .....	56
Statements of Budgetary Resources .....	56
Statements of Financing .....	57
Statements of Custodial Activities .....	58
Notes to the Consolidated Financial Statements .....	59
Consolidating Schedules .....	93
Required Supplementary Information .....	105
Deferred Maintenance .....	105
Required Supplementary Stewardship Information for Research and Development .....	107
Intragovernmental Amounts .....	112
<b>Detailed Performance Results (GPRA Reporting)</b> .....	A1
Energy Resources .....	A9
National Nuclear Security .....	A53
Environmental Quality .....	A107
Science .....	A121
Corporate Management .....	A145
<b>Financial Highlights</b> .....	44
Highlights of Balance Sheet .....	44
Financial Performance Measures .....	46
Payment Performance .....	46
Functional Support Costs .....	47
Balances of Uncosted Obligations and Unobligated Appropriations .....	48
Results of System Evaluation .....	49
Financial Management System .....	49
Western's Financial System .....	49
<b>FMFIA Reportable Items</b>	
Management Control Attestation .....	1
Financial System Attestation .....	43
Summary of Departmental Challenges (FMFIA) .....	7

Energy Markets .....	13
Security .....	18
Surplus Fissile Materials .....	19
Environmental Compliance .....	24
Nuclear Waste Disposal .....	27
Safety and Health .....	34
Contract Management .....	36
Human Capital Management .....	37
Information Technology Management .....	37
Managing Physical Assets .....	38
Project Management .....	39
Inadequate Audit Coverage .....	40
<b>Management's Response to Inspector General Audit Reports .....</b>	<b>41</b>
<b>Message From the Chief Financial Officer .....</b>	<b>43</b>
<b>Message From the Secretary .....</b>	<b>1</b>
<b>Organization and Resources .....</b>	<b>8</b>
<b>The Department At a Glance .....</b>	<b>5</b>