

Chapter Three

Program Management Center

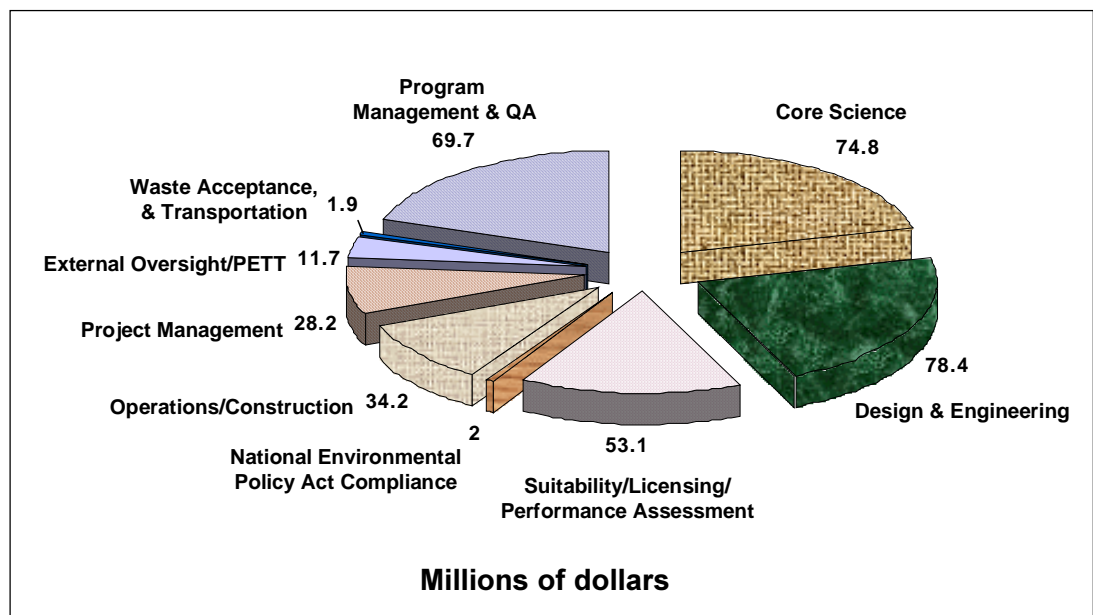
The Program Management Center consists of the Office of Quality Assurance, the Office of Program Management and Administration, and the Systems Engineering and International Division of the Office of Acceptance, Transportation and Integration. The former is located in Las Vegas, the latter two organizations in Washington, D.C.

Appropriation and Budget

Our Fiscal Year 1999 appropriation of \$358 million was \$12 million more than the Fiscal Year 1998 appropriation of \$346 million, but \$22 million less than the President's budget request.

We allocated \$282.4 million, or roughly 79 percent of our appropriation, to the Yucca Mountain Site Characterization Project. The remaining funds were used to support the Waste Acceptance, Storage and Transportation Project, which received \$1.9 million, or less than 1 percent; and the Program Management Center, which received \$69.7 million, or roughly 20 percent, approximately half of which supported the Yucca Mountain Site Characterization Project. In addition, \$4.0 million was provided by Congress to be

used for a civilian research and development program to conduct a study of accelerator transmutation of waste (ATW) technology.



OCRWM Program FY 1999 budget allocation (excludes ATW)

The conference report accompanying the Fiscal Year 1999 Energy and Water Development Appropriations Act directed a 10-percent reduction from the Administration's budget request for support service contractors at the Yucca Mountain Site Characterization Project and at OCRWM headquarters. The report also provided for the following distributions from funding for the Yucca Mountain Site Characterization Project:

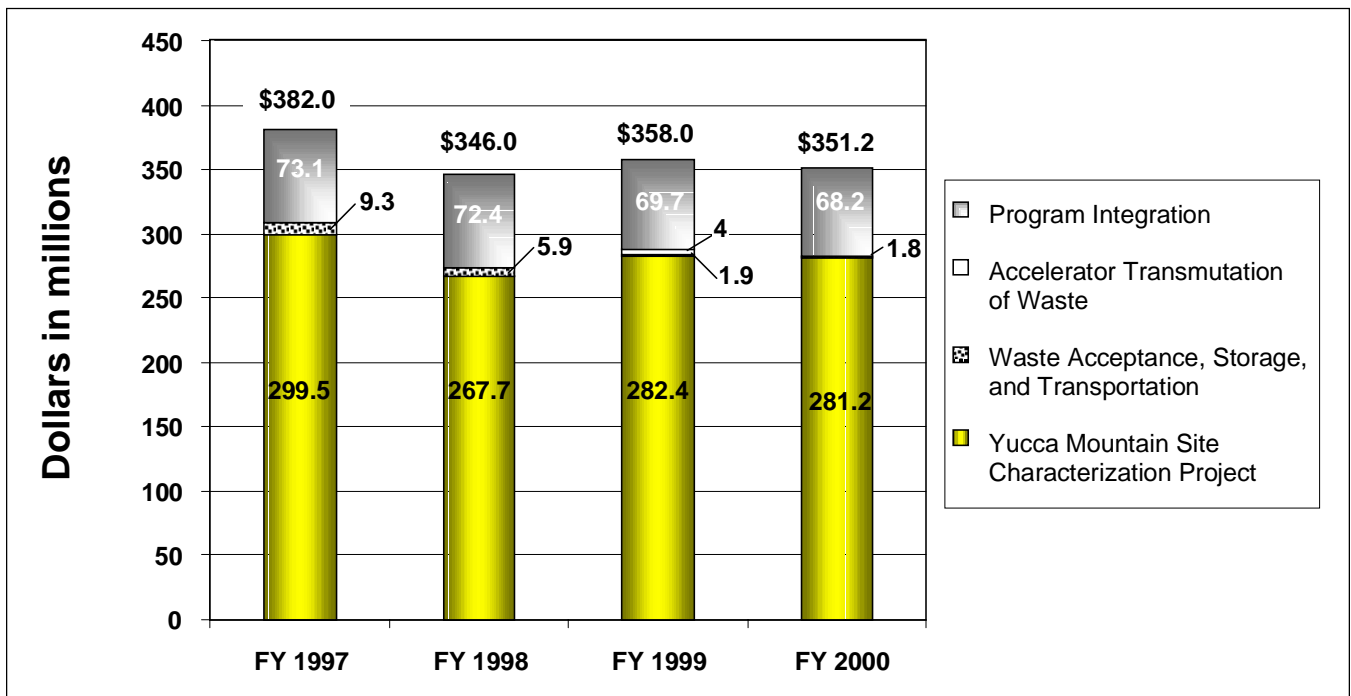
- \$250,000 to be reimbursed to the State of Nevada "for actual expenditures on

appropriate scientific oversight responsibilities...”

- \$5,540,000 for affected units of local government, to be allocated in the same proportion as was provided in the previous fiscal year.
- \$400,000 for the University of Nevada-Las Vegas to manage data from scientific studies of Yucca Mountain.

activities that have the greatest impact on confidence in the information on which the determination will rest. They worked to ensure that appropriate QA requirements were in place, fully understood, and implemented. In-line reviews of draft documents and quality assurance audits helped ensure compliance.

One of the benefits of increased interaction between QA and technical personnel was that real-time feedback on the QA program was received. As a result, we were able to target several areas of the



OCRWM funding profile for FY 1997-2000

Quality Assurance

Fiscal Year 1999 quality assurance (QA) activities focused on tasks related to a determination on site recommendation and, in particular, on activities and products in support of total system performance assessment. QA personnel worked closely with technical personnel conducting scientific, engineering, and performance assessment work to identify those

program for enhancement. These enhancements included the clarification of requirements for model validation and data qualification as well as the streamlining of requirements for software control.

These enhancements have been incorporated into the *OCRWM Quality Assurance Requirements and Description* and were implemented in early in Fiscal Year 2000.



QA Sample Management Facility at Yucca Mountain

Through audits and other means, QA personnel continued to examine the full range of quality-affecting activities performed by OCRWM, its contractors, and the organizations within the Department's Office of Environmental Management that interface with OCRWM. Audits and monitoring were used to evaluate how well QA requirements were being met and whether documentation was sufficient to demonstrate compliance. Deficiencies were evaluated and, if warranted, root causes were investigated. For each deficiency, a corrective action plan was developed, reviewed, and implemented. Deficiencies were promptly identified, and their correction was tracked. Audit and surveillance schedules and reports were posted on the OCRWM Web site.

QA staff continued to interact with staff from the Naval Nuclear Propulsion Program and the Office of Environmental Management, and they began a review of the QA program documentation of the Department's Office of Fissile Materials Disposition. These DOE organizations are responsible for waste forms that may be disposed of in the repository, and

QA staff work closely with them to ensure that they apply appropriate QA requirements to activities that could impact OCRWM's acceptance and disposal of their materials.

Program Management and Integration

Program planning

Revision 2 of the *Civilian Radioactive Waste Management Program Plan*, issued in July 1998, described the Program's strategic objectives and the strategies, success measures, schedules, and costs for completing them. We began to update major milestones and work plans in a draft revision of the *Program Plan* to reflect and build upon recent events,

including DOE's issuance of the viability assessment, the draft EIS, and proposed revisions to the Department's repository siting guidelines; EPA's release of proposed new, site-specific radiation standards, and NRC's publication of proposed new, site-specific repository licensing regulations. The fact that Congress appropriated significantly less funding for fiscal years 1999 and 2000 than required to carry out work as scheduled played a major role in updating our planning. An internal review draft of *Program Plan, Revision 3*, was completed in Fiscal Year 1999 and also provided a source of input to the Department's new strategic plan. In spite of the reduced Fiscal Year 1999 appropriation, OCRWM met all its success measures in the Secretary's Fiscal Year 1999 Performance Agreement with the President. (These measures are presented on the inside cover of this report.)

We supported the Department's implementation of the Government Performance and Results Act (GPRA), and we integrated OCRWM plans and strategies with those of the Department. We developed performance

measures for inclusion in the Secretary's Fiscal Year 2000 Performance Agreement with the President; these measures also satisfy the GPRA requirement for the Department's annual performance plan. We also developed preliminary performance measures for OCRWM for Fiscal Year 2001.

In keeping with GPRA's emphasis on strategic planning, internal review, and stakeholder input, we held two OCRWM planning workshops at which Program managers, senior contractor personnel, and representatives of DOE headquarters, the National Laboratories, the U.S. Geological Survey, and other parties engaged in intensive discussion of key issues and proposed approaches, solutions and decisions.

Program-level systems studies

Systems studies serve to ensure that the effects of a major decision about one component of the national waste management system are technically integrated with all other components. In Fiscal Year 1999, we conducted one major study and released the results of two others as companion documents to the viability assessment. All are available on the OCRWM Web site at: www.rw.doe.gov

- A study that resulted in a *Modular Design/ Construction and Operations Options Report* was undertaken to evaluate ways of minimizing peaks in Program expenditures during repository construction, which would be the period of highest annual costs. The report describes analyses of alternative approaches to developing a waste management system during the period between 2000 and 2020. The analyses were performed for scenarios that assume that waste receipt begins at the repository in 2010, as envisioned in Revision 2 of the *Program Plan*, and for alternate scenarios that assume that waste receipt begins as early as 2007.
- Issued as a companion to the viability assessment, the December 1998 *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* was the latest in a series of total

system life cycle cost (TSLCC) estimates. This estimate aids in financial planning, gives policy makers information they need to determine the course of the Program, and provides input to the fee adequacy analysis described below. The analysis is based on current plans, strategies, and policies for a national waste management system.

The 1998 TSLCC analysis reflected significant changes in the Program since the previous TSLCC was conducted in 1995. Based on design concepts used in the viability assessment, it provides a comprehensive cost estimate for disposal of all wastes projected through the year 2035. It includes all future repository costs identified in the viability assessment, as well as historical costs, the costs of transportation, and construction of a rail spur in Nevada, and certain institutional, Program integration, and management cost categories not included in the viability assessment.

The 1998 TSLCC projects a total future cost to complete the Civilian Radioactive Waste Management Program, through repository closure in 2116, of \$36.6 billion in constant 1998 dollars. Although elimination of extensive use of multi-purpose canisters lowered cost projections in the 1998 TSLCC, this decrease was offset by an increase in the costs of disposal containers and surface facilities. Other cost increases resulted from planned disposal of larger quantities of DOE wastes and a longer monitoring period after waste emplacement ends. In addition, the transportation cost algorithm was updated based on new tariff information, and institutional costs were reexamined. As the Program matures, estimates of its costs will evolve to reflect changes in repository design and other cost drivers.

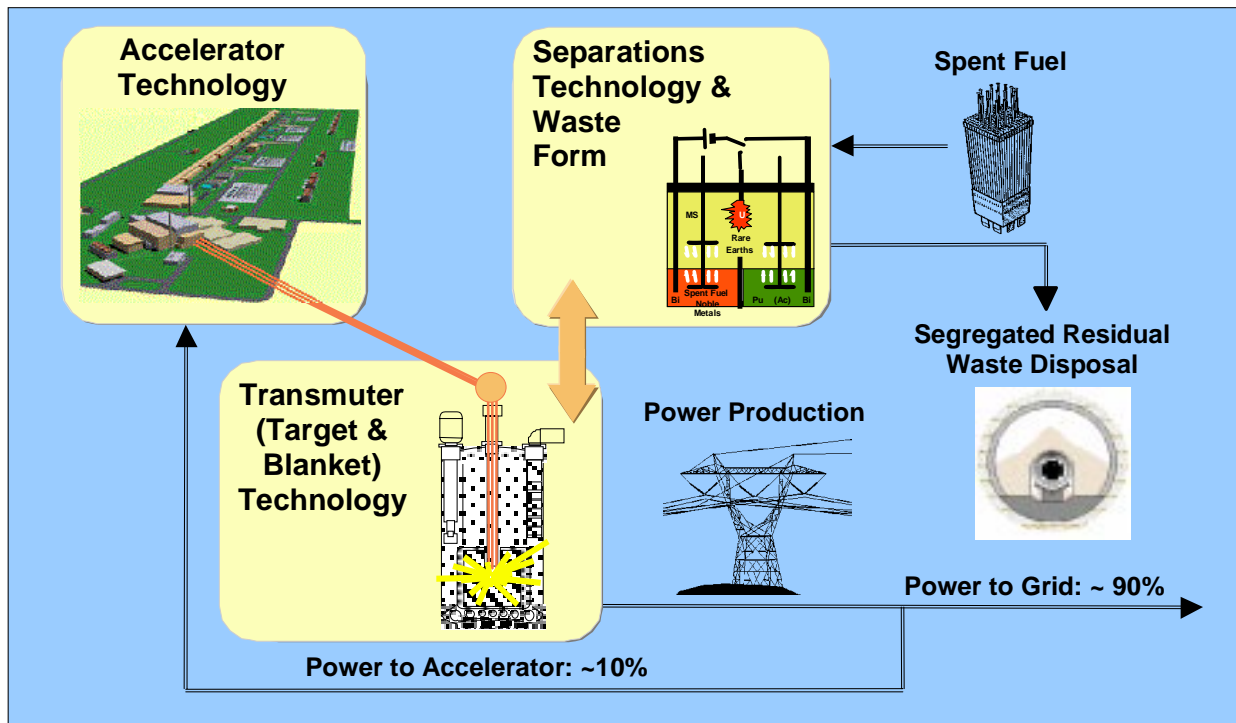
- *Nuclear Waste Fund Fee Adequacy: An Assessment* was based on the 1998 TSLCC and fee income projections from the Department's Energy Information

Administration. It was also issued as a companion document to the viability assessment. Because the owners and generators of commercial spent nuclear fuel must pay the full cost of disposing of it, the Nuclear Waste Policy Act requires an annual assessment of whether the fee the utilities pay into the Nuclear Waste Fund is adequate to cover those costs. The 1998 assessment considered a reasonable range of uncertainties in projecting what the Fund's balance would be at the end of the Program's life, and it concluded that the fee provided an adequate margin of safety for uncertainties and changes in Program scope, cost, revenues, and economic assumptions. The fee has remained unchanged since it was established by the original Act at 1.0 mil per kilowatt-hour of electricity generated and sold.

In addition, *A Roadmap for Developing Accelerator Transmutation of Waste (ATW) Technology* was prepared by OCRWM in Fiscal Year 1999, as

mandated by the Fiscal Year 1998 Energy and Water Development Appropriations Act. This technology, which several nations are exploring, would alter the waste stream produced by the nuclear fuel cycle, reducing the volume and long-lived radioactive content of spent nuclear fuel.

The evaluation was carried out by a steering committee consisting of Federal employees and national laboratory staff, supported by four technical working groups, individual consultants, and world experts. Their findings, presented in an October 1999 report to Congress, responded to specific congressional requests; however, the findings do not constitute a policy decision. The steering committee recommended a 6-year, science-based, research and development effort to determine the technical feasibility of the technology, but emphasized that efforts to develop a geologic repository should continue because a repository will be needed even if the technology proves successful.



Components of an ATW system

Integrated safety management

The Secretary of Energy requires all DOE sites and contractors to systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment.

An integrated safety management system must be in place and verified by September 30, 2000. In February 1999, we issued Revision 1 of the Civilian Radioactive Waste Management Program *Safety Management Functions, Responsibilities, and Authorities Manual*, which describes how we will meet and implement the requirement for this system. In the spring of 1999, we asked the Department's Office of Environment, Safety, and Health to assess our work planning and control processes and our efforts to develop an integrated safety management system. Our goal was to identify weaknesses and obstacles to timely implementation. Although the reviewers acknowledged our good safety record, they noted weaknesses in work planning and control and in our overall approach to developing the system. We, therefore, restructured our strategy and made it more comprehensive.

In Fiscal year 1999, as part of our efforts to improve our integrated safety management strategy, we developed and began implementing a working draft *Safety Requirements Document* that defines high-level safety requirements and standards, permit conditions, and safety-related expectations. It identifies organizational roles and responsibilities, describes key processes and products, and explains how to tailor compliance with requirements to our mission and work. One key process will be confirmation that system expectations have been satisfied. We examined all DOE directives and compiled those that apply to OCRWM in a safety requirements database. As the directives change, we will modify the database accordingly. The first phase of requirements documentation was completed on September 30, 1999; the second phase is in progress.

Program-level baseline control

Baselines that define and document the features of the waste management system, including technical work, its cost, and the schedule for completing it, are the foundation of our Program. The technical, cost, and schedule components of the baseline must be integrally linked. A work breakdown structure provides one link between technical work scope and costs. Another is provided through cost-loaded and logic-linked Program and project summary schedules that are the products of annual and multi-year planning.

Because baselines are so important, changes to them must be closely controlled. Our Strategic System Management Policy outlines a process that ensures that baselines are defined and controlled at the appropriate level of authority. As the Program evolves, baselines are modified, but only after change control boards at each appropriate level approve each change. These boards follow formal procedures to evaluate proposed changes against impact thresholds specified for each level of authority.

The following changes were made in Fiscal Year 1999 to the three documents that constitute the Program's technical baseline: the *Civilian Radioactive Waste Management System Requirements Document* (CRD), the *Total System Description*, and the *Integrated Interface Control Document Volume I*. They specify requirements that must be met by all components of the national waste management system, or they provide a reference description of the engineered and natural systems that meet those requirements.

- In Fiscal Year 1999, we made important revisions to the CRD, which defines the basic technical requirements for a national waste management system.
- We added mixed oxide spent nuclear fuel and immobilized plutonium waste forms to the technical baseline, and we established waste acceptance requirements applicable to surplus weapons-grade plutonium waste forms.

- We defined the total projected spent nuclear fuel and high-level radioactive waste inventory through 2035. This clarification was needed because inventories used in cost estimates, technical, design, environmental information, and other documents were inconsistent. The clarification supports planning and a repository design capable of accommodating the full inventory of spent nuclear fuel and high-level radioactive waste expected to be generated.
- We established the concept of allowing future generations to decide when to permanently close a repository. The repository design would not preclude its remaining open for up to 300 years.
- We established tentative receipt rates for naval spent nuclear fuel in dual-purpose canisters and canisters containing immobilized plutonium waste forms to ensure that the Program can begin to receive that waste in the years 2010-2014. This was necessary to allow the Department to meet the consent agreement among the Navy, DOE, and the State of Idaho under which spent nuclear fuel must be ready for shipment from Idaho by 2035.
- We transferred acceptance criteria for commercial spent nuclear fuel and all criteria for waste acceptance, storage, transportation, and disposal of DOE spent nuclear fuel, high-level radioactive waste, and naval spent nuclear fuel from the CRD and consolidated them in the *Waste Acceptance System Requirements Document*.
- The *Total System Description* provides a top-level description of design assumptions for the waste management system's basic physical facilities and concept of operations. It enables senior managers to evaluate the impacts of significant design and operational decisions that affect major subsystems. It also serves as a frame of reference for communication with Program participants, regulatory and oversight entities, and stakeholders. Because the

Program continues to evolve, the *Total System Description*, which presents a snapshot in time, must be revised to reflect the latest operations concepts and designs. Revision 1 was issued early in Fiscal Year 1999 to reflect the repository design used in the viability assessment. Another revision was initiated late in Fiscal Year 1999 and will be issued in Fiscal Year 2000 to reflect the enhanced repository design that will support a determination on site recommendation. Revision 1 of the Total System Description is posted on the OCRWM Web site.

- We completed and incorporated into the technical baseline the *Integrated Interface Control Document, Volume I*. It specifies the physical and operational interface agreements among all components of the national waste management system, including the waste acceptance, transportation, and repository systems, and the DOE offices whose wastes OCRWM will accept. These interfaces are important to the design of a repository because they define how waste handling facilities and equipment must be designed to accommodate shipping casks and waste forms.

The Program Cost and Schedule Baseline, the other component of the program-level baseline, also underwent changes in Fiscal Year 1999. We updated the Program Cost and Schedule Baseline to reflect the lack of explicit legislative authorization of work on interim storage, our organizational realignment, and the resulting changes to milestone responsibilities, revisions to project work breakdown structure dictionaries, and other policy decisions described in Revision 2 of the *Program Plan* and subsequent Program documents. The most significant changes were deferral of procurement of waste acceptance and transportation services and of implementation of Section 180(c) of the Nuclear Waste Policy Act. Further modification will be made to the baseline in Fiscal Year 2000 to reflect changes to the WBS and product definitions for the Yucca Mountain Site Characterization Project.

A fundamental tool for controlling and collecting cost data is the Program Work Breakdown Structure (WBS). The WBS defines the work scope at the Program, project, and contractor levels. It provides the basis for the Program's budget structure and for the allocation of budgets and the collection of cost data.

The Program Work Breakdown Structure Dictionary was revised to establish a separate Quality Assurance element, on a par with other Program elements. This activity was previously captured under the Program Management and Integration WBS. We also updated the Program Management and Integration Work Breakdown Structure Dictionary to reflect the consolidation of systems integration activities under a separate WBS element and the transition of DOE nuclear materials activities to the Waste Acceptance, Storage, and Transportation WBS element.

Information management

OCRWM is headquartered in Washington, DC, but most Federal and contractor personnel work at the Yucca Mountain Site Characterization Office in Las Vegas, NV, and at the Yucca Mountain site. In Fiscal Year 1999, we consolidated information management functions under an Office of Information Management within the Yucca Mountain Site Characterization Office. A small team of Federal information management staff, supported by contractors, remains at OCRWM Headquarters to provide ongoing support to OCRWM Federal staff in Washington, DC.

Since Fiscal Year 1997, we have been working to upgrade systems and networks with Y2K-compliant hardware and software. OCRWM met all of the Department's Y2K milestones for both mission-critical and non-mission-critical systems ahead of the Secretary's stretch goals. We also completed and tested our Y2K Business Continuity Plan. It was designed to mitigate risks in the event of Y2K-related system failures or loss of external or internal support and to ensure timely resumption and continuation of core business processes and activities by providing for minimum levels of service or operations. The subsequent transition to 2000 proceeded smoothly and without significant problems.

On December 30, 1998, the NRC finalized its revision of 10 CFR 2, Subpart J, which establishes the requirements for an Internet-based Licensing Support Network that would provide an electronic means of supporting document discovery motions and would permit electronic docketing of the license application itself. The final rule revises the requirement for a large centralized database but retains the requirement to provide scanned images with associated bibliographic indexes and searchable full text of each document related to licensing. We will procure a full-text database management system to develop the retrieval techniques necessary to support licensing.

We have continued to reprocess legacy records and to process current records into the format required. At the end of Fiscal Year 1999, our system held a total of 917,200 legacy and current records. Of this total, 482,600 were reprocessed legacy records; 237,500 legacy records remained to be reprocessed; and 197,100 were current records.

We also assessed our information technology (IT) management practices and presented the findings in an *IT Investment Management Baseline and Recommendations Report*. As a result of this assessment, we established an Investment Review Board to develop IT initiative investment review thresholds, procedures, and criteria, and approve major IT investments.

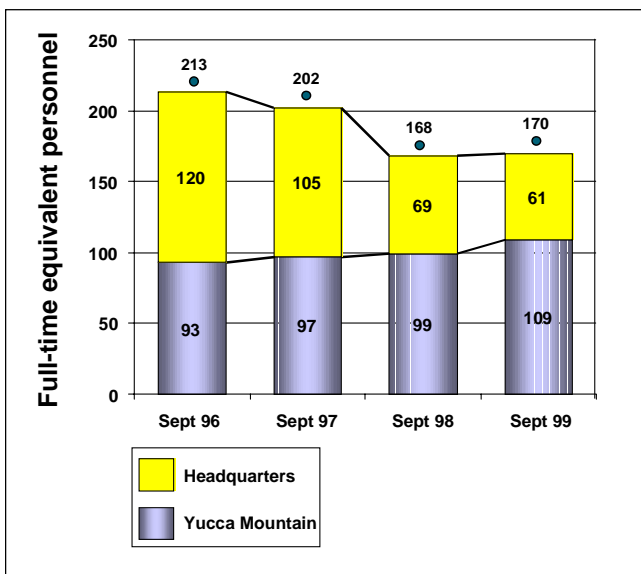
Staffing

In November 1998, the Secretary announced completion of the Strategic Alignment Initiative that had mandated a series of workforce reductions. Since then, we have participated in the Department's Workforce for the 21st Century initiative, termed *Workforce 21*. OCRWM's Workforce 21 Plan outlines our strategy to further streamline and restructure the workforce and to hire and retain personnel with the skills and technical expertise in key areas needed to carry out our mission.

Federal staffing levels remained relatively stable from the end of Fiscal Year 1998 through Fiscal Year 1999. By the end of Fiscal Year 1999, 109 Federal employees were working in Las Vegas; 61 were at

headquarters in Washington, DC, including staff assigned to the Waste Acceptance, Storage and Transportation Project. The figure shows how Federal employment levels have changed at these two locations.

Contractor staffing declined slightly from the end of Fiscal Year 1998; at the end of Fiscal Year 1999, approximately 1,950 contractors were supporting the Program. The graphic below shows this contractor staffing profile for Fiscal Years 1996-1999.



Federal staffing levels for Fiscal Years 1996 to 1999

Scholarship and fellowship programs

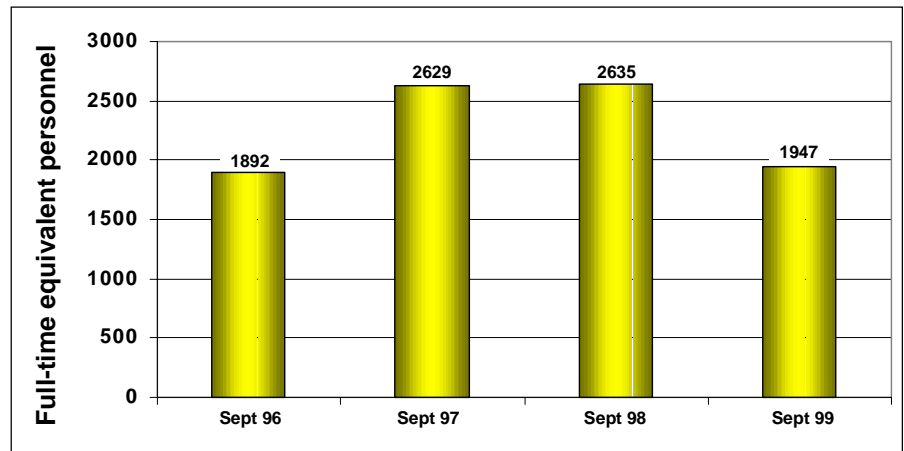
OCRWM’s scholarship and fellowship programs implement Executive Order 12677, which directs support to Historically Black Colleges and Universities, and the Secretary of Energy’s Science and Math Education Initiative. The programs provide a potential pool of skilled scientists and engineers to help meet OCRWM’s future staffing needs.

OCRWM supported scholarships for ten juniors and seniors attending Historically Black Colleges and Universities in Fiscal Year 1999. Scholars serve summer internships at the Yucca Mountain Site Characterization Project or with other Program participants, providing an opportunity to learn how the skills and knowledge gained through their undergraduate scientific and technical studies can contribute to our work.

Through its Radioactive Waste Management Graduate Fellowship Program, OCRWM provided fellowships to eight graduate students pursuing advanced degrees in disciplines directly related to high-level radioactive waste management at the Nation’s top colleges and universities. Fellows complete a practicum assignment that involves research relevant to ongoing site characterization studies, at the Yucca Mountain Site Characterization Project or with other Program participants.

Program Business Plan

In Fiscal Year 1999, we published an *OCRWM Program Business Plan* to document our overall business and contracting strategy for managing the Program’s acquisition requirements. For the short term, it focuses on the recompetition of OCRWM’s management and operating contract. In the long term, if repository development is approved, the plan will guide acquisition of contractors to accept and transport spent nuclear fuel and high-level radioactive waste to



Contractor staffing levels for Fiscal Years 1996 to 1999

a repository and to construct and operate the repository.

Based on assumptions, task descriptions, schedules, and cost estimates for the Program from Fiscal Year 2002 through Fiscal Year 2010, as described in the viability assessment, the plan provides an acquisition roadmap for both OCRWM and potential bidders. Its successful implementation is predicated on our receiving necessary funding and approvals, and on other external factors.

The plan has been designated a model for other DOE programs to follow in developing site management plans required by the Department. It is posted on our Web site.

External Interactions

Outreach

Each statutory milestone on the path to an operating repository presents opportunities for public participation. To participate meaningfully and constructively, stakeholders want and need information about our work. In turn, we want and need their views as we formulate our plans and assess our performance. Although external interactions have been curtailed in recent years because of funding cuts, we continue to provide information to other parties and to actively solicit their views.

In Fiscal Year 1999, OCRWM's Acting Director and staff at headquarters and at the Yucca Mountain Site Characterization Office met with representatives of over 20 Federal agencies, environmental groups, technical and professional organizations, policy groups, and international organizations:

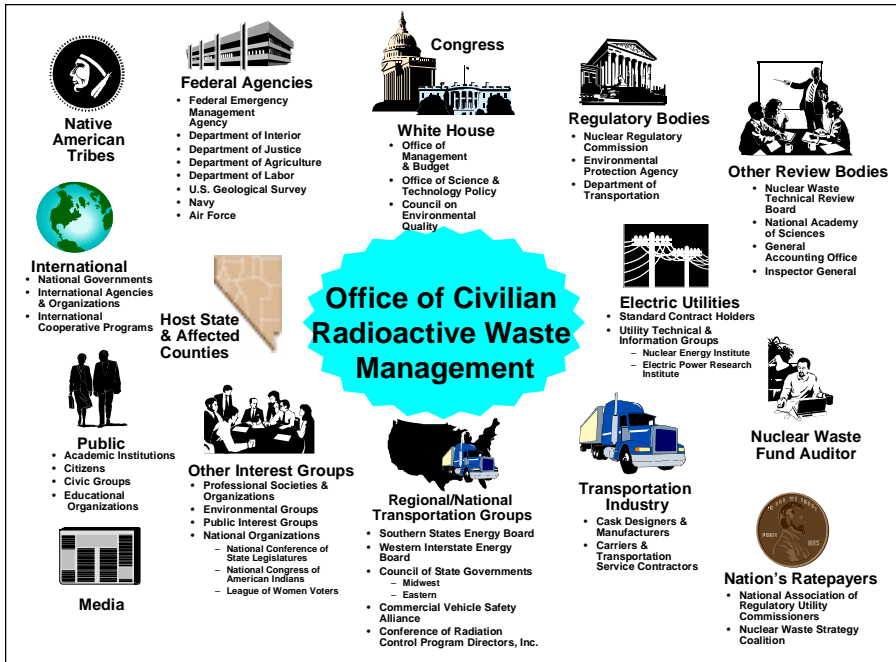
- Groups representing State, Tribal, and regional interests, such as the Nevada Legislative Committee on High Level Radioactive Waste, Nevada Test Site Citizens Advisory Board, Nevada Commission on Nuclear Projects, Nevada Alliance for Defense, Savannah River Citizen's Advisory Board, Midwestern High-Level Radioactive Waste Committee, National Congress of American Indians, National Conference of State Legislatures,

Environmental Council of the States, Council of State Governments, Association of American State Geologists, and National Association of Regulatory Utility Commissioners.

- Academic, technical and professional organizations, such as the Institute of Nuclear Materials Management, American Nuclear Society, University of Arizona Waste Management Conference, Center for Strategic and International Studies, International Association on the Environmental Disposal of Radioactive Waste Materials, Air and Waste Management Association, American Society of Mechanical Engineers, and the Massachusetts Institute of Technology.
- Organizations representing business interests, such as the Nuclear Energy Institute, the U.S. Chamber of Commerce, and Atomic Energy of Canada, Limited.
- Nonprofit foundations such as the Aspen Institute.

These meetings served the purpose of building understanding of our work and helping us learn the views of other parties.

We rely heavily on our Web site as the most efficient and cost-effective means of making Program documents, announcements, and other materials available to the general public. The OCRWM Home Page presents current Program and budget plans, major documents, congressional testimony, *Federal Register* notices, speeches, fact sheets, news releases, and photographs of the Yucca Mountain site. In Fiscal Year 1999, we redesigned our Home Page to make it more user-friendly, reorganizing some information and adding a search capability. An interactive mailbox facilitates responses to individual questions and elicits comments on the Web site. The site is linked to the Web sites of other agencies and organizations with which OCRWM regularly interacts, including the NRC, EPA, NWTRB, and the State of Nevada. Web site visitors came from more than 30 countries and represented a variety of government, commercial,



OCRWM stakeholder groups and oversight bodies

conference in October 1998, and OCRWM was assigned lead responsibility. Working with the Office of Environmental Management and the Office of Nonproliferation and National Security, we coordinated planning in cooperation with the IAEA and the Organization for Economic and Cooperative Development/ Nuclear Energy Agency (OECD/NEA). Hosted by the City of Denver, Colorado, the conference was held on October 31- November 2, 1999, and included more than 250 participants from approximately 25 countries. Participants were invited to tour the Yucca Mountain site and the Department's Waste Isolation Pilot Plant (WIPP) on November 3, 1999. We coordinated the

academic, and private organizations. The Web site address is: www.rw.doe.gov

The OCRWM Enterprise, a semiannual newsletter, is posted on our Web site. We continued to publish it and distribute it through the mail, to meet the needs of interested parties without access to the Internet. The OCRWM Calendar is both posted on the Web site and published in *The OCRWM Enterprise*; it announces opportunities for public involvement, Programwide meetings, and Yucca Mountain tours open to the public. The Calendar also identifies public meetings that are video-conferenced.

International cooperation

International cooperation to advance geologic disposal received increased attention in Fiscal Year 1999. In 1998, Secretary Richardson had announced at the first International Atomic Energy Agency (IAEA) General Conference that the Department would convene an international conference in 1999 to highlight the global progress made on the management of nuclear materials and radioactive waste in geologic repositories. The Department began to prepare for the

timing of the conference with the National Academy of Sciences' technical workshop on geologic disposal in Irvine, California, on November 4-5, 1999.

We held several meetings during Fiscal Year 1999 with officials of the Russian Federation's Ministry for Atomic Energy (Minatom) in an effort to formalize an agreement for cooperative activities on geologic disposal of radioactive materials. In June 1999, senior Minatom officials met with us at DOE headquarters and the Yucca Mountain Site Characterization Office, and they visited the Yucca Mountain site. The joint working group that we established on spent nuclear fuel will assess broader issues associated with the shipment, storage, direct disposal, and management of radioactive waste and spent nuclear materials. We are coordinating efforts to develop a preliminary list of general issues to be addressed by the working group, which is expected to issue a report on its findings in February 2001. We also participated in a joint working group meeting on the study of radionuclide migration.

During Fiscal Year 1999, OCRWM continued to participate in the OECD/NEA, and the IAEA. In addition to representing the United States on the OECD/NEA Radioactive Waste Management

Committee, OCRWM participated in the following technical projects: Thermochemical Data Base, GEOTRAP, and DECOVALEX. GEOTRAP is an international project aimed at exchanging information and in-depth discussions on approaches to acquiring field data, as well as testing and modeling the transport of radionuclides in actual geologic formations. DECOVALEX fosters international cooperation on modeling and validation of coupled thermo-hydromechanical models. The third phase of this project will model data from the drift-scale heater test at Yucca Mountain, and several other participating nations will use that data in their thermo-hydromechanical models.

OCRWM continued to serve as the official U.S. representative to the IAEA's Spent Nuclear Fuel Working Group. We developed information on OCRWM and technical materials in support of the

IAEA Convention on the Safety of Spent Nuclear Fuel and the Safety of Radioactive Waste Management.

OCRWM is one of 11 members of the newly-formed International Association for the Environmentally Safe Disposal of Radioactive Materials. OCRWM representatives attended the annual meeting of this multilateral forum in Avila, Spain, in May 1999, to discuss policy issues related to the management and disposal of nuclear materials. We held one bilateral meeting and three technical coordination workshops with ENRESA, the Spanish National Waste Management Company. One workshop focused on performance assessment, another on waste package development, and the third on site characterization. Further discussions with the United Kingdom and Finland identified the mutual benefits associated with development of a cooperative agreement on waste management and geologic disposal.