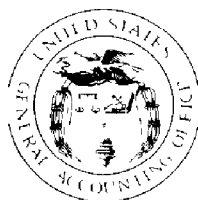


April 1987

NUCLEAR WASTE

Status of DOE's Implementation of the Nuclear Waste Policy Act



038599



United States
General Accounting Office
Washington, D.C. 20548

Comptroller General
of the United States

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April 15, 1987

To the President of the Senate and the
Speaker of the House of Representatives

This report presents the results of our third audit of the Department of Energy's (DOE's) efforts to implement the Nuclear Waste Policy Act of 1982 (42 U S C 10101). The act requires us to report to the Congress the results of an annual audit of DOE's Office of Civilian Radioactive Waste Management. Our third audit covers selected activities of this office during the period October 1984 through July 1986.

We are sending copies of this report to congressional committees with oversight of DOE's activities, the Secretary of Energy, and other interested parties.

This work was performed under the direction of Mr. Keith Fultz, Associate Director, Resources, Community, and Economic Development Division. Other major contributors are listed in appendix XII.

A handwritten signature in cursive script that reads "Charles A. Bowsher".

Charles A. Bowsher
Comptroller General
of the United States

Executive Summary

Purpose

The Nuclear Waste Policy Act of 1982 established a comprehensive national program for the safe management, storage, and permanent disposal of highly radioactive nuclear waste in deep underground facilities (repositories). The estimated cost of the program is between \$24 billion and \$32 billion.

This report, GAO's third annual audit as required by the act, discusses the Department of Energy's (DOE) progress and problems from October 1984 through July 1986 in implementing several of the act's key requirements.

Background

The act established numerous requirements leading to the selection of sites and construction and operation of nuclear waste repositories. The act also required that DOE conduct a study of the need for and feasibility of a monitored retrievable storage facility where the waste could be stored, monitored, and subsequently retrieved for permanent disposal in a repository. DOE has contracted with the nation's utilities to accept waste for disposal by January 31, 1998.

The act established within DOE the Office of Civilian Radioactive Waste Management to manage the program and implement the act's requirements. To finance the program, the act established the Nuclear Waste Fund to receive fees from the owners and generators of nuclear waste. In fiscal years 1985 and 1986, this fund provided a total of \$827 million for program activities.

Results in Brief

DOE accomplished most of the 27 program activities it planned to initiate or complete during 1985. However, several major activities were either completed after 1985 or delayed. States, Indian tribes, and others expressed dissatisfaction about their level of participation in the program as well as DOE's implementation of the act. Consequently, states and other groups have initiated numerous lawsuits against DOE primarily regarding its procedures to select a nuclear waste repository site. DOE, however, believes that it has acted in accordance with the act and that state and Indian tribe involvement in the program has improved. GAO believes that past program delays, problems with state and Indian tribe participation, and potential delays resulting from litigation have jeopardized DOE's ability to begin repository operations in 1998. In this regard, on January 28, 1987, DOE announced plans to extend the target date for beginning repository operations from 1998 to 2003.

During 1985 DOE assessed the impact of defense waste on the repository program and completed two overall program strategy documents. DOE also issued two key siting documents for the second repository program, however, DOE postponed site-specific work for the program in May 1986. Activities that DOE scheduled for 1985 but completed late included issuing final environmental assessments that accompanied DOE's recommendation of first repository sites for more detailed testing and a proposed cost allocation agreement for defense waste disposal.

In addition to activities that were completed late, DOE did not as planned (1) submit its proposal on monitored retrievable storage to the Congress because of a court injunction and (2) complete consultation and cooperation agreements with affected states and tribes primarily because of concerns over such issues as liability for nuclear waste accidents and defense waste disposal.

Principal Findings

First Repository Site Selection

Final environmental assessments were not issued in 1985 as planned because DOE needed additional time to (1) respond to comments on the draft assessments and (2) revise its site-selection methodology. Because of state concerns, DOE requested the National Academy of Sciences to review a selected part of site-selection methodology. This review resulted in DOE further delaying issuance of the final assessments. The academy reported that the portion of the site-selection methodology it reviewed was adequate.

Monitored Retrievable Storage Proposal

In December 1985 DOE issued a draft monitored retrievable storage proposal for formal comment and expected to submit a final proposal to the Congress within the next 2 months. However, in February 1986 DOE was prohibited from submitting the proposal by a U.S. district court, which found that DOE had not properly consulted and cooperated with the state of Tennessee—the potential host state for the monitored retrievable storage facility—as required by the act. DOE appealed the court's decision and on November 25, 1986, the U.S. Court of Appeals for the Sixth Circuit ruled in DOE's favor. DOE still has been unable to submit the proposal because Tennessee has not yet exhausted all of its appeals.

Defense Waste

On April 30, 1985, the President decided that defense waste and commercial waste would be disposed of together. Subsequently, DOE developed a cost allocation proposal that established a fee that the federal government through DOE would pay for defense waste disposal. DOE planned to issue the proposal for public comment by the end of 1985. However, according to DOE officials the proposal was not issued until December 1986 because of unexpected problems in obtaining regulatory clearance from the Office of Management and Budget.

Consultation and Cooperation

States and Indian tribes believe that DOE's efforts to involve them in the program could be improved. In a separate report GAO notes that DOE has faced legal challenges regarding its consultation and cooperation practices that could result in a longer and more costly waste management program. GAO discusses actions DOE could take to enhance state and Indian tribe involvement in the nuclear waste program.

Second Repository Site-Screening Activities

In April 1985 DOE completed the site-screening methodology it planned to use to identify second repository sites. After implementing the methodology in January 1986, DOE issued a draft report that identified candidate areas as proposed sites. However, in May 1986 DOE announced postponement of its site-specific work citing as justification progress with the first repository program and questions as to when a second repository would be needed.

Legal Challenges

As of September 30, 1986, states, environmental, and other groups have filed over 20 court cases against DOE regarding its implementation of the act. Generally, these cases involve legal challenges to DOE's site-selection process and its decision to postpone site-specific work on the second repository.

Recommendation

In a draft of this report, GAO recommended that DOE evaluate the impact of past program delays and determine if the January 31, 1998, target date is reasonable for beginning repository operations. DOE stated that it was in the process of reevaluating the program's repository schedule consistent with GAO's draft recommendation.

As a result of the reevaluation, DOE announced plans to extend the target date for beginning repository operations from 1998 to 2003 and other related program changes.

Agency Comments

DOE believes that the report accurately presents the status of the nuclear waste management program and its progress and problems

The six states and three Indian tribes affected by the first repository and Tennessee were asked to comment on a draft of this report. Four of the six first repository states, one Indian tribe, and Tennessee provided comments. Generally, the comments GAO received were aimed at enhancing the report's accuracy and clarity. Two states commented that DOE should take more steps than GAO recommended to consult and cooperate with the states. Another state commented that the program's problems have destroyed the credibility of the repository site selection process.

DOE, state, and Indian tribe comments have been incorporated into the report, where appropriate, and are reprinted in appendixes V through XI.

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Abbreviations

CRP	Crystalline Repository Project
DOE	Department of Energy
EA	environmental assessment
EPA	Environmental Protection Agency
GAO	General Accounting Office
MRS	monitored retrievable storage
NAS	National Academy of Sciences
NRC	Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act
OCRWM	Office of Civilian Radioactive Waste Management
OMB	Office of Management and Budget
TVA	Tennessee Valley Authority

Introduction

The safe disposal of spent nuclear fuel¹ and high-level radioactive waste remaining from the reprocessing² of spent nuclear fuel is a matter of national concern. In July 1986 the Department of Energy (DOE) estimated that electric utilities had accumulated over 12,000 metric tons (one metric ton equals 2,205 pounds) of spent nuclear fuel. DOE also estimated that defense and other installations had accumulated about 370,000 cubic meters of high-level waste. Appendix I contains more detailed information on the characteristics and inventories of spent nuclear fuel and high-level waste.

Both types of nuclear waste³ are extremely difficult to dispose of because of their high radioactivity and heat production. Also, these radioactive materials are long-lived and remain potentially hazardous for hundreds to millions of years. Consequently, nuclear waste must be isolated from people and the environment until its radioactivity decays and it does not pose a significant threat to the overall environment.

To establish a definite federal policy for nuclear waste management and to ensure the safe storage and permanent disposal of nuclear waste, the Congress enacted the Nuclear Waste Policy Act of 1982 (NWPA). NWPA (Public Law 97-425) was signed into law by the President on January 7, 1983. The act set up a long-term statutory agenda aimed at solving the nation's critical problem of how to permanently and safely dispose of nuclear waste. To implement this agenda and carry out the associated projects related to the nuclear waste management program, the act established, within DOE, the Office of Civilian Radioactive Waste Management (OCRWM). The act requires the Comptroller General to audit this office annually. This report presents the results of our third annual audit of OCRWM⁴ and covers selected program activities that occurred from October 1, 1984, through December 31, 1985, updated to July 31, 1986.

¹Spent nuclear fuel is the used uranium fuel that has been removed from a nuclear reactor and used to the extent that it can no longer be useful in the efficient production of electricity.

²Reprocessing is a chemical process to dissolve spent nuclear fuel elements to recover unused uranium and plutonium. The chemical solution remaining from this process is high-level radioactive waste. This waste consists primarily of "defense waste," which remains from defense reactors used to produce nuclear weapons material.

³For convenience the term "waste" in this report means both spent nuclear fuel and high-level radioactive waste.

⁴See Department of Energy's Initial Efforts to Implement the Nuclear Waste Policy Act of 1982 (GAO/RCED-85-27, Jan. 10, 1985) and The Nuclear Waste Policy Act: 1984 Implementation Status, Progress, and Problems (GAO/RCFD-85-100, Sept. 30, 1985) for the results of our first and second annual audits, respectively.

The Nuclear Waste Policy Act of 1982

NWPA represents the culmination of many years of legislative effort to establish a comprehensive national program for the safe storage and disposal of nuclear waste. In NWPA the Congress declared that a national problem had been created by the accumulation of nuclear waste and that such waste had to be disposed of safely in an environmentally acceptable manner. In addressing this finding, NWPA required the federal government to provide a means to safely manage and dispose of nuclear waste. Specifically, NWPA provides for the site screening and characterization leading to the selection of single sites for two deep-underground geologic repositories and the licensing, construction, and operation of the first repository. For construction of a second repository, congressional authorization would be required. NWPA also requires DOE to complete a study of the need for and the feasibility of one or more monitored retrievable storage (MRS) facilities where nuclear waste can be monitored, stored, and subsequently retrieved for disposal in a permanent repository and to submit a proposal to the Congress for the construction of one or more of these facilities. In addition, NWPA established a time schedule and step-by-step process by which the President, the Congress, states, Indian tribes, DOE, and other federal agencies could cooperate in developing repositories for the disposal of nuclear waste.

Our third annual report focuses on DOE's efforts to meet NWPA's requirements and places emphasis on the following requirements that are important to the overall success of the nuclear waste management program.

1 Environmental assessments of sites nominated for the first repository

NWPA requires the Secretary of Energy to nominate as first repository candidates at least five sites that he determines are suitable for more detailed geologic testing or site characterization and then to recommend three of the five sites for such testing to the President. NWPA also requires that DOE prepare an environmental assessment (EA) for each site nominated for detailed testing as a repository candidate. These assessments must explain the basis for DOE's recommendation and the probable impacts of investigation activities at each site on public health, and safety, and the environment. After the Secretary recommends candidate sites and prepares EAs, NWPA requires that the President review each candidate site recommendation and accompanying EA to either approve or disapprove the candidate site for further detailed testing. NWPA stipulates that the final EAs be completed no later than January 1,

1985, when the Secretary was to have recommended to the President three potential first repository sites for site characterization

2. Siting investigations and geologic evaluations to identify locations for a second repository

NWPA authorizes the construction of only one repository but directs the Secretary of Energy to conduct siting investigations and geologic evaluations to select a location for the second repository. The Secretary may not nominate any site previously nominated for the first repository that was not recommended as a candidate site. NWPA requires the Secretary to recommend to the President three candidate second repository sites for site characterization by July 1, 1989. NWPA also requires the President to submit to the Congress a recommendation of a second site from any of the sites already characterized that the President considers qualified for a construction authorization for a second repository. After the recommendation has been submitted to the President, he may submit to the Congress recommendations for other repository sites.

3. Use of repositories for the disposal of high-level waste generated by atomic energy defense activities

NWPA contains a provision for the disposal of defense waste in one or more of the geologic repositories. NWPA requires the President to evaluate the disposal of defense waste in terms of factors relating to cost, efficiency, health and safety, regulation, transportation, public acceptability, and national security by January 7, 1985. According to NWPA if the President determines that defense waste is to be disposed of with commercial spent nuclear fuel in the same repository, the Secretary of Energy is required to promptly make arrangements to comply with that determination. Such arrangements include allocating the program costs between commercial spent fuel and defense waste generators for developing, constructing, and operating the repositories. The cost resulting from permanent disposal of defense waste is to be paid into the Nuclear Waste Fund by the federal government. NWPA established this fund to finance DOE nuclear waste management activities.

4. Submission of proposal for the construction of one or more MRS facilities

NWPA requires DOE to complete a detailed study of the need for and feasibility of one or more MRS facilities by June 1, 1985. NWPA also requires DOE to submit, by that date, a proposal to the Congress for its approval.

to construct one or more of these facilities. MRS facilities are generally thought of as ground-level or slightly below ground-level storage facilities that will permit continuous monitoring, management, and maintenance of nuclear waste. In addition, these facilities are to provide for the ready retrieval of nuclear waste for either further processing or disposal.

5 Consultation and cooperation with states and affected Indian tribes⁵

NWPA requires DOE to consult and cooperate with states and any affected Indian tribes during its efforts to determine the suitability of geographic areas or locations for nuclear waste facilities such as a repository or MRS facility. DOE is to consult and cooperate with states and Indian tribes to resolve their concerns regarding the public health and safety, environmental, and economic impacts of a repository. To reinforce DOE's consultation and cooperation responsibilities, NWPA also requires DOE to seek to enter into a binding written agreement and begin negotiations with potentially affected states and Indian tribes not later than 60 days after (1) the approval of a site for characterization or (2) the written request of a state or Indian tribe that has been notified that its geographic boundaries contain a potentially acceptable site for a repository, whichever occurs first.

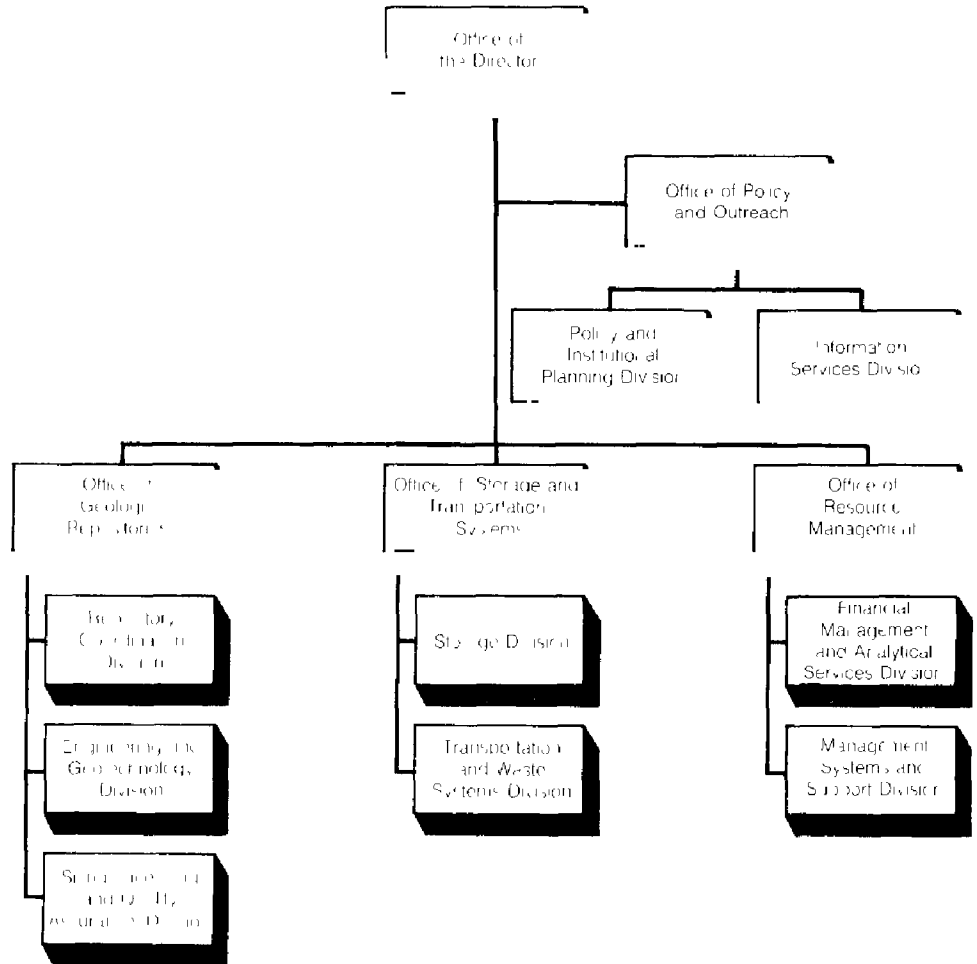
Responsibilities of DOE and Other Federal Agencies in the Nuclear Waste Management Program

⁵An affected Indian tribe is one within whose reservation a nuclear waste facility is proposed to be located or whose federally defined usage rights to other lands outside the reservation's boundaries may be substantially and adversely affected by such facilities, as determined by the Secretary of the Interior upon petition from the Indian tribe.

Organization and
Responsibilities of DOE's
Office of Civilian
Radioactive Waste
Management

DOE's OCRWM is responsible for the safe and permanent disposal of nuclear waste. NWPA established OCRWM as a single-purpose organization with the sole function of conducting the nuclear waste management program. OCRWM is headed by a director appointed by the President, by and with the advice and consent of the Senate. The first and current Director of OCRWM was nominated by the President and approved by the Senate in May 1984. The director is responsible for carrying out the functions of the Secretary of Energy under NWPA. OCRWM discharges its responsibilities through the following four suboffices that report to the director: Policy and Outreach, Geologic Repositories, Storage and Transportation Systems, and Resource Management. These four suboffices are responsible for the major nuclear waste management activities discussed throughout this report. Figure 1.1 illustrates OCRWM's organizational structure as of May 1986.

Figure 1.1: OCRWM Organizational Chart as of May 1986



Office of Policy and Outreach

The Office of Policy and Outreach provides staff support in program-level policy formulation and communication and coordination and review of external institutional activities, including media and congressional affairs. In addition, the office coordinates international activities relating to radioactive waste management.

Office of Geologic Repositories

The Office of Geologic Repositories is primarily responsible for siting, licensing, constructing, operating, and decommissioning mined geologic repositories. The office plans and directs the repository site screening and characterization process; the selection and recommendation of

repository sites; the evaluation of regulatory requirements, and the licensing of repository construction, operation, and decommissioning. Also, the office is responsible for the operation of a test and evaluation facility, management of research and development activities for repositories and other means of permanent nuclear waste disposal, interaction with state and local governments, Indian tribes, and other federal agencies; and for safety and quality assurance activities pertaining to the geologic repository program.

Office of Storage and
Transportation Systems

The Office of Storage and Transportation Systems is primarily responsible for implementing activities related to the interim or long-term storage of nuclear waste. The office manages the development of waste packaging, handling, and transportation technologies and systems, prepares the congressionally mandated proposal for construction of one or more MRS facilities; and offers international cooperation in areas related to its activities.

Office of Resource Management

The Office of Resource Management is primarily responsible for developing and maintaining OCRWM's Program Management System and Program Management Information System, for managing contracts between DOE and nuclear utilities for the provision of federal disposal and/or storage services, and management and administration of the Nuclear Waste Fund, including performance of fee adequacy studies and total system life cycle cost analyses. The office also has responsibility for organization and manpower planning, information resources management, special management analyses and automatic data processing management, and management support in the areas of personnel, procurement, and administrative services.

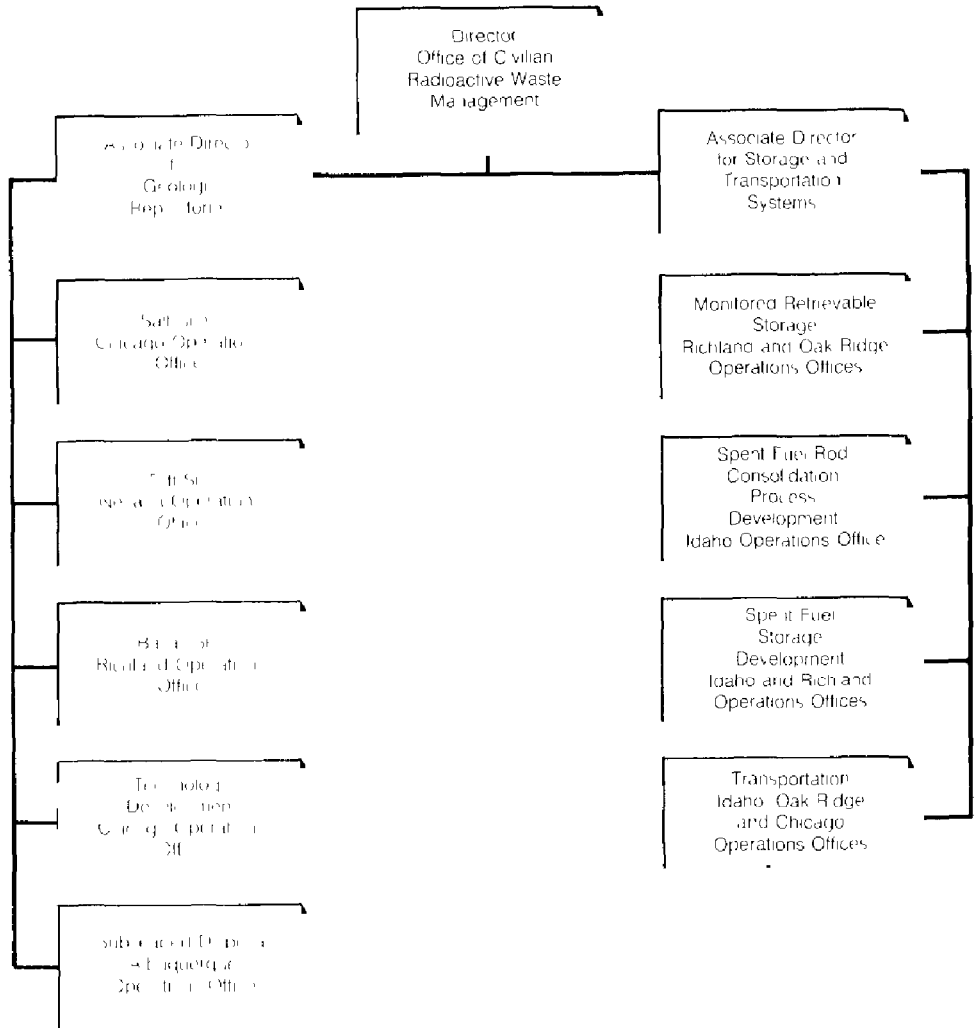
Project Management Within
OCRWM

The waste management activities of two OCRWM offices—Office of Geologic Repositories and Office of Storage and Transportation Systems—are supported heavily by DOE's operations offices. Generally, under DOE's decentralized project management structure, individual OCRWM waste management projects are administered through project offices in DOE operations offices.

Although the project offices are, for administrative purposes, part of the DOE operations offices, they report to the Director, OCRWM for overall policy guidance and to either one of two associate directors for technical direction and review of project performance. The project offices provide

programmatic guidance and oversight to their contractors, who are responsible for preparing project plans, schedules, cost estimates, and budgets, and performing site-specific activities. In addition to technical management the project offices have responsibilities for cooperation and consultation with other federal agencies, states, and Indian tribes (An organizational chart of DOE's operations offices with responsibility for major projects in the nuclear waste management program is shown in figure 1.2)

Figure 1.2: DOE Operations Offices Responsible for Major Projects (As of October 1986)



1. The Richland Operations Office administers, without a Project Office, studies related to monitored retrievable storage (MRS). If Congress authorizes a MRS facility, a Project Office will be established at the Oak Ridge Operations Office.
2. Two operations offices administer spent fuel activities: Richland administers storage technology; Idaho administers fuel processing development.
3. No Project Office has been established for subseabed disposal. The Albuquerque Operations Office administers the prime contract for this activity.
4. Three operations offices administer transportation activities: Oak Ridge administers operation of transportation systems; Idaho administers transportation cask development; Chicago administers institutional integration, economic, and environmental issues.

Project offices in Las Vegas, Nevada, Columbus, Ohio; and Richland, Washington are responsible for the work on potentially acceptable sites for the first repository. The DOE Richland Operations Office is also primarily responsible for carrying out the MRS and spent fuel storage and development activities. The DOE Chicago Operations Office is responsible for work relating to a second geologic repository and for transportation program planning and integration activities. The Albuquerque Operations Office is heading up remaining subseabed disposal activities. In addition, DOE's Idaho Operations Office is primarily responsible for a spent nuclear fuel rod consolidation equipment development project, and transportation cask development activities.

Role of Other Federal Agencies Under NWPA

While DOE's OCRWM is responsible for implementing NWPA, other federal agencies have key institutional responsibilities to support OCRWM's technical activities for storing and disposing of nuclear waste. These responsibilities range from consultation and document review to major actions such as the promulgation of regulations, standards, technical requirements, and other criteria that DOE must comply with.

In September 1985 the Environmental Protection Agency (EPA) issued generally applicable standards for repository operations regarding the protection of individuals and the environment from the releases of radioactive materials. NWPA also requires DOE to submit certain key program documents—such as the MRS proposal—for EPA's review and comment. In addition, DOE had to consult with EPA in the preparation of guidelines for the siting of geologic repositories.

The Nuclear Regulatory Commission (NRC) is responsible for developing and implementing specific technical requirements and criteria, consistent with EPA standards, that DOE must meet before NRC licenses (1) the construction of a repository, (2) the delivery and emplacement of nuclear waste in repositories, and (3) the closing and decommissioning of a repository.

The Department of Transportation is responsible for developing, issuing, and enforcing safety standards governing certain packaging and shipping containers for radioactive materials, and for the labeling, classification, and marking of all nuclear waste packages.

The Department of the Interior's U.S. Geological Survey (USGS) is responsible for conducting investigations in support of the nuclear waste management program, collaborating with OCRWM on earth sciences

technical activities, and acting as a consultant to NRC during its licensing consideration of DOE's applications for waste disposal facilities

Role of Affected States, Local Governments, and Indian Tribes

The NWPA provides affected states, local governments, and Indian tribes, along with the general public, opportunities to participate in major federal implementing actions. For example, DOE must "consult and cooperate" with affected states and Indian tribes in making repository siting decisions, including negotiating written agreements with them at their request and providing them financial and technical assistance after certain stages in the repository siting or development process have been reached. In addition, a state or Indian tribe can submit to the Congress a notice disapproving the selection of a repository or MRS site within its boundaries.

Responsibilities of the Nation's Utilities

Although NWPA established a federal responsibility for permanent disposal of nuclear waste, utilities are responsible for providing their own storage space for spent nuclear fuel until the fuel is transferred to DOE for disposal. Also, utilities are required to enter into contracts with DOE to pay for the federal disposal or long-term storage of spent nuclear fuel. DOE has contracts with 66 commercial owners and generators covering 150 reactors.

The contracts establish (1) the terms and conditions under which DOE will dispose of spent fuel generated by civilian power reactors and (2) the procedures to follow in collecting fees to provide for full recovery of the government's disposal costs. Specifically, the contracts require utilities to provide DOE with information on actual and projected spent fuel inventories and to arrange for, and provide, all preparation, packaging, required inspections, and loading activities necessary for transporting waste to a DOE facility. The contracts also stipulate that DOE shall accept title and begin accepting waste for disposal after commencement of facility operations, not later than January 31, 1998. DOE believes that the contracts' terms can be met by beginning to accept title to the spent fuel by January 31, 1998, and utilizing an MRS, if approved by the Congress, or another facility if a repository is not yet in operation. In addition, the contracts provide three payment options to utilities for waste generated prior to April 7, 1983: (1) pay in 40 quarterly installments with accrued interest, (2) pay in a lump sum with accrued interest prior to the first scheduled delivery of waste to DOE for disposal, or (3) pay in a lump sum prior to June 30, 1985, with no interest.

NWPA Requirements for Financing the Cost of Nuclear Waste Disposal

The Nuclear Waste Fund was established to finance activities under NWPA. Such activities include the siting, design, construction, and operation of deep underground geologic repositories for the disposal of nuclear waste, preparation of a proposal to the Congress on the need for and feasibility of one or more MRS facilities; development of a transportation system; state and Indian tribe programs to review DOE activities, and other related activities. According to DOE the act's key financial concept is that the cost to the federal government of providing disposal and/or storage services shall be fully recovered from the generators and owners of spent nuclear fuel and high-level radioactive waste.

Under NWPA, nuclear utilities, through contracts with DOE, pay a 1-mil (one-tenth of a cent) per kilowatt hour disposal fee for commercial spent nuclear fuel generated beginning April 7, 1983. As of December 31, 1985, \$880 million in ongoing fees have been collected, and DOE will collect approximately \$350 million per year for the life of the program. DOE has also collected \$1.4 billion from utilities in one-time fees for nuclear fuel generated before 1983.

NWPA also requires that DOE evaluate on an annual basis the adequacy of the 1-mil per kilowatt hour fee to ensure full cost recovery and provide for adjustment of that fee, as needed, with the approval of the Congress. A proposal to the Congress for a fee adjustment is required only if DOE determines that an adjustment to the ongoing fee is required.

Fiscal Year 1985 and 1986 Budgets for Nuclear Waste Activities

DOE's nuclear waste activities discussed in this report are currently funded under two budget categories: (1) the Nuclear Waste Fund and (2) Civilian Radioactive Waste Research and Development. The Nuclear Waste Fund finances the repository development activities, including preparation of the siting guidelines and environmental assessments, interaction with states and Indian tribes, MRS activities, and transportation. Under NWPA the Nuclear Waste Fund consists of fees paid by utilities, although DOE cannot expend these funds without specific congressional approval through the appropriations process. DOE received appropriations from the Nuclear Waste Fund of \$328 million in fiscal year 1985 and \$499 million in fiscal year 1986.

The Civilian Radioactive Waste Research and Development budget is funded under Energy Supply Research and Development Activities from DOE's general appropriations. These funds cover DOE's spent fuel storage research and development activities. DOE received \$25.9 million in fiscal

year 1985 and \$16.1 million in fiscal year 1986 for spent fuel storage activities appropriations

Objectives, Scope, and Methodology

NWPA requires the Comptroller General to report to the Congress the results of an annual audit of OCRWM. Our overall objective was to provide the Congress with information on DOE's progress in implementing NWPA requirements during the period October 1, 1984, through December 31, 1985. Except where noted, descriptions of the status of most major DOE activities were updated through July 31, 1986, to reflect DOE's more recent schedules and progress.

Our third annual audit report focuses on evaluating OCRWM's progress in implementing five NWPA requirements. These requirements provide the basis for OCRWM's activities to (1) recommend three sites for site characterization as part of the first repository program, (2) conduct siting investigations and geologic evaluations for identifying locations for a second repository, (3) establish a methodology for allocating nuclear waste management program costs between the federal government and utilities for the disposal of defense waste, (4) complete a proposal to the Congress for the construction of one or more MRS facilities, and (5) conduct consultation and cooperation with states and Indian tribes that would be affected by repository siting decisions.

Specifically, in this report we present

- the status of the above five NWPA requirements and other program activities required by NWPA as of December 31, 1985, updated through July 1986 (ch. 2),
- an analysis of DOE's fiscal year 1985 efforts to identify locations for the second repository (ch. 3), and
- an overview of program activities and management initiatives that are key to the program's success that DOE did not accomplish in 1985 as planned and implications regarding DOE's ability to meet NWPA requirements (ch. 4).

To obtain information on the status of OCRWM program activities and selected management initiatives, we reviewed DOE and OCRWM program documents, publications, correspondence, and studies and interviewed OCRWM managers and operating personnel, both at DOE headquarters in Washington, D.C., and the Chicago Operations Office in Argonne, Illinois, responsible for planning and managing activities associated with the research and development of the nuclear waste management program.

Our methodology, in general, was to compare the provisions and milestones, where appropriate, of NWPA with DOE's activities and schedules to determine the progress of the program. To assess DOE's progress in implementing NWPA requirements, we used DOE's Mission Plan—the program's principal planning document—and its nuclear waste management program budget request for fiscal year 1986 to identify specific activities that DOE expected to initiate or complete in fiscal year 1985. Specifically, the Mission Plan contained activities DOE planned to accomplish by the end of 1985, and the budget request identified activities that DOE expected to accomplish during fiscal year 1985. Both of these documents provided milestones and target dates for most of the major activities that OCRWM expected to accomplish before the end of calendar year 1985. To determine states', Indian tribes', and others' concerns regarding DOE's implementation of nuclear waste management program activities and to obtain insights on where they believed the program was experiencing problems, we reviewed written comments sent to DOE on various program activities.

In determining the status of DOE's efforts to identify locations for a second nuclear waste repository, we concentrated our work at DOE's Chicago field operations office, which was responsible for siting the second repository. We identified and cataloged second repository program planning documents and reviewed key reports and studies concerning the procedures DOE used to identify possible locations for the second repository. We also reviewed the history and development of the second repository program leading up to DOE's current activities. We obtained program information on the status of the second repository program from DOE headquarters and Chicago field operations office officials.

During our review, in May 1986, DOE decided to postpone site-specific work to locate potentially acceptable sites for the second repository. At that time DOE had tentatively identified 20 candidate areas for a second repository and spent about \$64 million on second repository activities. Although DOE opted to curtail its site-specific efforts, we are reporting on the second repository program in a separate chapter of this report to provide the Congress with information on the site-selection procedures DOE used for the second repository because these plans may have to be used in the future if DOE elects to renew its site-specific efforts. In reviewing DOE's second repository program, we did not assess the appropriateness of DOE's procedures and technical decisions concerning the selection of potentially acceptable sites for a waste repository.

In preparing this report we also relied on the results of several of our recent and ongoing nuclear waste management reviews. Specifically, to update DOE's activities through June 30, 1986, we used information obtained in developing our August 1986 quarterly fact sheet on DOE's progress in implementing NWPA (GAO/RCED-86-206FS). To provide insight on the MRS' proposal and states' and Indian tribes' concerns about DOE's consultation and cooperation practices, we relied on information obtained in developing our May 1986 fact sheet on monitored retrievable storage of spent fuel (GAO/RCED-86-104FS) and our February 1987 report on DOE's program participation with states and Indian tribes (GAO/RCED-87-14).

Although we gathered information on all aspects of DOE's implementation of NWPA, we did not conduct a comprehensive evaluation of all of DOE's implementation efforts. For example, we did not review DOE's management of the Nuclear Waste Fund during 1985 since this issue was discussed in our January 1986 quarterly fact sheet to the Senate Energy and Natural Resources Committee.⁶ Our work was performed in accordance with generally accepted government auditing standards.

Comments by DOE, States,
Indian Tribes, and Others

This report was distributed for comment to DOE, the six states, and three Indian tribes affected by the first repository program, and the state of Tennessee, which is under consideration as a host for an MRS facility. Comments were submitted by DOE (see app. V), the states of Mississippi, Nevada, Tennessee, Utah, and Washington, and the Confederated Tribes of the Umatilla Indian Reservation (see apps. VI through XI).

These comments contain several diverse viewpoints on our report's proposals and were generally aimed at enhancing the report's accuracy and clarity. DOE concurred with the report's proposals and believed that the report represented an accurate review of the status of the nuclear waste management program and its progress and problems. However, two states—Nevada and Washington—took exception to the report's proposals and believed that DOE needs to take additional steps to consult with the affected parties and improve the program's credibility. In addition to concerns about the report's suggestions, both states believed that DOE has not made progress in building public confidence and cooperating and consulting with states and tribes.

⁶See Quarterly Report on DOE's Nuclear Waste Program As of December 31, 1985 (GAO/RCED-86-86, Jan. 31, 1986).

These groups' specific comments are summarized and addressed toward the end of chapter 5. Also, technical and editorial comments submitted by DOE and others have been incorporated in the text where appropriate.

Status of DOE Activities to Implement Selected Provisions of the Nuclear Waste Policy Act

During the last quarter of calendar year 1984 and through calendar year 1985, DOE made substantial progress in accomplishing most of the 27 nuclear waste management program activities¹ that it planned to initiate or complete this period, however, two major activities—issuance of final EAS and submission of the MRS proposal—related to the first repository program were not completed as scheduled. In addition, DOE did not complete financial arrangements for the disposal of defense waste or cooperation and consultation agreements with affected states and Indian tribes.

This chapter presents an overview of the status of 27 program activities—22 activities DOE identified in its fiscal year 1986 budget request to the Congress as expected fiscal year 1985 accomplishments and 5 other activities OCRWM included in its Mission Plan that were scheduled to be completed by the end of calendar year 1985. Appendixes II and III contain listings of the status of OCRWM's accomplishments expected by fiscal and calendar year 1985, respectively. This chapter also provides detailed information on four activities that are important to the NWPA's successful implementation. These four activities are

- EAS on the three potential first repository sites that DOE nominated and recommended to the President,
- an assessment of the impact of combining high-level radioactive defense waste with commercial spent fuel into the same geologic repository,
- a proposal for one or more MRS facilities, and
- consultation and cooperation agreements with states and Indian tribes.

This chapter also discusses the status of other activities related to DOE's research and development, waste management system planning, and public outreach efforts. In chapter 4 we expand our evaluation of the program's progress to specific areas in which DOE has encountered problems meeting NWPA requirements.

¹Five of the 27 activities scheduled for initiation or completion by the end of 1985 were originally scheduled by DOE as fiscal year 1984 expected accomplishments. Delays in completing these activities in fiscal year 1984 contributed to pushing back their milestones to fiscal year 1985.

DOE Accomplished Many of Its Fiscal and Calendar Year 1985 Goals

NWPA specifies numerous actions that DOE must take in managing the nation's high-level nuclear waste. In many instances, NWPA sets milestones and schedules for certain mandated activities. However, DOE, as part of its overall responsibilities under NWPA, also has periodically revised several schedules and milestones for selected program activities. Two sets of criteria—the Mission Plan and OCRWM's nuclear waste management program budget request—provide milestones for most of the major activities that DOE expects to accomplish before the operation of the first geologic repository. Consistent with the approach we used for our second annual audit in assessing the status of DOE's implementation of NWPA in 1984, we used the Mission Plan and OCRWM's budget request for fiscal year 1986 as the best available means to determine what DOE deemed important to implement NWPA requirements on the basis of what it expected to accomplish during fiscal and calendar years 1985. The Mission Plan contains DOE's overall strategy and plans for implementing NWPA. The 1986 budget request was submitted to the Congress in early 1985 and contained a list of the program's actual accomplishments for fiscal year 1984 and expected accomplishments for fiscal years 1985 and 1986, respectively.

Status of OCRWM Accomplishments Expected by September 30, 1985

DOE identified 22 activities in its fiscal year 1986 budget request to the Congress that it expected to have completed or initiated during fiscal year 1985. As shown in the following sections, 16 of the 22 activities were accomplished as projected, and 5 other activities were completed after September 30, 1985. Only 1 of the 22 activities—submission of the MRS proposal to the Congress—was delayed because of a court decision and a ruling that prohibited DOE from submitting the proposal.

(1) Publish Mission Plan

The Mission Plan for the program, originally planned to be submitted to the Congress on August 20, 1984, was completed and submitted in July 1985. This plan is required by NWPA and contains OCRWM's overall strategy and plans for implementing the act.

(2) Issue final repository siting guidelines

Final repository siting guidelines for the first and subsequent repositories, originally targeted for May 15, 1984, were issued on December 6, 1984. These guidelines established performance objectives for a geologic

repository system, defined the basic technical requirements that candidate sites must meet, and detailed how OCRWM would implement its site-selection process

(3) Publish third annual fee adequacy report

NWPA requires that the Secretary of Energy perform an annual evaluation of the adequacy of fees collected by OCRWM to cover the projected cost of the waste management program. DOE's third annual fee adequacy report on the Nuclear Waste Fund was submitted to the Congress and made available to the public in February 1985. The report summarized the effects of projections of OCRWM revenues and cost on the ability of the waste management program to remain fully self financing under the 1-mil per kilowatt hour fee. The report concluded that revenues based on the current fee, anticipated one-time fee payments, and the interest earned on the Nuclear Waste Fund investments should be sufficient to cover program cost. In March 1986 DOE submitted its fourth annual fee adequacy report. The report concluded that the current fee was sufficient to cover projected total life cycle costs of the program.

(4) Issue final project decision schedule

In July 1985 DOE issued its draft project decision schedule, which is required by NWPA. The schedule depicts major nuclear waste management program milestones, sets activities for DOE and other federal agencies, and establishes the deadlines that these agencies have for taking the required actions associated with the activities. In March 1986 DOE issued the final project decision schedule.

(5) Issue draft environmental assessments

Draft EAS for each of the nine sites that DOE identified as potentially acceptable for the first repository were published in December 1984. Five of the nine draft assessments were required by NWPA for the sites nominated for further detailed study. These assessments included the probable impact of site characterization activities, such as drilling the exploratory shafts necessary to obtain geologic information, and ways to avoid such impacts. Each site's assessment included a comparison of the site with the eight other sites and a ranking according to various criteria in the siting guidelines. The five sites nominated in the draft assessments were located in Mississippi, Nevada, Texas, Utah, and Washington. The assessments proposed recommending a site in Nevada,

Texas, and Washington for further detailed testing as potential first repository candidates

(6) Hold public hearings on draft environmental assessments

During 1985 DOE held a series of briefings and public hearings on the draft EAS with officials from affected states, Indian tribes, and the public near all nine sites

(7) Recommend three candidate first repository sites to the President for site characterization

NWPA requires the Secretary of Energy to nominate at least five sites that he determines suitable for site characterization for the first repository and then to recommend three candidate sites for characterization to the President by January 1, 1985. Each site nomination must be accompanied by an EA. Consequently, because DOE did not complete final EAS in 1985, the Secretary's nomination and recommendation of candidate sites was delayed until May 1986 when the final assessments were completed.

(8) Prepare and issue final environmental assessments

Following issuance of the draft EAS in December 1984, DOE received over 21,000 comments from the six states containing the nine potential first repository sites, Indian tribes, federal agencies, local parties, and others. After receiving these comments, DOE revised the draft assessments and obtained an independent review by the National Academy of Sciences of selected aspects of the decision-aiding methodology the department planned to use to assist in identifying the three sites that would be recommended for site characterization. The final assessments were originally scheduled to be issued in August 1985 but were delayed because of the number and complexity of the comments DOE received and OCRWM's desire to obtain an independent review of the application of the decision-aiding methodology. In May 1986 DOE issued final environmental assessments for five sites that it nominated for site characterization. Of the five sites nominated, DOE recommended three sites for characterization studies as candidates for the first repository. The sites that were nominated and recommended were the same sites DOE identified in the draft assessments. (Chapter 4 provides more detailed information on DOE's delay in issuing the final assessments.)

(9) Initiate waste package advanced conceptual design in basalt and tuff

During 1985 DOE initiated studies of conceptual designs for nuclear waste containers in basalt and tuff—geologic media to be considered for the first repository. Basalt is a material formed from molten rock from volcanoes or fissures, and tuff is a hard compacted ash from volcanoes. A study was initiated to evaluate the feasibility of using copper-based materials for waste containers to be placed in basalt and tuff formations. A report on the status of this study was issued to the Congress in September 1985.

(10) Assess impact of disposing defense waste in a commercial repository

NWPA requires the President to evaluate and determine whether defense waste should be disposed of in a defense-only repository. In February 1985 DOE submitted a report to the President to provide input for an evaluation of defense waste. The report recommended that defense waste and commercial spent fuel be disposed of in the same repository because building a separate repository for defense waste would cost an additional \$1.5 billion. In April 1985 the President accepted DOE's recommendation and directed it to arrange for the disposal of both defense and civilian waste in the same repository. In June 1985 DOE published a final report on the impact of defense waste on the repository program.

(11) Publish second annual report

DOE's second annual report on the activities and expenditures of OCRWM was published and submitted to the Congress in May 1985. The report is mandated by NWPA and covers OCRWM's activities for fiscal year 1984.

(12) Initiate studies of techniques for integrating the overall waste management plan

During 1985 DOE initiated studies of preliminary concepts and techniques for integrating the overall waste management system. In October 1985, OCRWM issued its Systems Engineering Management Plan, which established the step-by-step process DOE planned to use for defining the waste management system. Also, in September 1985 DOE completed a draft of its System Requirements and Description document. This document was finalized in January 1986 and will be used to define the requirements of the overall waste management system. DOE intends to

use both of these program documents to direct the systems integration process

(13) Issue final regional-to-area screening methodology document

In April 1985 DOE published its regional-to-area screening methodology document that outlined the procedures that DOE planned to use to select potential second repository sites for the Crystalline Repository Project. Crystalline rock is a general term used to designate certain igneous or metamorphic rocks as opposed to a sedimentary rock. Crystalline rock was being studied extensively under this project as one of the geologic media considered for the second repository.

(14) Issue final regional characterization reports

Final regional characterization reports for the Crystalline Repository Project were issued in September 1985. These reports contained, according to DOE, available geologic and environmental information on the three geologic regions that had been studied by the Crystalline Repository Project for the second repository.

(15) Initiate independent financial audit of Nuclear Waste Fund for fiscal year 1985

In December 1985 a certified public accounting firm completed its examination of the Nuclear Waste Fund's financial statements for fiscal year 1985. The firm reported that the financial statements that it reviewed fairly presented the fund's financial position as of September 30, 1985.

(16) Submit report to the Congress on alternative means of financing and managing radioactive waste facilities

NWPA requires the Secretary of Energy to study alternative approaches to managing the nuclear waste management program, including the feasibility of establishing a private corporation for such purposes. NWPA also requires that the study be completed and a report be submitted to the Congress by January 1984.

To conduct this study the Secretary empaneled 13 citizens throughout the United States, representing diverse backgrounds, and established the Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities in December 1983. In January 1985 the panel submitted a report to DOE on alternative approaches to managing

the waste program. In April 1985 the Secretary of Energy submitted the panel's report and DOE's response to it to the Congress.

The panel's principal recommendation was that an investigation should be made to determine the necessary steps to implement an alternative organization to OCRWM. The panel's preferred alternative was to establish a public corporation to manage the waste program. DOE, in its response to the report, concluded that the possible management advantages of a new organization would be more than offset by a number of disadvantages, including possible delays in the critical siting process associated with the difficulty in obtaining the necessary legislative amendments to effect such a change.

(17) Submit proposal to the Congress for the construction of one or more MRS facilities

NWPA requires DOE to prepare by June 1, 1985, a detailed study on the feasibility of constructing one or more MRS facilities. DOE did not submit its MRS proposal to the Congress by June 1, 1985; however, on that date, DOE issued a status report stating that it would submit the MRS proposal to the Congress by January 15, 1986. In August 1985 the state of Tennessee filed suit in a U.S. district court alleging that any DOE proposal to construct a MRS facility in Tennessee would be in violation of NWPA because DOE had not properly consulted and cooperated with the state as required by the act. In February 1986 the court ruled in favor of Tennessee and enjoined DOE from submitting its proposal. DOE appealed the court's decision, and on November 25, 1986, a three-judge panel of the U.S. Court of Appeals for the Sixth Circuit ruled in favor of DOE.

On December 4, 1986, Tennessee filed a petition for rehearing with a suggestion that the case be reheard by the appeals courts' full 12-judge panel. The court denied this motion on December 31, 1986, and on January 5, 1987, Tennessee requested a further injunction to allow time for an appeal to the U.S. Supreme Court. The court granted a further stay on January 7 for 30 days and, if an appeal is filed, a further stay until a Supreme Court decision is reached.

(18-19) Provide draft transportation business plan for public comment and issue final plan

NWPA authorized DOE to establish a national system for the disposal of high-level nuclear waste. A primary element of the waste management system will be the development of a waste transportation system. NWPA

also directs DOE to contract with private industry to the fullest extent possible in each aspect of the transportation system. In August 1985, OCRWM released for public comment a draft transportation business plan. OCRWM requested that all comments be submitted by September 30, 1985. After reviewing public comments in December 1985, DOE issued its final transportation business plan in January 1986. The plan describes DOE's expected contracting strategies and actions to acquire equipment and contractors for developing and operating the required transportation system.

The acquisition strategy described in the plan is divided into two phases. Phase I covers the development and acquisition of prototype casks that will be used to ship radioactive waste to or between federal waste facilities. The cost for phase I is estimated to be about \$75 million. Phase II of the strategy will be implemented when DOE begins accepting waste at the first repository or the MRS facility. At that time, DOE will implement transportation operations. The cost to provide a fleet of casks for the first 5 years of phase II system operation is estimated to exceed \$100 million.

(20) Develop transportation institutional plan for public comment

DOE issued its draft transportation institutional plan for public comment in September 1985. The purpose of the plan, a companion document to the business plan, is to lay the foundation for interaction among interested parties to define a comprehensive process for identifying, addressing, and resolving issues related to the waste transportation system. The plan describes the institutional development and operation of the transportation system and lists four elements necessary for achieving its stated purposes:

- providing policy guidance for establishing the transportation system,
- identifying the major participants, who must interact to build the transportation system and agree on the philosophy of the system,
- providing mechanisms for interaction to ensure wide participation in program planning and implementation, and
- providing a framework for managing and resolving issues related to the development and operation of the system.

As the program evolves, DOE plans to update the information in these documents and combine it with a third element, operations, into a single coordinated plan for all activities related to the development and operation of the transportation system.

(21) Complete independent financial audit of Nuclear Waste Fund for fiscal years 1983 and 1984

In September 1984 DOE signed a \$1.3-million contract with a certified public accounting firm—Main Hurdman—to provide auditing services for the Nuclear Waste Fund for fiscal years 1983 and 1984 with options for 3 more years. Main Hurdman presented the results of its examination for fiscal years 1983 and 1984 of the fund's financial statements, internal controls, and overall fund status in March 1985 and submitted its recommendations in June 1985. The firm reported that the financial statements of the Nuclear Waste Fund present fairly the financial position of the fund and that it complied with applicable laws and regulations that might have a material effect on its financial position, changes in its financial position, or results of its operations.

(22) Reimburse U.S. Treasury for unexpended appropriations

NWPA required DOE to transfer unexpended appropriations as of January 7, 1983, from the ongoing nuclear waste program to the Nuclear Waste Fund. Subsequently, DOE transferred about \$254 million to the waste fund in fiscal year 1983. This amount became an appropriated debt to be repaid later from the fund to the Treasury with interest on the amounts used for the program. Another \$4.6 million was transferred into the fund (and became part of the debt) in fiscal year 1984 from appropriations that had been passed before the fund was established. An additional \$6.5 million was added to the appropriated debt during the quarter ending September 30, 1985, as a result of an audit of fiscal years 1983 and 1984 program funds. About \$860,000 in interest expense accumulated on the appropriated debt during fiscal year 1985. In September 1985, DOE repaid the debt, a total of about \$265 million, including interest, from the fund to the Treasury.

Status of OCRWM
Accomplishments Expected
by December 31, 1985

OCRWM's Mission Plan identified five other activities that DOE planned to complete or initiate by the end of 1985. As shown in more detail in the following sections, one of the activities was completed in 1985, another activity was accomplished in 1986, one activity has been rescheduled for completion at a later date, one activity was postponed indefinitely, and one activity was canceled.

(1) Completion of comparative evaluation of alternative host rocks

DOE's final report on a comparative evaluation of sedimentary rocks as an alternative host rock for a repository has been rescheduled for release in April 1987. DOE had planned to complete its report in 1985, however, an OCRWM official told us that it will take DOE longer than originally anticipated to obtain all the necessary information on alternative rock types.

(2) Submission of license application for the Tennessee Valley Authority to demonstrate dry storage

According to DOE, dry-storage systems provide an alternative for additional spent-fuel storage at nuclear power plants. Systems for dry storage include casks, drywells, silos, and vaults. DOE has about 20 years of experience with dry-storage technologies. Drywell, silo, and vault systems have been demonstrated at DOE's facilities in Nevada.

In 1982, DOE entered into an interagency agreement with the Tennessee Valley Authority (TVA) to demonstrate dry storage of spent fuel in two different prototype casks called CASTOR and REA 2023, respectively. DOE expected TVA to submit a license application to NRC in 1985 to demonstrate dry storage. Subsequently, TVA decided that demonstrations of the CASTOR cask would not provide them with more information than that which had become available from another dry-storage demonstration. Also, TVA was unable to use the REA 2023 cask in a licensed demonstration because of problems obtaining NRC certification. This occurred because the original designer and fabricator of the REA 2023 cask went out of business and sold its assets to another company.

(3) Completion of TVA rod consolidation demonstration

DOE expected to complete by late 1985 a cooperative rod consolidation demonstration with TVA. Rod consolidation represents a means of increasing the capacity of spent-fuel pools by dismantling the fuel assembly and rearranging the spent-fuel rods. Completion of TVA's rod consolidation demonstration has been indefinitely postponed due to operational problems with the utility's Browns Ferry reactor.

(4) Evaluation of results of independent studies of waste handling and packaging techniques

In April 1986 a private consulting firm under DOE contract issued a final report on its review and evaluation of concepts studied under DOE's Program Research and Development Announcement for nuclear waste handling and packaging. The report makes recommendations regarding follow-up activities on alternative concepts that were studied by DOE contractors for spent-fuel handling, packaging, shipping, and storage that through standardization or other means would improve the performance of the waste management system.

(5) Complete documentation and full implementation of program management system

In December 1985 DOE released its Program Management System Manual. According to DOE the manual describes its plans, policies, and procedures that, taken together, serve as a mechanism for managing the waste management program.

**Environmental
Assessments Finalized
and Candidate First
Repository Sites
Recommended for Site
Characterization After
Fiscal Year 1985**

NWPA requires the Secretary of Energy to nominate five sites that he determines suitable for site characterization studies and then to recommend by January 1, 1985, three of the five sites for characterization studies to the President. Each site nomination must be accompanied by an EA that compares each site with others and ranks them according to criteria defined in DOE's siting guidelines that were issued in December 1984. In addition, these assessments must include the probable impacts of site characterization activities, such as drilling the exploratory shafts necessary to collect geologic data and ways to avoid such impacts.

Although NWPA did not contain a specific deadline for the completion of the assessments, the sequence for siting a repository required that these documents be completed by January 1, 1985, to allow DOE to meet the deadlines for recommending sites for characterization. In December 1984 OCRWM published nine draft assessments for each of the potential first repository sites located in six states. Table 2.1 lists the proposed potentially acceptable sites for the first repository.

Table 2.1: Potentially Acceptable Sites for the First Repository

Site	State	Host rock
Yucca Mountain	Nevada	Tuff ^a
Hanford	Washington	Basalt ^b
Deaf Smith County	Texas	Bedded salt ^c
Swisher County	Texas	Bedded salt
Davis Canyon	Utah	Bedded salt
Lavender Canyon	Utah	Bedded salt
Vacherie Dome	Louisiana	Domed salt ^d
Cypress Creek Dome	Mississippi	Domed salt
Richton Dome	Mississippi	Domed salt

^aTuff is a rock formed from volcanic fragments

^bBasalt is a fine grained solid lava

^cBedded salt is salt deposits laid down in layers or beds

^dDomed salt is individual pillars of salt formed when deeply buried, bedded salt was forced upward

In the draft EAS DOE proposed to nominate five sites and recommend three sites for further detailed testing or site characterization. The three sites were Yucca Mountain, Deaf Smith County, and Hanford. After the draft EAS were issued, DOE allowed 90 days for public comment until March 20, 1985, and expected to issue final EAS in June 1985.

During the public comment period, interested parties submitted over 21,000 comments. Because of the level of interest, DOE informally extended the comment period through June 1985 and received about 2,000 additional comments. DOE considered the issues raised in the comment letters or through oral briefings and obtained an independent review from the National Academy of Sciences of selected aspects of the first repository site-selection decision-aiding methodology and, subsequently, parts of the actual application of that methodology. On May 28, 1986, DOE issued final EAS and announced the recommendation of three candidate first repository sites for characterization. The three sites that DOE recommended in the final EAS were approved by the President and were the same as those identified for further testing in the draft EAS.

Site Characterization for First Repository

NWPA requires DOE to issue site characterization plans describing the testing to be performed during the site characterization phase prior to sinking exploratory shafts. The objectives of the testing include providing the data needed for demonstrating the suitability of the site and aiding the selection of one site for development as a geologic repository.

DOE anticipates that the plans will be published in the spring of 1987 for the Nevada and Hanford sites and late 1987 for the Texas site

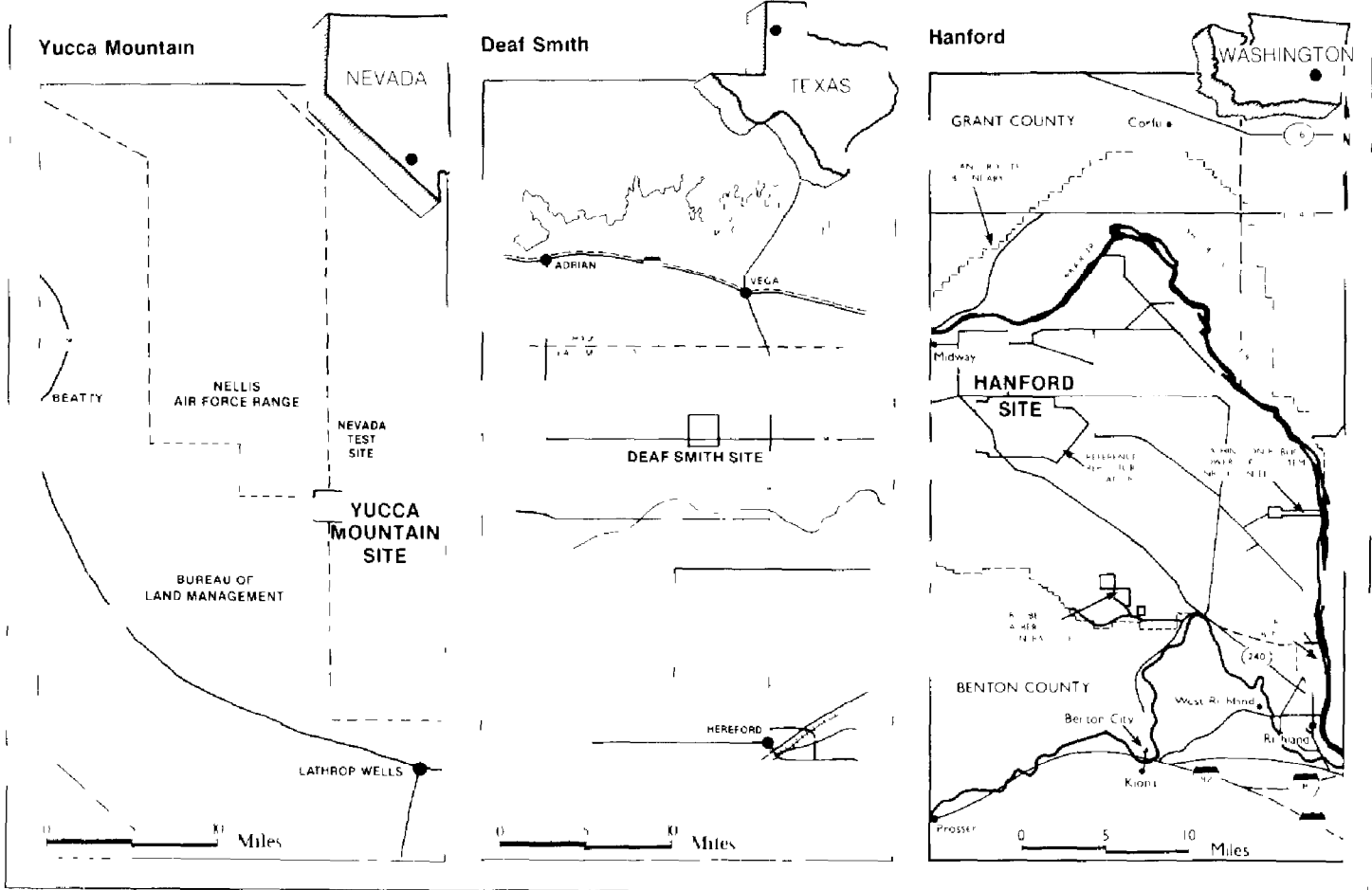
Work to be conducted at the three sites that DOE nominated for characterization will include constructing exploratory shafts to depths of a proposed repository—about 1,000 to 3,000 feet below ground—so that scientific studies, evaluations, and comparisons can be made in selecting a site that meets the criteria for constructing a repository and gathering sufficient data to support a license application to NRC. DOE had planned to begin exploratory shaft drilling at Hanford and possibly in Nevada during fiscal year 1987. However, funds were not provided for drilling any exploratory shafts at any site in fiscal year 1987.

According to DOE, site characterization work will take about 5 years and will involve extensive interactions with federal agencies, states, Indian tribes, and the public. At each site, DOE plans to construct surface facilities, access roads, two exploratory shafts, and underground testing facilities. DOE estimated in September 1986 that 200 to 500 people will be employed at each candidate site and site characterization could cost about \$1 billion for each site (in 1985 dollars).

Following site characterization, DOE plans to select one of the characterized sites for development as a repository. Following both presidential and congressional approval, DOE will request a license from NRC to authorize construction of the repository. Figure 2.1 shows the three locations currently under investigation for the first nuclear waste repository.

Chapter 2
 Status of DOE Activities to Implement
 Selected Provisions of the Nuclear Waste
 Policy Act

Figure 2.1: Locations Under Investigation for the First Nuclear Waste Repository



The Yucca Mountain site is located in Nevada's Nye County, and it straddles the southern end of the western boundary of the Nevada Test Site and is on the eastern edge of the Mojave Desert. It is on land owned by the federal government. The nearest town is Amargosa Valley, which is about 16 miles away. The Deaf Smith site is on private land in the Texas Panhandle County of Deaf Smith, and the nearest town is Vega, which is about 13 miles away. The Hanford site is in Washington's Benton County on DOE's Hanford Reservation. The site is situated between Gable Butte to the north and the Rattlesnake Hills to the south. The land is owned by DOE. The nearest town is Richland, 22 miles away.

President Decides Defense Waste and Commercial Spent Fuel Will Be Disposed of in the Same Repository

On April 30, 1985, the President advised the Secretary of Energy that, under NWPA, DOE should dispose of defense high-level waste and commercial spent fuel in a single repository because of cost savings. The President's decision was consistent with a February 1985 DOE report, which recommended that defense waste be commingled with commercial waste because building a separate repository for defense waste could cost an additional \$1.5 billion. The report estimated that defense waste could be expected to require about 10 percent of the repository underground area. However, there could be a substantial increase in the amount of defense waste if DOE decides to dispose of defense waste currently stored at Hanford in single-shelled tanks.

Since the President's decision, officials in DOE's Office of Defense Programs and OCRWM negotiated a proposed internal fee recommendation agreement on defense waste that would establish the federal government's obligation for funding its share of the cost associated with the disposal of defense waste. According to these officials, the proposed agreement establishes a fee comparable to the fee paid by the commercial sector (utilities) and procedures for determining DOE's one-time fee for defense waste generated prior to fiscal year 1987. (Chapter 4 provides information on DOE's development of the cost allocation agreement.)

Project Decision Schedule Finalized

NWPA requires the Secretary of Energy to prepare, in cooperation with affected federal agencies, a project decision schedule that portrays the optimum way to attain the operation of a repository. NWPA also requires that the schedule include a description of nuclear waste management program objectives and a sequence of deadlines for all federal agencies involved. This schedule is to identify activities that, if delayed, would cause a delay in beginning repository operations by DOE's target January 1998 date. Any federal agency that determines that it cannot comply with project decision schedule deadlines, or fails to do so, must explain the reasons in writing to the Secretary of Energy and the Congress. The Secretary of Energy must report the matter and DOE's response to the Congress within 30 days after receiving the federal agency's written submission.

DOE issued its Project Decision Schedule in March 1986, which was developed in cooperation with the Departments of Agriculture, Defense, Interior, Justice, and Transportation as well as the Council on Environmental Quality, EPA, and NRC. According to OCRWM officials, DOE had planned to issue the schedule in November 1985 but postponed it.

because many near-term document issue dates—such as the final EAS and the draft and final plans that describe DOE's second repository siting investigations—were uncertain. DOE believed that the schedule should be as accurate as possible and include major program milestones when issued.

A draft Project Decision Schedule was issued in January 1985, and a second draft schedule was issued in July 1985. Both drafts were distributed to all affected federal agencies for review and comment. The final schedule contains reference schedules for siting, construction, licensing, and operation of the radioactive waste management system and the key activities and decision points in meeting these schedules. The schedule also includes deadlines for the first repository, second repository, MRS, and transportation programs. DOE plans to modify the schedule on an annual basis, if needed, or at any time a significant change occurs in the nuclear waste management program.

MRS Proposal Completed but Not Submitted

NWPA requires DOE to complete a detailed study of the need for and feasibility of one or more MRS facilities on or before June 1, 1985. DOE was also required to submit by that date a proposal for construction of one or more of these facilities to the Congress for its approval. NWPA specified that the proposal include site-specific designs, alternative concepts, and a program plan for (1) siting, developing, constructing, and operating an MRS facility, (2) funding the construction and operation of such facilities, and (3) integrating such facilities into the federal waste management system. In addition to these requirements, NWPA also requires that DOE submit with the proposal an EA that includes a full analysis of the advantages and disadvantages of five alternative combinations of proposed sites and designs.

In April 1985, OCRWM issued a report which concluded that DOE's preferred option was an integral MRS facility that would (1) be centrally located to existing spent-fuel inventories, (2) permit spent-fuel consolidation and packaging at the facility, and (3) provide a buffer between waste acceptance and waste disposal. At that time, DOE also identified three sites that it considered the most favorable for developing site-specific designs for the MRS proposal:

- the canceled Clinch River Breeder Reactor Project site, located in the Roane County portion of Oak Ridge, Tennessee,
- a site on DOE's Oak Ridge Reservation, located in Oak Ridge, Tennessee, and

- the site of the Tennessee Valley Authority's canceled Hartsville nuclear power plant near the Hartsville, Tennessee, community.

As a result of its study, DOE selected the Clinch River Breeder Reactor Project site as the preferred site

Although DOE completed its preliminary MRS analysis in April 1985, it delayed submitting the MRS proposal by June 1, 1985, as required by NWPA because it needed additional time to support consideration of an MRS facility as an essential, integral component of the waste management system. However, on June 1, 1985, DOE issued a status report to the Congress on the MRS program and stated that it would submit the MRS proposal to the Congress by January 15, 1986. DOE estimated that it would take approximately 10 years to have an operational MRS facility.

According to DOE officials, the MRS proposal was not submitted by January 15, 1986, in part, because DOE needed additional time to revise draft versions of the MRS proposal, a program plan, and a draft environmental assessment. Although it completed the proposal in February 1986, DOE had not submitted it to the Congress because the U.S. District Court in Nashville, Tennessee, enjoined DOE from formally submitting the MRS proposal to the Congress. The court ruled that in developing the MRS proposal, DOE had not properly consulted with Tennessee as required by NWPA. DOE appealed this decision and on November 25, 1986, a three-judge panel of an appeals court ruled against Tennessee's petition to halt submission of the MRS proposal to the Congress. However, Tennessee had requested and received on January 7, 1987, a 30-day stay prohibiting DOE from submitting the MRS proposal. During this 30-day period, Tennessee plans to ask to have the suit heard before the Supreme Court. (See ch. 4 for more detailed information on the status of DOE's MRS proposal.)

Consultation and Cooperation Agreements With States and Affected Indian Tribes Have Not Been Reached

NWPA requires DOE to formally negotiate consultation and cooperation agreements with states and Indian tribes that have repository sites selected for site characterization studies. States and Indian tribes can request such agreements before sites are formally selected for site characterization studies, if they so desire.

DOE is required to begin negotiations on consultation and cooperation agreements within 60 days after (1) a candidate site has been approved for characterization by the President, May 28, 1986, or (2) receipt of a written request by a state or affected Indian tribe. Currently, there are

three states (Nevada, Texas, and Washington) and three Indian tribes (Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Tribe, and the Yakima Indian Nation) that DOE must seek to enter into a binding written agreement with and begin consultation and cooperation negotiations

Formal negotiations for consultation and cooperation agreements were initiated in July 1983 in response to requests by the state of Washington and the Yakima Indian Nation and in July 1985 in response to a request from the Umatilla Indians. Negotiations continued between DOE and the state of Washington, however, negotiations with the Yakimas were postponed at the request of a Yakima Indian Nation representative, pending completion of an agreement between DOE and Washington. Negotiations with the Umatilla Indians were suspended by the tribe until May 1986.

In fiscal year 1985 OCRWM and Richland project office officials and tribal representatives held three negotiation sessions. However, after 1985, no further negotiation sessions were held and formal discussions between OCRWM and the state of Washington about a consultation and cooperation agreement were suspended. Negotiations had been suspended for over a year because of the question of liability for potential accidents at a future repository and Washington's concerns about defense waste that exist at the Hanford site and other issues. The state would like the federal government to assume unlimited liability, while liability is limited by the Price-Anderson Act.²

The state of Washington also believes that the defense waste stored at Hanford is within the scope of the agreement and that the state is entitled to grant funds as part of site characterization activities because of the proximity of the defense waste to the potential repository site. Other states have held back from serious negotiations awaiting the results of the Washington negotiations. On July 25, 1986, DOE advised the states and Indian tribes that it was ready to resume negotiations on a consultation and cooperation agreement.

²See our report, The Nuclear Waste Policy Act 1984 Implementation Status, Progress, and Problems (GAO RCED-85-100, Sept. 30, 1985) for a more detailed discussion on the Price-Anderson Act and the issue of liability for potential nuclear waste accidents.

Other DOE Program Initiatives

During fiscal year 1985 DOE completed several other activities related to its research and development, waste management system planning, and public outreach efforts. Specifically, DOE further developed its rod consolidation demonstration projects as part of its research and development activities and its efforts to improve program performance by issuing documents that outlined waste management planning activities. Also, during this period DOE took action to improve its public outreach and participation activities, and it provided financial assistance to states and tribes to facilitate public participation

Rod Consolidation Demonstration Projects

NWPA assigns DOE the responsibility of developing a national system of nuclear high-level waste disposal. However, until the disposal system begins to operate, utilities are responsible for spent nuclear fuel storage. To accommodate the growing inventory of spent fuel prior to system operation, many utilities must increase their storage capacity or face the possibility of shutting down their nuclear electric plants.

To alleviate this problem, NWPA directs DOE to establish a demonstration program, in cooperation with the private sector, to encourage the development of technology for spent nuclear fuel rod consolidation in existing reactor water storage pools. The purpose of this demonstration program is to collect data to help utilities obtain NRC approval of various rod consolidation technologies that NRC can license for use at the sites of reactors without the need for additional site-specific approvals.

According to DOE, rod consolidation represents a potentially cost-effective method for significantly increasing the capacity of utilities' spent fuel storage pools and for reducing the cost of adding storage facilities on-site at reactor locations. The rod consolidation procedure involves the dismantling of a nuclear fuel assembly, separating the fuel rods from their associated hardware components, and rearranging the spent-fuel rods into a more compact array. DOE believes that the consolidation of spent-fuel assemblies has the potential of providing significant cost savings in transportation and emplacement in a nuclear waste repository.

In 1983 government-owned rod consolidation equipment was modified to handle spent fuel for use in a cooperative demonstration program with TVA. This demonstration of the disassembly and consolidation of 12 spent-fuel assemblies is now indefinitely postponed because of operational problems at TVA's Browns Ferry reactor site.

In May 1984 OCRWM issued a solicitation for a cooperative agreement proposal for licensed spent-fuel rod consolidation demonstrations. One proposal was received, and negotiation of a contract was initiated, however, according to DOE the actual schedule for this project will depend on the negotiated scope of the cooperative demonstration.

OCRWM has established an engineering development program to develop and demonstrate equipment for consolidating spent fuel in a dry, hot-cell environment for use at a repository or MRS facility. Specifically, in December 1985 DOE issued a request for proposals for a prototype rod consolidation demonstration. According to DOE officials, a four-phase project is envisioned that will begin with a preliminary design competition and lead to a demonstration of at least one dry rod consolidation system in a dry environment by the summer of 1989. Phase I of the project is for preliminary designs, phase II is for final designs, phase III is for fabrication of equipment and testing, and phase IV is for an actual spent-fuel rod consolidation demonstration.

In June 1986 OCRWM announced that negotiations will proceed with five competitively selected contractors for the award of multiphase contracts to develop prototype equipment to consolidate spent nuclear fuel assemblies from commercial reactors. DOE expects that negotiations with the contractors will result in up to five phase I awards to develop preliminary designs. In each phase the number of contractors will be reduced until DOE selects only one contractor for the final phase of the demonstration. DOE awarded five contracts for phase I in August 1986. Beyond that, the pace of the project will be driven by the goal of conducting a demonstration by June 1989.

Waste Management System Integration

During 1985 DOE made progress in several activities related to integrating or planning the overall nuclear waste management system. According to DOE, significant accomplishments for the period included the documentation of a formal systems engineering process within OCRWM and progress on the development of technical, cost, and schedule baselines needed to administer the nuclear waste management program.

According to DOE it is the role of systems engineering to integrate the packaging, handling, storage, transportation, and disposal functions into a waste management system, which maximizes the efficiency and flexibility of operations. During 1985 OCRWM completed a final draft of its Systems Engineering Management Plan. The plan establishes steps for the technical process of defining and optimizing the waste management

system, the management procedures to control development, and documentation to support the decision process

During 1985 DOE completed a draft of its System Requirements and Description document. The final document issued in January 1986 defines the requirements for the waste management system and describes the baseline systems that will satisfy those requirements. DOE is using this document to organize and control the technical development of the total waste management system. Also during 1985 DOE completed a draft systems analysis plan to identify system studies currently required to support waste management system integration decisions.

Public Outreach and
Participation Activities

In 1985 OCRWM also made progress in several areas of its participation programs for information exchange and interaction with the general public, particularly the states, communities, and Indian tribes that are potential hosts for nuclear waste facilities.

Specifically, OCRWM implemented an external interactions tracking system that contained an automated index of correspondence and documents sent to and received from states, Indian tribes, the Congress, federal agencies, foreign governments, public interest groups, private citizens, and others. Also in 1985 OCRWM began publishing a regular bulletin that contains information on such things as waste management meetings, descriptions of program documents recently released, status of program accomplishments and activities, organizational changes, schedules for congressional testimony, program milestones, and order forms for office publications. According to DOE the bulletin is currently being mailed to about 7,000 recipients, including states, Indian tribes, members of the Congress, and other interested parties. In addition to the bulletin, OCRWM began issuing a series of other publications, including information on program initiatives, milestones, and facts on managing nuclear waste.

Financial Assistance Under
NWPA

NWPA authorizes DOE to provide grants to eligible states and affected Indian tribes to facilitate public participation such as evaluating economic, social, health, and environmental impacts of a repository. In April 1986 we reported³ on DOE's program for financial assistance and indicated that during 1985 DOE provided grants totaling \$8.4 million to the states and Indian tribes affected by the first repository, resulting in

³Department of Energy's Program for Financial Assistance (GAO/RCED-86-4, Apr. 1, 1986)

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a cumulative amount of about \$14 million awarded since enactment of NWPA on January 7, 1983. Second repository states received a total of about \$2.2 million in grants during 1985, for a cumulative amount of about \$5.25 million for 3 years. The state of Tennessee was provided a grant of \$1.4 million in 1985 to assist it and local governments in evaluating the MRS proposal. In addition, a grant of \$211,000 was made to the National Congress of American Indians during 1985 to provide coordination assistance for all affected Indian tribes, and a grant of \$222,000 was awarded to the National Conference of State Legislatures, resulting in a cumulative amount of \$856,000 for these two organizations since the enactment of NWPA. (See appendix IV for more detailed information on DOE grant funds obligated under NWPA through fiscal year 1985.)

Overview of DOE's Efforts to Locate Potentially Acceptable Sites for the Second Nuclear Waste Repository

In fiscal year 1985 through May 1986, DOE was heavily involved in planning site-specific work to locate potentially acceptable areas for a second nuclear waste repository. During fiscal year 1985, DOE made major accomplishments for the second repository by completing two key program documents and a draft report that identified potential repository sites. As of May 28, 1986, DOE indefinitely postponed its site-specific work for the second repository and refocused on conducting more broad-based technical studies that would not result in identifying potential repository locations. Among the reasons that DOE cited as the basis for the postponement was the continuing progress in siting of the first repository. This chapter presents an overview of DOE's second repository activities by highlighting program accomplishments during fiscal year 1985 and discussing several issues raised by states, Indian tribes, and others. In reviewing second repository activities, we did not assess the appropriateness of DOE's procedures and technical decisions concerning the selection of potentially acceptable sites.

Second Repository Site-Selection Criteria

Although NWPA does not authorize DOE to finance the construction of a second nuclear waste repository, it does require DOE to carry out the siting and development activities for preparing such a facility. Before constructing a second repository, DOE must obtain congressional authorization. NWPA requires the Secretary of Energy to recommend to the President by July 1, 1989, three sites for characterization for the second repository. DOE may consider for the second repository sites identified as potentially acceptable for the first repository but not nominated. These sites are Cypress Creek in Mississippi, Lavender Canyon in Utah, Vacherie Dome in Louisiana, and Swisher County in Texas. DOE may also consider for the second repository two of the three sites characterized for the first repository but not chosen. In addition, DOE can consider sites found potentially acceptable from other rock formations for the second repository not studied during the first repository site-selection process. (The site-selection process for the second repository is discussed in detail in another section of this chapter.)

Major Activities for the Second Repository Program During Fiscal Year 1985

During fiscal year 1985 DOE spent about \$22.3 million¹ to conduct second repository program activities. Major activities for the second repository program included issuing two reports and drafting an area recommendation report to document the results of DOE's screening of three eastern regions for potential repository sites. The reports issued were the regional characterization reports and the region-to-area screening methodology. These reports documented DOE's efforts to identify potential crystalline rock sites for the second repository. Crystalline rocks are intrusive (rock forced into another rock bed) igneous and high-grade metamorphic rocks whose crystals are easily visible with the unaided eye. These rocks include granite and other similar rocks. According to DOE, crystalline rocks have good potential for isolating radioactive waste principally because of their mechanical strength, low porosity and permeability, and low moisture content.

The regional characterization reports compiled public literature on the geologic, environmental, and socioeconomic conditions of the three regions. The screening methodology document described how DOE's region-to-area screening would be conducted. During 1985 DOE also continued significant interactions with states that were potentially affected by second repository siting decisions. These interactions included meetings, briefings, workshops, and training sessions on the development of DOE's site-screening process.

On January 16, 1986, DOE issued a draft area recommendation report to provide the results of its region-to-area screening of 235 rock formations in 17 states. The report identified 20 candidate areas in 7 states, of which 12 were selected as proposed potentially acceptable sites. During the 90-day comment period DOE received over 60,000 comments from states, Indian tribes, and others on the draft report. Following the comment period, which included public briefings and formal hearings on the draft report, DOE had planned to issue a final area recommendation report that would identify candidate sites for further field investigation. However, as discussed in the following section, in May 1986 DOE postponed site-specific work for the second repository.

As of July 30, 1986, DOE was implementing a tracking system to catalog and maintain the comments and public hearing transcripts received during the public comment period. DOE does not plan to perform any

¹DOE's program management costs for staff salaries, benefits, contractual services, and travel are not included in this figure. For fiscal year 1985, these costs totaled about \$1.6 million.

analyses or prepare responses to the comments; however, comments will be retained for use in future second repository siting activities

Site-Specific Work for Second Repository Postponed Indefinitely

According to the Secretary of Energy, DOE postponed site-specific work for the second repository because it had made progress in siting the first repository, and it was uncertain of when a second repository might be needed. Also, DOE believed that because projections showed that the volume of spent fuel was growing more slowly than anticipated at the time NWPA was passed, the first repository which NWPA permits to hold up to 70,000 metric tons of waste would be adequate to dispose of nuclear waste in the foreseeable future. Also, DOE postponed site-specific work on the basis of questions raised by states and others on the need to spend between \$600 and \$900 million on the second repository program before it was determined when and if a second repository would be needed. Our July 1986 fact sheet on the second repository provides more detailed information on DOE's decision to postpone site-specific work.²

DOE also attributed the prospective approval of an MRS facility by the Congress as a factor in the decision to postpone site-specific work. According to DOE, from the standpoint of operational efficiency and reliability, either an MRS facility or a second repository, at least for the first several years, would produce about the same benefit to the waste management system. Either an MRS facility or the second repository could add more flexibility to the waste management system by being able to accept waste if problems arise with the first repository.

Despite DOE's rationale for postponing site-specific work, several states questioned the legality of DOE's decision because NWPA requires DOE to conduct siting work for a second repository and to recommend to the President three sites for characterization by July 1, 1989. In September 1986 we issued a legal opinion on DOE's decision to postpone site-specific activities.³ Although DOE has not failed to meet any of the statutory deadlines for the second repository, its decision to postpone site-specific work makes it highly unlikely that DOE will be able to support a recommendation for potential second repository sites by 1989, and DOE had not planned to recommend second repository sites until October 1991.

²Issues Concerning DOE's Postponement of Second Repository Siting Activities (GAO/RCED-86-200FS, July 30, 1986)

³Letter to the Chairman, Subcommittee on Energy Conservation and Power, Committee on Energy and Commerce, House of Representatives (B-223315, B-223370, Sept. 12, 1986)

Although site-specific work was postponed, DOE intends to continue studies for a second repository as required by NWPA; however, these studies will focus on technical issues and alternate siting strategies. They will not be directed towards identifying potential repository sites. DOE officials said they expect the site-selection process for a second repository to restart in the 1990's, making use of data collected to date and generated by the continuing technical studies.

OCRWM's Crystalline Repository Project

Thus far DOE's second repository efforts have focused primarily on the study of crystalline rock formations in the eastern part of the United States. OCRWM's Crystalline Repository Project (CRP) was conducted by DOE's Chicago Operations Office in Argonne, Illinois, and was conducting the investigation for potential second repository sites located in crystalline rock formations.

DOE management plans for the CRP included support by four major prime contractors: a management contractor, an architect/engineer, a construction manager, and an operating contractor. Only the management contractor is in place at this time. DOE contracted with Battelle Memorial Institute to be the management contractor for the CRP. Under DOE's direction, Battelle is responsible for performing all crystalline rock research and development activities and for performing site screening and characterization to help DOE determine the suitability of candidate sites as potential repository hosts, as well as for managing, coordinating, integrating, and overseeing the project. In addition to Battelle, the CRP receives support from DOE's laboratories, other federal agencies, and other contractors.

CRP's Crystalline Rock Site-Screening Process

Prior to DOE's decision to postpone site-specific work, the entire process for development, including the siting, of a repository in crystalline rock was projected to span about 25 years. DOE, as previously noted, had been in the initial site-screening phase and had completed several activities that were conducted to locate potentially acceptable sites for the second repository.

DOE's siting guidelines direct that the screening process for determining potentially acceptable sites for the second repository and any subsequent repositories begin with site-screening activities that consider large land masses that contain suitable rock bodies with features favorable for radioactive waste containment and isolation. Within those large land

masses, subsequent site-screening activities are to focus on successively smaller and increasingly more suitable land units

According to DOE, generally, site screening may consist of up to the following four phases, each of which narrows to a land unit of smaller size (1) a survey of the nation or geologic provinces, narrowing to regions, (2) a survey of regions, narrowing to areas, (3) a survey of areas, narrowing to locations, and (4) a survey of locations, narrowing to potentially acceptable sites. DOE believes that a site-screening phase may be deleted if a preceding phase reveals smaller land units that are more suitable for further study in the subsequent phase

In the case of the CRP, DOE decided not to go through with the location phase because it believed that region-to-area screening would enable it to identify the preferred site location within each potentially acceptable area. Consequently, DOE planned to conduct area phase investigations to identify the preferred site location within each potentially acceptable area. Accordingly, the site-screening process for the CRP up to the point that DOE would have nominated and recommended a site for characterization was to consist of the above-mentioned phases 1, 2, and 4.

National Survey of Crystalline Rock

Prior to enactment of NWPA in January 1983, DOE was engaged in developing a system for the permanent isolation of high-level nuclear waste under the National Waste Terminal Storage Program. As part of the program, DOE contracted with Battelle to conduct a survey of the nation's crystalline rock formations as potential hosts for a geologic repository.

In December 1979 Dames and Moore under a subcontract with Battelle released a draft report on a nationwide study of crystalline rock, which identified eight regions in the conterminous United States containing sufficient crystalline intrusive rocks considered to be favorable for developing a repository. The report concluded that the following eastern regions were potentially more favorable for further repository siting considerations: the Lake Superior, Southern Appalachians, and the Northern Appalachian/Adirondacks regions. Specifically, the draft report stated that the Lake Superior region was considered the most favorable region in which to conduct future crystalline rock site-selection studies. After the draft was issued, DOE did not issue a final version.

According to DOE the national survey was primarily geologic in nature and conducted solely from a review of existing literature such as maps

of faults, earthquake epicenters, land use, recent volcanic activity, locations of potential host rock formations, geohydrologic conditions, and other information as available. The survey addressed geologic criteria that DOE deemed feasible to consider on a national scale because of comparability and availability. For the survey DOE did not consider nongeologic factors such as socioeconomic, demographic, engineering, or environmental concerns. DOE planned to take nongeologic factors into account during subsequent studies of potentially acceptable sites.

After NWPA was passed in January 1983, DOE renewed its efforts to complete the national survey of crystalline rock. In April 1983 DOE issued its final report on the national survey, which included data from the 1979 draft report. According to DOE the final national survey report used a different screening process and was responsive to and included resolutions of pertinent issues and substantive comments raised through state reviews of the 1979 draft. Also, according to DOE the national survey was limited to crystalline rock masses that were largely exposed because considerably more information existed on exposed crystalline rocks and they could be mapped, studied, and sampled directly to determine and evaluate factors that relate to site repository suitability.

The final national survey report narrowed down the number of potential host crystalline rock regions to the same eastern regions previously identified in the 1979 draft report as the most favorable for repository siting considerations. The final report also concluded, however, that there was a reasonable likelihood that geologically suitable repository sites exist in each of the major crystalline rock regions in the conterminous United States, and perhaps also in smaller scattered occurrences outside those regions.

The final report also concluded that the three identified regions, which are based for the most part in the eastern part of the United States, could be explored more effectively and suitable sites probably could be found, characterized, verified, and licensed more readily there than in the other regions. In addition, the report stated that locating a repository in one of the three recommended regions would be in accordance with provisions of NWPA requiring DOE to consider regional distribution for the second repository since all of the potentially acceptable sites for the first repository were west of the Mississippi river except for the Richton and Cypress Creek salt domes, which were east of the Mississippi river.

**Crystalline Rock Regional
 Characterization Reports**

In 1980 DOE began regional characterization work in the three eastern regions identified by the draft crystalline rock national survey as probably being more favorable for repository siting. The regional characterization work was to obtain and provide information to help DOE identify potentially suitable repository areas for further study. Also, the results of regional characterization work were to provide DOE with additional information that would allow the department to disqualify or defer large areas in those regions not likely to contain potentially acceptable sites.

In May 1983 DOE issued draft regional characterization reports on the North Central, Northeastern, and Southeastern regions, formerly referred to as the Lake Superior, Northern Appalachian and Adirondack, and Southern Appalachian regions, respectively, for review and comment by the 17 states and other affected parties located in the three regions identified for further study in the final national survey report. Once states' and others' review was completed, DOE considered their comments and made changes where it believed appropriate. Review of the draft characterization reports resulted in DOE preparing revised drafts, which were issued in December 1984.

In September 1985 DOE issued final regional characterization reports, two for each of three eastern regions. Table 3.1 contains a listing of the states located in the three eastern regions. The final reports identified 235 bodies of crystalline rock that were located in 17 states.

**Table 3.1: States Located in Preferred
 Crystalline Rock Regions**

North Central Region	Northeastern Region	Southeastern Region
Michigan	Connecticut	Georgia
Minnesota	Maine	Maryland
Wisconsin	Massachusetts	North Carolina
	New Hampshire	South Carolina
	New Jersey	Virginia
	New York	
	Pennsylvania	
	Rhode Island	
	Vermont	

According to DOE the final regional characterization reports documented the data base for the department's region-to-area screening and described the environmental and geologic data to be used in identifying possible candidate areas for the second repository. The reports compiled information, contained in literature, such as U.S. Geological Survey

reports, state geologic reports data, and technical journals on the geology and the environment, including each of the three regions' socio-economic conditions. These reports also contained information on disqualifying factors, relatively favorable conditions, and potentially adverse conditions, all relating to environmental and geologic considerations for siting a repository.

As a supplement to the final regional characterization reports, DOE also prepared three comment response documents (one for each region). The documents responded to state and other comments on the December 1984 revised draft regional characterization reports.

Crystalline Rock Region-To-Area Site-Screening Process

After the draft regional characterization reports were issued, DOE began work on a companion document—the region-to-area screening methodology document—to describe the methodology that it used in conformance with its siting guidelines to conduct the region-to-area site-screening process and to identify preliminary candidate areas and proposed potentially acceptable sites for a second repository in crystalline rock.

The final DOE siting guidelines, issued December 6, 1984, present the basis and provide the criteria for evaluating the suitability of sites for the development of geologic nuclear waste repositories. Accordingly, DOE's guidelines served as the source for the factors and variables used in the region-to-area screening process to identify the candidate areas and proposed potentially acceptable sites.

The guidelines set forth disqualifying and qualifying conditions as well as potentially adverse and favorable conditions that are to be considered in DOE's geologic evaluation of the favorability of land units. Qualifying conditions that DOE planned not to use in the region-to-area screening were to be applied in later screening phases when data to support them would be available.

Development of Site-Screening Methodology: From Geographic Regions to Smaller Areas

DOE developed the region-to-area screening methodology through interactions with the 17 states that would have been affected as potential locations for a repository in the three eastern regions. DOE conducted workshops to discuss and develop with state representatives the region-to-area screening methodology that would be applied to the information obtained in the regional characterization reports. This application was done to identify potentially acceptable land areas in crystalline rock for

the second repository. In DOE's viewpoint these workshops provided an opportunity for representatives from the 17 states to comment on the region-to-area screening process and to present ideas and preferences on screening factors and conditions that would be used in narrowing down the 235 crystalline rock bodies under consideration to 15 to 20.

In April 1985 DOE released its final screening methodology document describing the following site-screening process:

Step 1. Disqualifying factors screen.

The first step of the region-to-area screening process is referred to as the disqualifying factors screen. DOE planned to apply disqualifying conditions contained in its siting guidelines to eliminate from further consideration those portions of the crystalline rock land masses that contained such conditions. Although the DOE guidelines contain a total of 17 disqualifying conditions or factors, only 10 of the 17 must be applied in the initial phase of screening to determine if a site is potentially acceptable. The remainder are to be applied during the next phase of the siting process for the nomination of sites as suitable for site characterization. According to DOE, not all disqualifying conditions prescribed by the DOE siting guidelines are applicable to the region-to-area screening either because the supporting data will not be available until field data are collected in later screening phases or because existing data in the literature are not appropriate for use on a regional scale.

DOE determined that 5 of the 10 disqualifying conditions for which findings are required to identify a site as potentially acceptable indicated sufficient regional data to be applied in step 1 of the screening methodology. Accordingly, the screening methodology document lists five factors to disqualify rock bodies or portions thereof from further consideration: (1) federal-protected lands, (2) components of the National Forest lands, (3) state-protected lands, (4) highly populated areas and areas containing more than 1,000 persons per square mile, and (5) mines and quarries deeper than 330 feet.

The presence of deep mines and quarries eliminated both the surface and underground areas to be considered as repository locations. However, the remaining four conditions will disqualify only the surface area for the siting of surface facilities or use as part of a restricted area. Thus, the underground facility of a repository could still be sited in an area where any of the latter four disqualifying conditions exist.

DOE planned to use the regional characterization reports and other information in existing literature to evaluate the other five disqualifying conditions not included in step 1 but required for the identification of potentially acceptable sites. DOE anticipated that this review, undertaken as an additional step 4 in the screening process, would enable the required finding on applicable disqualifying conditions.

Step 2. Scaled regional variable screen

The second step of the region-to-area screening process is referred to as the scaled regional variables screen. DOE planned to further evaluate the land units and crystalline rock bodies that remained after step 1 was completed. DOE intended to evaluate these land units and rock bodies by using 16 regionally applicable potentially adverse and favorable geologic and environmental variables such as national and state forest, state wildlife areas, surface water bodies, seismicity and geologic faulting. DOE used a scaling process that was developed in consultation with representatives from the 17 states that were affected by the CRP to translate physical conditions for each of the 16 variables (6 geologic and 10 environmental) into a numerical value.

Once scales were established to assess the range of conditions for a single variable, DOE planned to use a weighting process to prepare favorability maps that geographically depicted the 235 crystalline rock bodies under consideration. According to DOE, the weighting process would result in an evaluation of the relative importance of all of the screening variables in comparison with each other. DOE developed two sets of weights to evaluate differences of technical opinions on the importance of individual regional screening variables. One set was developed by DOE's CRP staff while the other set was developed by the states' representatives.

Step 3. Sensitivity analysis screen

The third step of the region-to-area screening process is referred to as sensitivity analysis. DOE planned to conduct a sensitivity analysis on the results of the step 2 process. DOE planned this step to analyze differences in varying technical opinions on how to identify the crystalline rock bodies most suitable for repository consideration. DOE identified several types of sensitivity analysis that could be performed. For example, DOE would selectively modify the scales for 3 of the 16 screening variables used in step 2—the 3 scales that the CRP staff and the representatives from the states did not fully agree on during the workshops that were

held when the scales were developed. Once the scales were modified for the variables, DOE would compare the results of this analysis with the results from step 2.

Selecting Candidate Areas

DOE planned that the results of steps 1 through 3 in the region-to-area screening process would serve as the basis for selecting candidate crystalline rock areas. Specifically, before identifying candidate areas, DOE planned to review

- the results of the three-step region-to-area screening methodology described in the previous section to ensure accuracy and technical defensibility,
- qualitative literature on the geology of the identified candidate areas to help assure that there is reasonable expectation, within the constraints of a regional study, that the candidate areas warrant further examination, and
- the region-to-area screening to ensure that it conforms with the relevant provisions in the siting guidelines on selecting candidate areas for further investigation.

Implementation of the Site-Screening Methodology and Identification of Proposed Potentially Acceptable Sites

DOE's draft area recommendation report for the CRP, originally scheduled for issuance in November 1985, was issued January 16, 1986, for public comment. The draft report described DOE's implementation of the crystalline rock site-screening process outlined in the region-to-area screening methodology document and identified 20 candidate crystalline rock areas that were selected from 235 rock bodies as being suitable for further study in the area survey phase.

According to the draft area recommendation report, after DOE eliminated crystalline rock areas by applying the 10 disqualifying conditions and the 16 geologic and environmental screening variables, 22 crystalline rock areas were identified as the most suitable for a repository.

On the basis of DOE policy not to select a site that would require field work on Canadian soil, the Department deferred one area near the Canadian-Maine border. Two other areas, about 1 mile apart in Wisconsin, were combined into 1 large area, leaving a total of 20 candidate areas.

DOE analyzed each of the 20 candidate areas through sensitivity analysis to verify the quality of their selection and used an additional fourth step

in the screening process to determine if each of the 20 areas was a potentially acceptable site

In determining site suitability, DOE applied 10 disqualifying conditions and assessed whether the available evidence supported a finding that a site is disqualified

DOE determined that all 20 areas warranted further investigation in the area phase and that all 20 were suitable for identification as potentially acceptable sites. According to DOE, based on steps 1 through 3 of the region-to-area screening process and consideration of certain favorable geologic characteristics analyzed in step 4, 12 areas in 7 states⁴ were selected as proposed potentially acceptable sites for field work activities. DOE planned to reserve the remaining eight candidate areas for use if needed to meet program requirements.

According to DOE the other eight candidate areas in four states (Georgia, Minnesota, Virginia, and Wisconsin) met the requirements for identification as potentially acceptable sites. Prior to DOE's decision to postpone site-specific work on the second repository, these eight sites were to retain their designation as candidate areas, and DOE could formally identify any or all as potentially acceptable sites if one or more of the 12 proposed potentially acceptable sites proves unsuitable before the area recommendation report is finalized or during the area survey phase.

After the draft area recommendation report was released, DOE formally allowed 90 days for public comment and conducted briefings to inform state and Indian tribe officials and the general public about the contents of the draft report. Also, during the comment period DOE conducted formal briefings and hearings in 15 of the 17 states involved in the CRP to receive oral and written comments regarding the draft report and DOE's proposed decision on the location of potentially acceptable sites.

As discussed in the following section, various issues and problems were identified at these briefings and hearings. Following coordination of the comments DOE received on the draft report, it planned to issue the final area recommendation report in November 1986 and continue on with the area phase of the site-screening process. However, because DOE postponed site-specific work for the second repository, the area recommendation report will not be finalized for release as planned. Moreover, at

⁴Issues Concerning DOE's Postponement of Second Repository Siting Activities (GAO/RCED-86-200FS, July 30, 1986)

the time of the postponement the Secretary of Energy announced that the 20 sites that were identified in the draft report were no longer under active consideration and that if site-specific work for a second repository was reinstated, it was expected to begin from square one

Concerns Regarding DOE's Selection of Proposed Potentially Acceptable Sites

Overall, the written comments we reviewed and oral testimony presented by state and Indian tribe representatives during congressional hearings on the second repository were not favorable regarding DOE's draft area recommendation report. Generally, states and tribes had site-specific concerns regarding the selection of potentially acceptable sites in their locality. However, they had several common questions and concerns regarding the need for a second repository, the siting methodology, the 90-day comment period, Indian tribe participation in siting decisions, and financial assistance to Indian tribes.

While we did not evaluate the 60,000 comments DOE received on the draft report, the Director, OCRWM told us that their large number and negative nature had an impact on the postponement decision. The director was greatly surprised at the number and critical nature of the comments especially because he was sure that DOE's Chicago Operations Office had run a very strong interrelations program throughout the crystalline rock site-screening process. The director emphasized, however, that the main reasons for the postponement decision were

- a decline in the estimated quantities of spent fuel to be generated by nuclear power plants,
- an increased confidence in the technical suitability of the candidate first repository sites,
- questions about the need to spend an estimated \$600 million to \$800 million to determine candidate second repository sites before determining when and if such a repository is needed, and
- OCRWM's growing expectation that an MRS system would be authorized by the Congress

In addition to site-specific concerns resulting from the selection of potentially acceptable sites and candidate areas for the second repository, states and Indian tribes raised several other issues regarding the draft area recommendation report. For example,

- States questioned the need for a second repository because recent projections by DOE of anticipated spent fuel inventory were declining. According to Minnesota these projections indicated that if no new

nuclear reactors were ordered, about 75,000 metric tons of spent fuel would require disposal by the year 2020 instead of the 98,000 metric tons originally estimated

- States were concerned about the quality of the national survey of crystalline rock. For example, Minnesota concluded that the process by which DOE selected 17 states in the 3 regions was inadequate. Minnesota attributed this inadequacy to, among other things, an illogical screening process that resulted in the eastern regions appearing more favorable and an inferior technical effort put forth in the collection of geologic information.
- States had problems with the draft area recommendation report because DOE decided to eliminate the location phase of the siting process. Wisconsin pointed out that DOE did not follow the general description of site screening given in the siting guidelines. Wisconsin also believed that the eight candidate areas should have been removed from consideration because their selection was not justified by either NWPAs or the siting guidelines. Moreover, the state commented that the 12 potentially acceptable sites and the additional sites from the first repository program should have been adequate for second repository siting work to proceed.
- States and Indian tribes expressed the need for more than 90 days to comment on the draft area recommendation report. Although DOE informally extended the comment period by about 30 days and accepted comments after that period expired, several states believed that the quality of the comments DOE would receive on the draft would be better if more time were allowed and passed a resolution calling on DOE to provide a year for review of the draft. Moreover, after the draft report was issued, Maine and New Hampshire filed lawsuits, which were later consolidated to set aside DOE's decision to limit the comment period to 90 days. On May 5, 1986, a U.S. Court of Appeals dismissed the suit and consequently upheld DOE's 90-day comment period.
- Indian tribes expressed concern that the financial assistance they received from DOE was inadequate to provide meaningful feedback on the draft area recommendation report. In our April 1, 1986, report on DOE's program for financial assistance, we pointed out that DOE had not applied the same rationale in considering grants to states and tribes in the second repository program. We also indicated that DOE's approach to limiting the activities for which tribes could receive assistance would not provide them with an opportunity to participate in all aspects of the second repository program.

Impact of Decision to Postpone Site-Specific Work on the Second Repository Program

As of June 30, 1986, DOE was analyzing the budgetary and program impact of its decision to indefinitely postpone site-specific work for the second repository. According to the Director, OCRWM, although site-specific work has been discontinued, the second repository program was not terminated. DOE plans to continue an effort on the order of about \$23 million during fiscal year 1987 to examine various geologic media other than crystalline rock and maintain cooperative efforts with Canada and others to obtain technical data.

DOE believes that the mid-1990's would be the earliest that it would decide on when site-specific investigation should proceed toward selection of a second repository. According to the Secretary of Energy, this decision would be dependent on the projected quantities of waste that will require disposal and the start-up date and waste acceptance rate of the first repository. Currently, DOE projects that the 70,000 metric ton limit imposed by NWPA will provide disposal capacity until the year 2020 based on a 1998 start-up and waste acceptance schedule of 3,000 metric tons per year for the first repository.

If DOE decides to move forward with the second repository in the 1990's, the site-screening process will start anew. The 12 areas of crystalline rock proposed in the draft area recommendation report as potentially acceptable sites and 8 areas as candidate sites would have no different status than any other possible sites throughout the country. Depending on the scope of the screening activities at the time site-specific work is restarted, DOE currently estimates that it would take 5 to 10 years to identify three second repository sites for site characterization and about 15 more years to design, license, and build the repository.

DOE plans to place before the Congress its position regarding the second repository in an amendment to the Mission Plan. In commenting on DOE's responsibilities under NWPA to recommend three second repository sites for characterization by July 1, 1989, DOE's Assistant General Counsel for Environment told us in an August 11, 1986, letter that amending the Mission Plan would assist the Congress "in taking whatever future legislative action on this subject that the Congress may consider appropriate." The Director, OCRWM told us that he believes an amendment to the act is unnecessary because the Congress will have the opportunity to reverse the postponement decision during its review of the fiscal year 1987 budget.

Problems With Meeting NWPA Requirements

In fiscal year 1985 DOE experienced delays and encountered problems completing several activities to comply with NWPA requirements. In addition to delays and problems with completing specific program activities, affected states and Indian tribes voiced concerns regarding DOE's implementation of its consultation and cooperation provisions under NWPA. As a result of these concerns and other concerns related to DOE's implementation of NWPA, states and other affected parties have initiated many legal challenges to the program. Through September 1986, states and other groups had filed about 23 lawsuits that were still pending against DOE concerning its implementation of NWPA.

DOE planned to issue final EAS and submit the MRS proposal to the Congress in fiscal year 1985. However, EAS were delayed and not issued until May 1986 because DOE needed additional time to respond to extensive comments on the draft EAS and to revise its site-selection methodology. The MRS proposal was withheld because of a court order prohibiting DOE from submitting the proposal. Also, according to OCRWM officials during 1985, DOE did not complete a proposed cost allocation agreement for defense waste disposal because of problems obtaining regulatory clearance from OMB.

According to DOE, completing the EAS and submitting the MRS proposal are important milestones in OCRWM's schedule to develop an integrated waste management system and ultimately begin repository operations by January 31, 1998. Utilities view DOE's completion of arrangements for defense waste disposal as a key activity because they want to ensure that the federal government through DOE pays its fair share of the program's cost to dispose of defense waste with commercial spent fuel. Moreover, affected states and tribes as potential hosts for a repository or MRS facility consider DOE's cooperation and consultation practices a major NWPA activity because it allows them a vehicle to participate and provide feedback on potential siting decisions. This chapter provides information on problems DOE encountered during fiscal year 1985 in issuing final EAS and in not submitting the MRS proposal. This chapter also discusses areas of concern regarding DOE's (1) development of a cost allocation agreement for the disposal of defense waste and (2) implementation of the consultation and cooperation provisions under NWPA for other program activities.

DOE Had to Resolve Concerns With Draft Environmental Assessments Before Making Recommendation of Candidate Sites

On May 28, 1986, DOE issued final EAS on five sites that were nominated for the first repository. In addition to nominating the five sites, DOE recommended and the President approved three of the five sites for site characterization. DOE's recommendation of first repository sites occurred about 17 months after the date specified in NWPA.

In our second annual report on DOE's progress in implementing NWPA, we pointed out that DOE could be faced with starting the selection process over again if more than one suitable site was not found after detailed testing. We also identified alternatives to siting the repository in case a suitable site was not found and recommended that the Secretary of Energy prepare contingency plans identifying which site or sites would be considered as backup site(s) to the three recommended for testing, and how and under what circumstances that site or sites would be tested. However, DOE believed that its approach would enable it to find a site without developing contingency plans.

The final EAS accompanying the site recommendation provided, among other things, a ranking of potential sites for the first repository. Because of the delay in issuing the required assessments, final site selection for the first repository had to be rescheduled and was planned for 1991, 4 years after the date set in NWPA. According to OCRWM officials, final EAS were delayed because of the number and complexity of comments received on draft EAS, which were issued in December 1984. During fiscal year 1985 DOE opted to further delay issuing the final EAS until it addressed comments made by states and others that criticized two of the three methodologies the department used in the draft assessments to rank the first repository sites.

DOE Delayed Final EAs to Respond to Numerous Public Comments

During a 90-day comment period on the draft EAS that ended March 20, 1985, about 2,600 interested parties submitted over 21,000 written comments to DOE on the draft assessments. DOE received comments from the six affected states, Indian tribes, federal agencies, and many other interested parties. Comments on the draft EAS also were in the form of statements presented at 19 public hearings conducted in February and March 1985. According to DOE the subject matter of the comments fell into several different areas, such as repository design, environment, socioeconomics, and transportation. Also, the comments addressed the cost of siting, constructing, operating, and closing a repository.

Many commenters said that the 90-day public comment period did not permit a thorough review of the lengthy and technical draft EAS, especially since the beginning of the comment period coincided with year-end holidays. According to DOE, it issued the draft EAS for public comment in the interest of expanding public participation in the site-selection process. The issuance of draft EAS was not required by NWPA, and it entailed delaying DOE's schedule for recommending sites for characterization. DOE opted to accept the program delay and informally extended the 90-day comment cut-off date. OCRWM received what it determined to be significant comments through the end of June 1985 and planned to consider and respond to each comment. The disposition of each comment received was addressed in a separate comment response document for each potential site.

DOE had planned to issue final assessments for each of the five nominated sites in August 1985, but rescheduled the milestone date to December 1985 because the number and complexity of the comments received delayed their release. According to OCRWM officials, environmental assessments for the other four sites will not be completed. DOE did not issue the final assessments in December 1985 because of states', Indian tribes', and the National Academy of Sciences' (NAS') concerns about the site-selection methodology. The following section provides more information on DOE's delay in issuing final assessments.

Decision-Aiding Methodology for Selection of First Repository Sites Revised and Independently Reviewed

Many of the comments DOE received on the draft EAS criticized the site-selection procedures DOE used to rank the first repository candidate sites. Of particular note, NAS' Board on Radioactive Waste Management commented in April 1985 that the analysis in chapter 7 of the draft assessments—the chapter that evaluated each site against each criterion established in the siting guidelines and ranked all sites using three different decision-making methodologies—was unsatisfactory, inadequate, and not state-of-the-art. Other comments requested that the methodologies be independently reviewed. In response to NAS' criticism and similar comments from states and other parties, DOE further delayed issuance of the assessments to revise the ranking methodology and selected a decision-aiding methodology that NAS said was a more valid means of comparing sites.

On August 29, 1985, at the request of the governor of Washington and in response to other comments calling for an independent review of the methodology to be used in the assessments, the Director of OCRWM formally requested NAS to independently review the revised methodology to

“assure an effective and credible document.” The NAS Board agreed, and copies of the revised methodology were sent to the Board in September.

In October 1985, NAS formally responded to DOE’s request. NAS pointed out that since site-specific data or revisions to the draft assessment were not included in the methodology document, NAS was not able to examine the specific implementation of the decision-aiding methodology developed by DOE. However, NAS also indicated that it believed DOE’s revised decision-aiding methodology could be an appropriate method by which to integrate technical, economic, environmental, socioeconomic, and health and safety issues to assist DOE in selecting sites for characterization. However, NAS cautioned DOE that it was crucial that the decision-aiding methodology be correctly applied.

After reviewing NAS’ report, in October 1985 DOE requested that NAS review the actual application of the decision-aiding methodology. In early December 1985, OCRWM officials submitted preliminary materials to the Board for its review and began meetings with NAS officials to explain the siting objectives and how achievement against these objectives would be measured. OCRWM officials discussed who would participate in the application of the methodology and how their office would compare the technical data contained in each assessment and make policy decisions. According to OCRWM officials, NAS made suggestions for content, clarity, and organization in OCRWM’s methodology, documentation, and presentation.

During the first quarter of 1986, NAS (1) reviewed how DOE applied the revised methodology to one site and (2) made cross comparisons among sites on key issues. In April 1986 NAS sent DOE a report that concluded that the decision-aiding methodology and its application were satisfactory and generally commended DOE’s efforts to objectively apply the state-of-the-art methodology. NAS pointed out that its review did not intend to address the ultimate ranking or the recommendation of specific sites because these matters went beyond the implementation of the decision-aiding methodology. NAS also pointed out several limitations in the application of the methodology, including the fact that DOE did not use independent experts in the assessment process as well as the review process; however, the report stated that there was no evidence that any bias was present in the application of the methodology.

After DOE received NAS’ comments on the suitability and application of the decision-aiding methodology, it considered provisions in the siting guidelines for diversity of geohydrologic settings and rock types in

arriving at a final order of preference. On the basis of these considerations, the Secretary of Energy determined the three sites to recommend for site characterization: Yucca Mountain, Nevada, Deaf Smith County, Texas; and Hanford, Washington.

States Had Minimal
Involvement in
Development of Revised
Decision-Aiding
Methodology

Although states and Indian tribes generally supported the NAS review, some criticized OCRWM's decision not to provide the decision-aiding methodology application to states and tribes nor to permit their participation at OCRWM's meetings with NAS officials. For example, the Yakima Indian Nation commented that it never had an adequate opportunity to review the decision-aiding methodology or its application and that DOE had a special responsibility under NWPA to consult and cooperate with states and affected Indian tribes to allow free access to all significant information. DOE believed that the public comment period on the draft EAS provided ample opportunity for comment on the decision-aiding methodology and met the objectives of NWPA's consultation and cooperation provisions.

OCRWM officials also said they received many requests to attend the meetings and could not honor one without honoring all requests. In December 1985 OCRWM told states and tribes that the meetings were intended to be working sessions; thus, the participation needed to be limited to essential working participants. OCRWM officials told us that because these were working sessions, state and tribal presence at the meetings could be distracting.

In addition to concerns about not having been able to concurrently review DOE's revised decision-aiding methodology, the State of Utah thought it was inappropriate for NAS to be the sole arbiter of the validity of judgments made by DOE in application of the methodology. According to the state, if NAS was the only body possessing expertise to analyze the application of the methodology, it might have been appropriate for DOE to grant them that exclusive opportunity. In responding to Utah's concerns, the Secretary of Energy commented that NAS is not the only body possessing the expertise to analyze the application of the methodology. However, he also indicated that NAS was clearly capable of providing a thorough review and is, to many involved and interested in the program, the most prestigious, knowledgeable, unbiased body who could undertake such a task.

In March 1986 DOE briefed first repository states and Indian tribes on the revised methodology. Although states and tribes requested additional time to formally review the revised methodology, DOE officials said that to allow additional comments on the methodology at this time could delay candidate site nomination and recommendation by 1 year. These officials said that they must strike a balance between involving the states and tribes in the program and attempting to adhere to the repository schedule mandated by NWPA. States and tribes were dissatisfied not only because of the lack of opportunity for their additional input but also because DOE had not allowed them to observe the meetings between DOE and NAS. States and tribes stated that DOE had not improved the program's credibility with this latest action.

DOE Experienced Problems in Submitting the MRS Proposal

As discussed in chapter 2, DOE did not submit its MRS proposal as it planned by January 15, 1986. According to OCRWM officials the proposal was not submitted to the Congress because DOE needed additional time to revise a draft of the proposal and other related documents. Also, DOE had been enjoined by a U.S. district court in February 1986 from submitting the proposal to the Congress. The court found that DOE had not properly consulted with the state of Tennessee in developing the proposal. DOE appealed the court's decision and on November 25, 1986, a three-judge panel of a U.S. Court of Appeals ruled in DOE's favor. Support for the MRS proposal among utilities—who would be the ultimate users of MRS—has been mixed.

DOE Needed Additional Time to Respond to Comments on Draft MRS Proposal

DOE has concluded that an MRS facility located in Tennessee would significantly improve the performance of the nuclear waste management system. On December 23, 1985, DOE issued drafts of its MRS proposal, program plan, and EA for formal comment to NRC, EPA, the state of Tennessee, and others. One of the reasons DOE did not meet its January 15, 1986, target date was it needed additional time to revise the draft MRS documents.

In the draft proposal, DOE recommended that the Congress approve the construction of an MRS facility at the canceled Clinch River Breeder Project site, located in the Roane County portion of Oak Ridge, Tennessee.¹ The proposal estimated the cost of the MRS program from congressional

¹For more specific details on the draft proposal see our fact sheets entitled Monitored Retrievable Storage of Spent Nuclear Fuel (GAO/RCED-86-104FS, May 8, 1986) and Cost of DOE's Proposed Monitored Retrievable Storage Facility (GAO/RCED-86-198FS, Aug. 15, 1986).

approval to start up to be \$970 million with annual operating expenses of \$70 million (in constant 1985 dollars). DOE has revised its estimate of including the MRS in the waste management system to range from \$1.6 to \$2.6 billion. The draft EA accompanying the proposal concluded that no significant adverse environmental impacts were expected from the siting of an MRS facility at the Clinch River site.

In its draft proposal, DOE planned to seek congressional authority to provide financial assistance to the state of Tennessee and local governments both during the period preceding MRS operations and, subsequently, during MRS operation. For example, DOE anticipated that early financial assistance would be required to begin planning for the mitigation and prevention of social and economic impacts resulting from the construction and operation of the MRS facility. DOE proposed that such payments approximate the taxes that a facility valued at \$1 billion would pay.

In response to concerns raised by the state of Tennessee and others that the MRS would diminish DOE's resolve to develop a geologic repository, DOE proposed that no waste be accepted at the MRS until NRC issues a construction license for the first repository and the Congress limits the MRS storage capacity to 15,000 metric tons.

According to DOE, the final MRS proposal, when submitted to the Congress, will contain extensive provisions on state and local involvement in the MRS program and will recommend establishing an MRS Steering Committee to provide a formal mechanism for DOE to obtain state and local input. Tentatively, this committee will be composed of DOE, state and local government, and industry officials who would provide guidance, conduct evaluations, and if necessary, recommend corrective actions. Tennessee has reservations about this part of the MRS proposal and believes that this planned committee does not provide for any specific state and local involvement but only provides a forum for discussion.

On January 21, 1986, the governor of Tennessee notified the Secretary of Energy that he opposed the MRS because (1) the MRS is unnecessary and (2) the public's perceptions and the controversy over the MRS would have a detrimental effect on industrial recruitment, economic expansion, and tourism in the Knoxville-Oak Ridge area. In addition to the governor's concerns, the Tennessee General Assembly adopted a resolution expressing its opposition to the MRS proposal.

Ongoing Litigation Delays Submission of MRS Proposal

The extent and timing of Tennessee's participation in the MRS siting process has been the subject of litigation. In August 1985, the state of Tennessee filed a complaint with a U.S. district court alleging that any DOE proposal to construct an MRS facility in Tennessee would violate NWPA because the act's cooperation and consultation provisions had not been met. Also, the state requested that the Secretary of Energy be enjoined from presenting any proposal to the Congress for an MRS facility in Tennessee until the cooperation and consultation requirements of NWPA have been fulfilled. Tennessee contends that, contrary to NWPA, DOE did not consult with the state before conducting a study of the suitability of three Tennessee locations for an MRS facility.

In October 1985 DOE asked the district court to dismiss the state's case on the grounds that the district court had no subject matter jurisdiction in the case. The district court determined in November 1985, however, that it did have jurisdiction. In February 1986, the court concluded that DOE violated NWPA by failing to consult and cooperate with the governor and legislature of the state of Tennessee in the MRS siting process. Also, the court enjoined DOE from making any proposal to the Congress that relies on siting studies developed prior to consultation and cooperation with Tennessee. DOE filed both a notice of appeal with the district court and a motion to stay the injunction pending appeal. That motion was denied.

In February 1986 DOE later appealed the district court's decision and also asked the U.S. Court of Appeals for the Sixth Circuit to dissolve the injunction or stay the injunction pending the outcome of the appeal. In March 1986 the court of appeals denied DOE's request for revisal or stay of the injunction prohibiting DOE from submitting the MRS proposal to the Congress.

On November 25, 1986, a three-judge panel from the U.S. Court of Appeals for the Sixth Circuit ruled that under NWPA the Federal Courts of Appeals have original jurisdiction over actions involving consultation and cooperation requirements applicable to MRS. The panel further held that NWPA does not require the Secretary of Energy to consult with any state before he sends the Congress his proposal for the location and construction of one or more MRS facilities. This decision overturned a February 1986 U.S. District Court ruling that DOE violated NWPA by failing to consult and cooperate with Tennessee in the MRS siting process and an injunction that prohibited DOE from submitting the MRS proposal to the Congress.

As a result of the appeals courts' decision, Tennessee filed a petition for stay or extraordinary writ of injunction on November 25, 1986. Two days later DOE responded with a motion for immediate issuance of mandate or dissolution of injunction. On December 1, 1986, Tennessee filed a motion in opposition to DOE's counter-motion.

On December 4, 1986, Tennessee filed a petition for rehearing with a suggestion that the case be reheard by the appeals courts' full 12-judge panel. The court denied this motion on December 31, 1986, and on January 5, 1987, Tennessee requested a further injunction to allow time for an appeal to the U.S. Supreme Court. The court granted a further stay on January 7 for 30 days and, if an appeal is filed, a further stay until a Supreme Court decision is reached.

Utilities Share Mixed Views on Necessity of MRS Facility

Most spent fuel is currently stored in pools at utilities' individual reactor sites. Some reactor sites are rapidly depleting their existing storage capacity. These sites must find alternative means to expand or supplement this storage to accommodate their growing spent-fuel inventories until DOE accepts it for disposal as planned beginning in 1998. Utilities' ability to expand storage capacity at reactor sites has some direct bearing on the question of need for and benefits of MRS for storage until a repository becomes available. DOE believes an MRS could curtail at-reactor storage problems but does not consider this a primary benefit of an MRS.

In November 1985 we distributed a questionnaire to chief executive officers either owning or operating 74 utilities to solicit their opinions on a proposed MRS facility. Of the 74 utilities, 54 completed our survey, 17 did not respond because they were minority owners and other companies responded for them, 2 companies did not respond but did provide letter comments, and 1 company did not reply.

In our May 1986 fact sheet on DOE's MRS proposal,² we reported that 70 percent of the utilities (all percentages are based on the 54 responses) that we contacted said that they were willing to pay a share of the costs for an MRS facility, if the facility would be covered by the current 1-mill per kilowatt fee to the nuclear waste fund. However, they were unwilling or uncertain that they would agree to pay these costs if (1) MRS requires an increase in the fee, (2) they have already incurred substantial cost for on-site storage, or (3) their spent fuel is not shipped to

²Ibid, p. 90.

an MRS. Based on responses to our questionnaire, after 1998 it would become more difficult for companies to provide storage. Three companies believed they would not be able to provide storage if a repository was delayed for a period up to 5 years or until 2003. Ten companies said they could not provide storage if a repository is delayed 5 years or more. If a repository is not available in 1998, many utilities (48 to 67 percent) expect to seek some form of financial reimbursement from DOE for continued storage of their spent fuel either through financial credit or direct payment for company services. Seventy percent of the utilities have no confidence that DOE will have a repository in operation in 1998.

Most utilities believe that, with effort, they could arrange for functions of an MRS without an MRS facility. These include, among other things, rod consolidation (81 percent), package standardization (69 percent), and transportation centralization (52 percent). Forty-four percent of the utilities indicated that they would prefer a waste management system with only a repository as opposed to both a repository and an MRS (39 percent). However, more companies (44 percent) support an MRS than oppose it (31 percent) and roughly 20 percent were neutral regarding an MRS facility.

In contrast to our survey results, the American Nuclear Energy Council, a trade association representing organizations engaged in commercial nuclear activities, passed a resolution November 19, 1985, supporting an MRS facility. In a similar action, the Edison Electric Institute, an association of electric companies, passed a resolution March 13, 1986, that supported an MRS facility. The resolution stated that construction of an MRS facility was a positive and appropriate step for the overall waste management program.

DOE Experienced Delays in Completing Its Defense Waste Cost Allocation Agreement

NWPA requires the Secretary of Energy to proceed promptly with arrangements for use of one or more of the commercial repositories for the disposal of defense waste, unless the President finds that such waste would be disposed of in a separate defense only repository. Such arrangements are to include the allocation of costs of developing, constructing, and operating a repository. Also, NWPA requires the federal government, that is, DOE to pay into the nuclear waste fund the costs resulting from disposal of defense waste in any repository developed for commercial users. Although the President decided in April 1985 that defense waste would be disposed of with commercial waste, as of July 31, 1986, DOE had not established a firm basis for allocating the cost of

defense waste disposal or determining the amount of fees that it should pay to cover such costs

In our first annual report, we recommended that DOE should decide the appropriate fee to charge the federal government for the disposal of high-level (defense) waste. On March 26, 1985, DOE concurred with our recommendation and said that it had initiated action to determine the appropriate fee to charge the federal government and other generators for the disposal of high-level waste.

After the President's April 1985 decision that defense waste and commercial spent fuel be disposed of together, officials in DOE's Office of Defense Programs and OCRWM said that they were negotiating a fee recommendation agreement on defense waste that would establish the Defense Office's obligation for funding its share of the nuclear waste disposal program's total costs. According to these officials, the agreement was to establish a fee comparable to the fees paid by the commercial sector and would be paid by DOE beginning in fiscal year 1987. Also, the agreement was to establish the fee to be paid by DOE every 3 months beginning in fiscal year 1987 and procedures for determining DOE's one-time fee for waste generated prior to fiscal year 1987. DOE intended its financial obligation also to be comparable to the obligation of commercial generators of high-level waste. The agreement would not have determined how much defense waste was to be deposited into a repository—but only the methodology for the fees. The amount to be deposited is under separate review within DOE.

In July 1985 we reported that DOE officials indicated that the fee recommendation agreement would be submitted to the Secretary of Energy for concurrence by September 1985. After the Secretary concurs, OCRWM officials said that they intended to publish the draft agreement in the Federal Register for comment. They expected to receive comments from the fee-paying utilities concerning DOE's share of waste program costs at that time. The officials also said that the utilities' comments would be considered in completing the final cost allocation agreement.

OCRWM revised the target date from September 1985 for submitting the proposed agreement to December 1985 because it was still being negotiated internally within DOE. According to an OCRWM official, DOE Defense Programs and OCRWM officials needed additional time to develop the cost allocation proposal because of differences of opinion on technical matters and other complexities surrounding the disposal of defense waste. In early December 1985 OCRWM submitted the proposed cost allocation

agreement in the form of a federal register notice or rule to the Office of Management and Budget (OMB) for review, comment, and clearance before public issuance.

OMB determined that because of the proposed agreements' potentially large cost impact on the federal government, the agreement was a major regulatory action or rule under Executive Order No. 12291 that required additional DOE analysis before being forwarded for public review. Because OCRWM and Defense Programs officials did not consider the proposed agreement a major rule, they had not provided OMB with information on various alternative cost allocation methodologies. In January 1986 OMB requested that DOE respond to a series of questions concerning such things as alternative bases or methodologies to develop fees associated with defense waste disposal and how the cost of disposing of defense waste would be funded through the federal budgeting process.

By early February 1986 DOE had not completed coordination of its response to OMB's concerns or answered several questions related to the cost allocation methodology in the proposed agreement. Consequently, OMB returned the proposed federal register notice to DOE because questions were still unresolved and OMB's 60-day review period had lapsed. DOE officials told us that they resubmitted the proposal and responded to OMB concerns. These officials also told us that, in May 1986 OMB reversed its initial determination that the proposed agreement was a major rule and advised DOE that an official agency policy statement on defense waste fees would be a sufficient vehicle to solicit public comment. However, according to an OMB official responsible for reviewing the cost allocation agreement, OMB had always considered the agreement a major rule that required detailed analysis.

On December 2, 1986, DOE published its preferred cost allocation agreement and two alternatives in the form of a DOE Notice of Inquiry and Request for Public Comment in the Federal Register. The agreement set forth the methodology DOE intends to use for sharing cost between civilian and defense disposers. DOE allowed 60 days for public comment and plans to refine the agreement after comments are received.

DOE Did Not Involve States, Indian Tribes, and the Public in Developing Defense Waste Agreement

While DOE was internally negotiating the defense waste cost allocation agreement and responding to OMB questions, public service commission and utility representatives and others expressed concern that DOE was not developing an equitable cost allocation methodology. Most of this concern was based on DOE's decision not to open discussions on the

defense waste issue to the public before formulating and publishing its draft position

For example, the National Association of Regulatory Utility Commissioners was concerned with the conflict of interest in two offices within DOE negotiating with each other on the defense waste fee. The association also expressed concern that the interest of ratepayers might not have been adequately protected during DOE's internal negotiations because outside parties were not involved in developing the proposal. Another trade group representing utilities, the Edison Electric Institute, also shared concerns expressed by the association that DOE's internal negotiations might have been no more than an exercise in creative accounting to justify that the lowest possible cost is allocated to defense waste. Moreover, in March 1986 the House Subcommittee on Energy Research and Production, Committee on Science and Technology, found based on testimony during congressional hearings that DOE had not followed appropriate procedures in determining the government's financial contribution for the disposal of defense waste. The Subcommittee recommended that DOE improve its handling of the defense waste issue by opening departmental discussions to public participation on the cost allocation agreement before issuing its draft position.

We believe that the disposal of defense waste and the adequacy of DOE's payments to the nuclear waste fund are issues that affect utilities and ratepayers. According to several utility representatives, DOE's private meetings on the defense waste issue did not give them assurance that a reasonable formula was being worked out within DOE or that DOE would equitably resolve the issue. DOE officials told us that outside parties were not asked to participate in the initial development of the cost allocation agreement because they would be allowed to comment and suggest changes on the draft agreement once it was published. DOE believed that providing for public comments on a formally published draft would be the best method to encourage public participation.

States and Indian Tribes Believe DOE's Consultation and Cooperation Practices Could Be Improved

In a February 1987 report³ on DOE's efforts to involve states and tribes in the nuclear waste management program, we indicated that first repository states, Indian tribes, and Tennessee, where the proposed MRS facility is to be located, believed that DOE's consultation and cooperation practices were inadequate and that they were not allowed to participate in the program to the extent intended by NWPA. These beliefs combined with states' and tribes' concerns about the potential socioeconomic and environmental impact of siting nuclear waste facilities have often led them to initiate law suits challenging DOE's decisions and made them adversaries of DOE, which believes that it is doing a good job of fostering state participation in the program and that a repository can be safely constructed and operated.

Interwoven throughout DOE's nuclear waste management activities required under NWPA is the requirement that DOE participate, consult, and cooperate with states and Indian tribes in the planning and development of repositories in order to develop their confidence in the health and safety of the repository program. NWPA contains many references to interactions among DOE and the states and Indian tribes and allows a state or Indian tribe, for example, to submit to the Congress a notice disapproving the selection of a repository or MRS site within its boundaries. The site will be considered disapproved unless the Congress passes a joint resolution approving the site.

Rather than specifying the level of participation expected, NWPA established formal consultation and cooperation agreements with DOE and affected states and Indian tribes as a mechanism for resolving questions on the amount of communication and participation and differences of opinions. While negotiations for such an agreement can begin at any time, the act required that negotiations commence after sites are designated for detailed study.

States, Indian Tribes, and DOE Have Mixed Opinions on the Level of Program Consultation and Cooperation

Although NWPA has imposed extensive consultation and cooperation requirements on DOE, we reported that states and Indian tribes generally believe that they have not been permitted to participate in the decision-making process as NWPA directs to determine how, where, and when nuclear waste facilities will be sited and constructed. Moreover, states and tribes differ with DOE on what they believe to be their proper level of participation as described under NWPA. According to them, DOE has

³Institutional Relations Under the Nuclear Waste Policy Act of 1982 (GAO/RCED-87-14, Feb. 9, 1987)

attempted to equate NWPA's consultation and cooperation provisions with keeping the statutorily affected parties informed of program developments and decisions and allowing them to comment on draft documents. States and tribes believe that consultation and cooperation should include the opportunity for affected parties to be involved in the program decision process at an early point so their input can be considered in developing DOE documents and decisions.

On the other hand, DOE officials believe that they have taken numerous steps over the past 2 years to involve states, Indian tribes, and others in its decision-making process and that they have made organizational changes that have enhanced their ability to work with states and tribes. These officials believe that the environmental assessment process illustrates the evolution of DOE in terms of better relating to states and tribes and proves that DOE is willing to meaningfully respond to states' and tribes' concerns in the face of slipping milestones. Also, DOE points to its allowing states and tribes to participate in internal DOE management groups and using an independent peer review group to review its methodology for repository site selection as evidence of the steps it has taken to involve states, Indian tribes, and others in making program decisions.

According to the Director, OCRWM, the major issue surrounding state and tribal concerns is not the question of whether there is appropriate opportunity for participation by affected and interested parties but whether there is opportunity for effective participation. He believes that the Congress' intent for participation is to enhance DOE's ability to carry out NWPA and that effective participation is one means of ensuring that resulting decisions will adequately protect public health, safety, and the environment.

Despite DOE's efforts to promote effective cooperation and consultation during 1985, states, tribes, and others often expressed displeasure regarding their role in the program. For example, as pointed out earlier in this chapter, states and tribes were concerned because DOE denied them opportunity to participate in the development of and review of the revised site selection and ranking methodology for the first repository. Also, utilities voiced concerns over not being permitted to participate in the early stages of DOE's development of its cost allocation agreement for defense waste. Tennessee was concerned about its level of participation in the development of the MRS proposal and subsequently filed suit challenging DOE's decision to propose siting an MRS in the state. In December 1984 Nevada filed suit against DOE over the disapproval of part of its

fiscal year 1985 grant request to support the states' independent collection of site characterization data

In contrast to concerns about inadequate program participation, second repository states while generally unhappy about the program's siting decisions believed that for the most part they were informed. However, two second repository states filed suits against DOE to extend the comment period on the draft area recommendation report. On the other hand, Indian tribes affected by the crystalline rock project were concerned because they were not allowed to participate with the states and DOE in siting workshops.

Consultation and Cooperation Problems Could Lead to Program Delays

States, environmental interest groups, and utilities have often relied on courts to resolve through the litigative process program concerns regarding technical matters as well as concerns about DOE's consultation and cooperation practices. In some instances, such litigation has been lengthy, significantly impeding DOE's progress and its ability to meet program milestones.

For example, litigation has already delayed the Congress' consideration of MRS, whose licensing process was expected by DOE to provide valuable insights for the first repository program. This litigation resulted directly from Tennessee's legal contention that DOE failed to involve the state earlier in the MRS decision-making and site-selection process. Although DOE successfully appealed the district court's decision, Tennessee has not yet exhausted its appeals. Consequently, litigation has delayed and continues to delay DOE's efforts to submit the MRS proposal. Should the MRS proposal be substantially delayed, some of the MRS' expected advantages may not be realized.

Observations and Prior Recommendations on DOE's Consultation and Cooperation Practices

In our report on institutional relations under NWPA, we discussed the conflict between states, Indian tribes, and DOE regarding the Department's consultation and cooperation practices. However, we recommended that to improve DOE's efforts in involving affected states and Indian tribes, DOE should take steps that might (1) resolve some of the concerns expressed by states and tribes over their level of participation in the program and (2) encourage the completion of formal consultation and cooperation agreements to address differences envisioned by NWPA. We discussed actions the Secretary of Energy could take to improve relations with states and tribes such as providing them additional access

to substantive program planning and technical meetings and better defining consultation and cooperation

The completion of consultation and cooperation agreements could go far towards minimizing the likelihood of litigation, and thus delays resulting from litigation. Because of the nature of the subject matter, and the different objectives of DOE and the states and Indian tribes, it is unlikely that disputes will be avoided. However, by establishing a formal mechanism for consultation, the agreements could provide an avenue, short of litigation, for states and tribes, as well as DOE, to air concerns and positions. Also, effective cooperation practices might prevent a state or tribal disapproval of the final, recommended repository site

Waste Management Program Faces Many Legal Challenges

State governments, environmental, and other interest groups have filed numerous court cases against DOE regarding its implementation of NWPA. As of September 20, 1986, over 20 court cases, some of which have been grouped together, challenging different aspects of DOE's site-selection process had been initiated and were under review by the courts. These cases generally involve legal challenges to procedures DOE used to develop its siting guidelines, the contents of the siting guidelines, the decision by DOE to postpone site-specific activities, and the recommendation of first repository sites for detailed testing. Also, as discussed earlier in this chapter, one of the cases challenged DOE's MRS proposal. Our April 30, 1986, and August 11, 1986, quarterly reports⁴ provide more detailed information on the status of litigation relating to the nuclear waste management program.

DOE's first repository siting process could be delayed if the courts rule that the siting guidelines are not in accordance with NWPA. In 1984 and 1985, a number of environmental groups and states filed a total of nine cases challenging the siting guidelines. In May 1986 the U.S. Court of Appeals for the Ninth Circuit consolidated all of the siting guidelines cases.

In the cases challenging the siting guidelines, DOE has argued that the issuance of the guidelines was a preliminary step to complete final EAS and that the guidelines should not be subject to review. However, several states have taken the opposite view and are requesting judicial

⁴Quarterly Report on DOE's Nuclear Waste Program as of March 31, 1986 (GAO/RCED-86-154FS) and Quarterly Report on DOE's Nuclear Waste Program as of June 30, 1986 (GAO/RCED-86-206FS)

review to determine the appropriateness or legality of the siting guidelines

DOE's first repository siting process also could be delayed if the courts rule that the EAS and/or the first repository nomination, recommendation, and selection procedures were not in accordance with NWPA. Nevada, Oregon, Texas, and Washington filed petitions challenging the EAS and DOE's first repository siting decisions. In July 1986, DOE filed a motion with the U.S. Court of Appeals for the Ninth Circuit to transfer and include these cases with the siting guidelines cases to the U.S. Court of Appeals for the District of Columbia. This motion was denied in October 1986.

In its Mission Plan, DOE pointed out that if states, Indian tribes, local governments, and others resort to court action contesting DOE activities, the program may be delayed. According to the plan, DOE intends to minimize the likelihood of litigation by seeking the views of all interested parties and implementing a comprehensive consultation and cooperation process with states and tribes.

States and tribes have expressed concerns about the potential environmental and socioeconomic impacts of siting a nuclear waste repository in their region and, as reported earlier in this chapter, believe that DOE has not allowed them to participate in the program to the extent intended by NWPA. On the other hand, DOE believes that a repository can be safely constructed and operated and that it is doing a good job of involving states and tribes.

These differing views have led to lawsuits and strained relations between DOE and the affected states and tribes. Representatives of the states and tribes involved in the first repository program say that if the program's credibility does not improve, they will continue to initiate lawsuits and can be expected to exercise their right to disapprove of the final site selection, forcing the courts, and perhaps ultimately the Congress, to judge whether DOE has adequately ensured the safe disposal of nuclear waste.

Conclusions and Agency Comments

NWPA established a national policy and schedule for the long-term safe disposal of spent nuclear fuel and high-level waste. It requires DOE to develop and construct permanent repositories to dispose of such materials; conduct related research, development, and demonstration projects, and consult with affected states and Indian tribes. NWPA also requires the owners and generators of nuclear waste who have a contract with DOE for disposal of such waste to pay fees to finance all cost associated with developing and operating repositories. DOE has contracted with the nation's utilities to accept waste for disposal by January 31, 1998.

During fiscal year 1985 and through July 1986, DOE accomplished most of the program activities it had planned. However, deadlines for the EAS and the MRS proposal imposed both by NWPA and DOE were missed and combined with past delays in issuing the Mission Plan, and siting guidelines could potentially lead to a longer and more costly waste disposal program. DOE was late issuing final EAS and announcing its recommendation of potential sites for the first repository because it needed additional time to resolve concerns about the draft assessments. DOE was prohibited by a court order from submitting the MRS proposal to the Congress because a U.S. district court held that DOE had failed to consult with the state of Tennessee as required by NWPA. Although the district court's decision was eventually overturned, DOE has lost time obtaining a decision on what it considers an integral part of the nuclear waste management system. DOE also did not develop a proposed cost allocation agreement for the disposal of defense waste until December 1986, and utilities, in particular, have not been satisfied with their role in the development of the proposed agreement.

States, Indian tribes, and others believe that one contributing cause of DOE's inability to consistently adhere to its program schedule is its failure to implement the cooperation and consultation provisions of NWPA. In addition to these concerns, states and other groups have initiated numerous lawsuits against DOE contending that its siting, cooperation, and consultation activities are not being implemented as required under NWPA.

We believe the consequences of states' and Indian tribes' concerns about the adequacy of DOE's consultation and cooperation practices and its siting practices are significant. If courts are requested to determine whether DOE's consultation and cooperation practices and/or its siting activities were appropriate, under NWPA, program delays could result from a lengthy litigative process. Furthermore, these delays could erode

public confidence in the federal government's ability to safely manage nuclear waste disposal

The ultimate goal of NWPA is the disposal of nuclear waste in a manner that adequately protects public health, safety, and the environment. To meet this goal the act requires DOE to develop and construct a nuclear waste repository, and DOE has a contractual commitment to accept spent fuel from utilities by 1998. States and tribes have been dissatisfied with their level of participation and influence in the program. They have also expressed concern over the potential long-term environmental and socio-economic risks associated with a waste repository. Because of these issues and states' and tribes' concerns that they lack impact on the program, they have often been at odds with DOE, as evidenced by the number of lawsuits filed against the program. DOE, however, believes extensive regulatory requirements ensure that a repository will be safe and that it has improved state and tribe involvement in the program.

We believe that program delays with the first repository siting process, problems with state and Indian tribe consultation and cooperation, and potential delays resulting from lawsuits have jeopardized DOE's ability to meet its own program schedule and its initial commitment to begin repository operations by January 31, 1998. Also, most of the 54 utilities that we surveyed in November 1985 believed that a repository will not be in operation by 1998.

In addition to uncertainties surrounding DOE's ability to have a repository operational by 1998, the current status of a proposed MRS facility, which could temporarily store waste if a repository is delayed, remains unclear. As time progresses, utilities will generate more spent fuel, which DOE would ultimately have responsibility to dispose.

In a draft of this report, we proposed that the Secretary of Energy evaluate the impact of past program delays and potential delays that could result from pending litigation or other circumstances on the program's current repository schedule and determine if DOE's January 31, 1998, target date is reasonable for beginning repository operations. We also pointed out that if the Secretary finds that the current target date is unreasonable in light of past and anticipated program delays, DOE should adjust the program's implementation schedule, Mission Plan, and other key planning documents to reflect an updated repository schedule. In making these adjustments, we suggested that the Secretary submit to the Congress written reports giving an accounting of the reasons for and

implications of not meeting the January 31, 1998, target date for repository operations

On January 28, 1987, DOE released a draft amendment to the Mission Plan for state, affected Indian tribe, and federal agency review. According to DOE the draft amendment was released to articulate three issues on which the Congress may wish to provide DOE with direction. The three issues were (1) postponement of the site-specific work for a second repository, (2) extension of the date for beginning repository operations from 1998 to 2003, and (3) pending litigation that prevents DOE from submitting its MRS proposal. DOE expects to submit a final Mission Plan amendment to the Congress after it receives formal comments from states, affected Indian tribes, and others. Because of DOE's actions we have deleted our recommendation.

Agency and Others' Comments

We asked DOE, the six states,¹ and three Indian tribes² affected by the first repository siting process, and Tennessee, the state the proposed MRS site would be located in, to comment on a draft of this report. Representatives or state officials from DOE, Tennessee, the Confederated Tribes of the Umatilla Indian Reservation, and four of the six first repository states (excluding Louisiana and Texas) provided written comments. These comments were both technical and editorial in nature and have been incorporated throughout the report where appropriate.

DOE's Comments

In commenting on our draft report, DOE expressed the view that the report was a thorough and accurate review of the status of the nuclear waste program and its problems and progress over the past 21 months. Also, DOE concurred with our suggestions and pointed out that the January 31, 1998, date for beginning disposal operations is mandated by NWPA in addition to being a DOE target. Further, DOE stated that it can meet its contractual obligation to begin accepting waste for disposal by January 31, 1998, by means other than repository operations. However, DOE did not indicate any specific strategy to begin disposal operations if a repository is not operational by the time its contractual obligation is to be met. DOE also commented that it had started a reevaluation of the program's repository schedule, including the 1998 date for beginning repository operations, as part of a planned update of the Mission Plan.

¹Louisiana, Mississippi, Nevada, Texas, Utah, and Washington

²The Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Yakima Indian Nation

This reevaluation formed the basis for DOE's January 28, 1987, amendment to the Mission Plan

States' and Indian Tribes'
Comments

Generally the states that commented on our draft report had diverse viewpoints on the report's proposals and its presentation of DOE's implementation of the act. The comments that we received from representatives of Utah and the Confederated Tribes of the Umatilla Indian Reservation were generally technical and did not directly address the report's proposals

A Mississippi State official agreed with the report's proposals and added that, because of the extensive litigation challenging the program, DOE may have a difficult time meeting the 1998 target date. In contrast, Nevada's representative stated that the report's proposals are weak and would do little to alleviate DOE's problems in cooperating and consulting with states and tribes. The Nevada representative also said that we should have recommended that DOE take extraordinary steps and efforts to cooperate and consult with affected parties

We recognize that the proposals do not specify actions related to DOE's implementation of its consultation and cooperation practices. However, as mentioned in chapter 4, we have previously recommended that the Secretary of Energy take specific actions, such as formally defining cooperation and consultation, to enhance states' and Indian tribes' participation in the program. We believe that the proposals in this report, if implemented, will provide DOE the opportunity to obtain a more realistic assessment of when the program can meet NWPA objectives of safe nuclear waste disposal

While Washington's State official did not disagree with the report's proposals, he commented that the proposals infer that the only significant impediment to DOE's achieving NWPA's goals are delays from litigation, which lead to unrealistic target dates. We believe that the proposals address both past program delays and potential delays that could result from litigation or other circumstances. In addition, we have pointed out other impediments to achieving successful NWPA implementation other than delays from litigation. For example, program delays with the first repository were highlighted as impediments to DOE's ability to begin repository operations by 1998

Tennessee's representatives generally commented that DOE has not been successful in implementing NWPA's provisions. They also told us that

DOE's implementation of NWPA has been marred by significant delays in major program activities, many of which DOE considers critical to the success of the program. They also believed that by covering a period of more than 1 year, our report made DOE seem to be accomplishing more than an annual audit would show.

Nevada's representative also commented that DOE has not successfully implemented NWPA. He stated that this report attempted to give DOE too much credit by emphasizing progress made in implementing the 27 program activities. He considered many of these activities minor and believed that an assessment of the incompleting activities suggests a poor performance record on DOE's part. Also, Nevada's representative believed that DOE had not made any progress in two of the most important activities—building public confidence and consulting with the states and tribes.

Although our review was primarily focused on obtaining information on the status of DOE's progress in implementing NWPA during 1985, we reported on the most current program activities as time would permit to provide a more informative and up-to-date report. We believe that by providing the most recent information as possible on the key program activities, the Congress, states, Indian tribes, and others will have a clearer picture of the issues and areas of concern confronting DOE and the program.

Tennessee's representatives also objected to this report's account of the MRS proposal's history on the basis that it was neither accurate nor objective and failed to describe the state's position adequately. We believe that this report accurately discusses the purpose of MRS as proposed by DOE. However, we have made changes where appropriate to more clearly reflect Tennessee's position on the development of the proposal.

Washington's State official also expressed concerns that the report did not document problems associated with DOE's implementation of NWPA. Specifically, he believes that DOE's decisions to recommend Hanford for site characterization was not based on favorable scientific information and that DOE distorted the facts in selecting Hanford. He also believes that DOE's decisions to (1) postpone site-specific work on the second repository and (2) make preliminary determination of site suitability for the first repository sites were unlawful. He stated that our report should have included information in a recent (October 1986) congressional

report that identified data distortion and deletions by DOE in recommending first repository sites for characterization.

We believe that our report accurately documents DOE's actions in implementing NWPA. An evaluation of DOE's procedures and criteria for selecting first repository sites was not the intent of our review, and as a result we are not in a position to question the legality or justification of DOE's siting decisions. However, as pointed out in chapter 4 these concerns raised by Washington State are valid and are currently being litigated.

Characteristics and Inventories of Spent Nuclear Fuel and High-Level Waste

Spent Nuclear Fuel

Nuclear fuel is the heart of a reactor for a commercial nuclear power plant. Nuclear fuel consists of pellets of ceramic uranium dioxide that are sealed in hundreds of metal rods bundled together within a rigid metal structure called a "fuel assembly." The fuel rods are carefully spaced in the fuel assembly to allow coolant to flow between them as they burn up during the fission process. Each assembly is about 14 feet long and weighs about 1,200 pounds and is designed to be readily handled with suitable hoists and cranes at the reactor site. After about 3 years of use, the fuel assembly is removed, or discharged, from the reactor. Spent nuclear fuel rods are currently being temporarily stored in water-filled pools at the sites of the nation's nuclear power reactors.

DOE uses forecasts of commercial spent fuel discharges published annually by the U.S. Energy Information Administration (EIA) as one of the principal planning variables in the formulation of waste management program and funding requirements. These projections are generated from predictive computer models and other data sources, including industry surveys. These data sources are used by EIA to assess the status of commercial nuclear power plants as they move from the planning phase to operational status.

In developing its waste acceptance schedules for program planning purposes, DOE uses EIA's "Mid-Case" (or moderate growth) forecasts of commercial spent fuel discharges that assume "constant burnup" of fuel assemblies. Under this assumption, the burnup levels of fuel assemblies removed from reactor cores remain basically unchanged for DOE's entire planning period (i.e., from 1984 through the year 2020).

In November 1985 EIA published a Mid-Case series forecast of spent fuel discharges that incorporated "extended fuel burnup" as a major variable. The new projection allowed for lengthening commercial reactor fuel cycles. Table I 1 displays these two sets of projections. As indicated in table I 1, the inventory of spent nuclear fuel is expected to continue to mount and reach over 40,000 metric tons by the year 2000.

**Appendix I
Characteristics and Inventories of Spent
Nuclear Fuel and High-Level Waste**

**Table I.1: Projections of Cumulative
Commercial Spent Fuel Discharges -
EIA Mid-Case^a**

Metric tons		
Year	Extended burnup	Constant burnup
1985	12,500	12,700
1990	21,000	21,800
1995	31,400	33,500
2000	41,700	46,100
2005	52,500	59,700
2010	66,400	77,400
2015	86,400	101,200
2020	106,400	126,600

^aEIA World Nuclear Fuel Cycle Requirements (DOE/EIA-04336) November 1985

High-Level Radioactive Waste

High-level radioactive waste produced from the reprocessing of spent fuel accounts for the other type of nuclear waste that DOE is required to accept and dispose of under the provisions of the Nuclear Waste Policy Act. High-level waste is distinguished from spent nuclear fuel by its much greater volume, substantially lower radioactivity and various forms, ranging from liquids to solids.

A small quantity of liquid high-level radioactive waste was generated during the commercial reprocessing of power reactor spent fuel at a facility near West Valley, New York, from 1966 through 1972. Currently, no additional commercial, liquid high-level waste from reprocessing is being generated in this country. The liquid waste stored at the West Valley facility is scheduled to be solidified into glass and encapsulated in stainless steel canisters for eventual disposal in a geologic repository.

The preponderant share of high-level waste comes from the nation's nuclear defense materials production. Defense waste is generated and stored at three DOE facilities (Hanford Reservation in Washington, Savannah River Plant in South Carolina, and Idaho National Engineering Laboratory in Idaho).

Defense waste in the form of liquid, salt, and sludge is stored in underground tanks at the Hanford and Savannah River Plant sites. At the Idaho National Engineering Laboratory site, acidic, liquid high-level waste is stored in stainless steel tanks. It is routinely converted to a dry, granular solid called calcine for storage in bins in underground concrete vaults. Table I.2 depicts actual and projected cumulative inventories of

**Appendix I
 Characteristics and Inventories of Spent
 Nuclear Fuel and High-Level Waste**

defense waste from 1984 through the year 2020. DOE expects the volume of defense high-level waste, currently almost seven times that of spent nuclear fuel, to stay appreciably the same through the year 2000 because of the Department's program to concentrate and solidify both existing and newly generated defense waste. DOE expects that this program will result in reducing the volume of defense waste.

Table I.2. Inventories of All Forms of Defense Waste^a

Thousands of cubic meters	
Year	Cubic meters
1984 ^b	368
1985	355
1990	326
1995	324
2000	330
2005	326
2010	335
2015	337
2020	342

^aDOE, Spent Fuel and Radioactive Waste Inventories, Projections and Characteristics (DOE/RW-0006, Rev. 1), December 1985

^bActual. Subsequent data are projections

Status of OCRWM's Activities Expected to Be Completed by 9/30/85

Activity ^a	Completed prior to 9/30/85	Completed after 9/30/85	Completion target date
1 Publish Mission Plan	7/85	•	•
2 Issue final repository siting guidelines	12/84	•	•
3 Publish third annual fee adequacy report	2/85	•	•
4 Issue final project decision schedule	•	3/86	•
5 Issue draft environmental assessments	12/84	•	•
6 Hold public hearings on draft environmental assessments	1/85–5/85	•	•
7 Recommend three candidate first repository sites to the President for site characterization	•	5/86	•
8 Prepare and issue final environmental assessments	•	5/86	•
9 Initiate waste package advanced conceptual design in basalt and tuff	9/85	•	•
10 Assess impact of defense waste on a commercial repository	6/85	•	•
11 Publish second annual report to the Congress	5/85	•	•
12 Initiate studies of concepts and techniques for integrating the overall waste management plan	9/85	•	•
13 Issue final regional- to-area screening methodology document	4/85	•	•
14 Issue final regional characterization reports	9/85	•	•
15 Initiate independent financial audit of the Nuclear Waste Fund for fiscal year 1985	•	12/85	•
16 Submit report to the Congress on alternative means of financing and managing radioactive waste facilities	4/85	•	•
17 Submit proposal to the Congress for the construction of one or more MRS facilities	•	•	pending
18 Provide draft transportation business plan for public comment	8/85	•	•
19 Issue transportation business plan	•	12/85	•
20 Develop transportation institutional plan for public comment	9/85	•	•
21 Complete independent financial audit of the Nuclear Waste Fund for fiscal years 1983 and 1984	3/85	•	•
22 Reimburse U S Treasury about \$258 million	9/85	•	•

^aDOE Congressional Budget Request FY 1986 Vol. 2, Feb. 1985

Status of OCRWM's Activities Expected to Be Completed by 12/31/85

Activity ^a	Completed prior to 12/31/85	Completed after 12/31/85	Completion target date
1 Completion of comparative evaluation of alternative host rocks	•	•	4/87
2 Submission of license application for TVA to demonstrate dry storage	•	•	canceled
3 Completion of TVA rod consolidation demonstration	•	•	held in abeyance
4 Evaluation of results of independent studies of waste handling and packaging techniques	•	4/86	•
5 Completion of documentation and full implementation of program management system	12/85	•	•

^aThis listing excludes activities that were scheduled as expected fiscal year 1985 accomplishments in DOE's 1986 budget request

Grant Assistance Under NWPA

Table IV.1: DOE Grant Funds Obligated Under NWPA Through 1985^a

Grantee	Dollars in thousands	
	Inception through 1984	Year 1985
First repository		
Louisiana	\$533	\$300
Mississippi	675	1,791
Nevada	996	1,899
Texas	300	300
Utah	624	1,035
Washington (state)	1,036	1,434
Washington (legislature)	•	247
Nez Perce Tribe	18	508
Confederated Tribes of the Umatilla Indian Reservation	273	547
Yakima Indian Nation	1,154	993
Total	5,609	9,054
Second repository		
Connecticut	195	122
Georgia	112	135
Maine	69	157
Maryland	32	71
Massachusetts	169	240
Michigan	274	113
Minnesota	362	189
New Hampshire	90	175
New Jersey	162	63
New York	246	197
North Carolina	298	166
Rhode Island	100	108
South Carolina	252	160
Vermont	52	67
Virginia	41	•
Wisconsin	342	248
Total	2,796	2,211

**Appendix IV
Grant Assistance Under NWPA**

Grantee	Year	
	Inception through 1984	1985
Monitored retrievable storage		
Tennessee	•	1,404
Total	0	1,404
Associations		
National Conference of State Legislatures (NCSL)	217	222
National Congress of American Indians (NCAI)	205	211
Total	422	433
Total all grants	\$8,827	\$13,102

^aDOE first began issuing these grants around mid 1983. Budget periods for the first repository grants generally conformed to the fiscal year in 1984 and 1985. Budget periods for second repository grants generally conformed to the calendar year in 1984 and 1985.

Comments From the Department of Energy



Department of Energy

Washington, DC 20585

November 25, 1986

Mr J Dexter Peach
Director, Resources, Community
and Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr Peach.

The Department of Energy (DOE) appreciates the opportunity to review and comment on the General Accounting Office (GAO) draft report entitled "Nuclear Waste: Status of DOE's Implementation of the Nuclear Waste Policy Act."

The Department finds this report to be a thorough and quite accurate review of the status of the Civilian Radioactive Waste Management Program and its progress and problems over the past 21 months

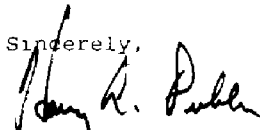
The Department concurs with GAO's recommendations that the Secretary " -- evaluate the impact of past program delays and potential delays that could result from pending litigation on the program's current repository schedule and -- determine if DOE's January 31, 1998, target date is reasonable for beginning repository operations." However, DOE would point out that the January 31, 1998, date for beginning disposal operations is mandated by Section 302 of the Act, in addition to its being a DOE target. Further, it should be noted that DOE can meet its contractual obligation to begin accepting waste for disposal by January 31, 1998, by means other than initiating repository operations. The Department has already started a reevaluation of the program's current repository schedule, including the 1998 date for beginning repository operations. This schedule evaluation is being conducted as part of DOE's current updating of the Mission Plan for the Civilian Radioactive Waste Management Program. A draft of this Mission Plan update, including preliminary revisions of the repository schedule, is expected to be issued for public comment in January or February 1987.

Appendix V
Comments From the Department of Energy

-2-

In addition to the above, specific technical and editorial comments on this report are being transmitted separately to Mr. Sam Madonia of your staff. The Department hopes that these comments will be of help to GAO in the preparation of the final report.

Sincerely,



Harry L. Peebles
Acting Assistant Secretary
Management and Administration

Comments From the State of Mississippi



DEPARTMENT OF ENERGY & TRANSPORTATION

Watkins Building 510 George Street
Jackson Mississippi 39202 3096
601/961 4731

November 21, 1986

Mr. J. Dexter Peach
U. S. General Accounting Office
Washington, D.C. 20585

Re Comments on draft report
GAO/RCED-87-17

Dear Mr. Peach

In response to your October 22, 1986 letter, I am pleased to be able to supply you and your staff with the attached commentary on your "Draft of a Proposed Report Nuclear Waste Status of DOE's Implementation of the Nuclear Waste Policy Act", GAO/PCED-87-17. The draft report has been reviewed by members of the Nuclear Waste Program staff.

We agree with the recommendations to the Secretary that are included in the proposed report. It is our opinion that due to the extensive litigation DOE may have a difficult time meeting the 1998 deadline.

On behalf of the Department of Energy and Transportation, I appreciate your invitation of these comments. I hope that they will serve a useful purpose as you finalize the report.

Very truly yours,

A handwritten signature in cursive script, appearing to read "John W. Green".

John W. Green
Executive Director

JWG cpf
Attachment

cy Mr. Allen Benson, DOE/OCRWM

Comments From the State of Nevada

Note GAO comments supplementing those in the report text appear at the end of this appendix

RICHARD H BRYAN
Governor

STATE OF NEVADA

ROBERT R LOUX
Executive Director



**AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE**

Capitol Complex
Carson City, Nevada 89710
(702) 885 3744

November 21, 1986

Mr. J. Dexter Peach
Assistant Comptroller General
441 G Street, NW
United States General
Accounting Office
Washington, DC 20548

Dear Mr. Peach:

Attached please find comments from the State of Nevada on your draft report; Nuclear Waste: Status of DOE's Implementation of the Nuclear Waste Policy Act (GAO 12 CED-87-17). I certainly appreciate the opportunity to provide these comments. In general, I found the report to be well organized and it provides a reasonably accurate reporting on the progress of the DOE program.

However, I believe the report attempts to give the DOE too much credit by emphasizing the progress made in the 27 nuclear waste program activities. Many of the activities are minor accomplishments, especially those pertaining to the second repository program, which has been "indefinitely postponed." In two of the most important activities, building public confidence and consulting and cooperating with the states and tribes, the DOE has not made any progress.

The assessment of the four activities identified as important to the successful implementation of the Act, which are presented on page 30 of the report, also suggest a poor performance record. The first of the four activities, issuance of the environmental assessments to the three potential first repository sites, has been completed. The second activity, assessment of the impact combining high level radioactive defense waste with commercial spent fuel in the same repository, has been partially resolved. The fiscal issues have not been resolved. The third and fourth activities, proposal for one or more monitored retrievable storage facilities and the negotiation of consultation and cooperation agreements with the states and tribes, have not been resolved or completed. The assessment of these four critical activities should indicate a performance record of less than fifty percent.

After reviewing your report and its conclusions, the Recommendations to the Secretary of Energy seem particularly weak and ineffective. Since GAO has well documented the fact that the

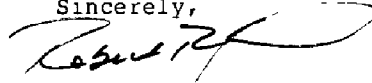
Appendix VII
Comments From the State of Nevada

lack of consultation and cooperation with the states and tribes and other affected parties is a major factor in delays and lawsuits, and the belief by over seventy percent of the utilities that the schedule can not be met, why has GAO not recommended that the DOE take extraordinary steps and efforts to consult and cooperate with the affected parties. GAO's two recommendations are very weak and will do little to alleviate the problems with the program.

See comment 1

Should you have any questions regarding these comments, please do not hesitate to contact me.

Sincerely,



Robert R. Loux
Executive Director

RRL:njc

Attachment

The following are GAO comments on the state of Nevada's letter dated November 21, 1986

GAO Comments

1 Sections of Nevada's letter were not included in this final report because they were either technical or editorial comments, which were considered in preparing the report and incorporated in the report as appropriate. Other parts of the letter are discussed in the agency comments section, pp 84-87

Comments From the State of Tennessee

Note GAO comments supplementing those in the report text appear at the end of this appendix



STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
CORDELL HULL BUILDING
NASHVILLE TENNESSEE 37219-5402

JAMES E. WORD
COMMISSIONER

November 25, 1986

Mr. J. Dexter Peach
Assistant Comptroller General
Resources, Community and Economic Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Thank you for the opportunity for the State of Tennessee to review the draft Government Accounting Office report entitled "Nuclear Waste Status of DOE's Implementation of the Nuclear Waste Policy Act" (GAO/RCED-87-17). We offer several general comments on the approach and scope of the report, as well as specific comments related to the implementation of Sections 141, Sections 115, 116(a), 116(b), 117, and 118 of the Nuclear Waste Policy Act (NWPA) which apply to monitored retrievable storage. Detailed page-by-page comments received from the individual staff members are appended.

Sincerely,

A handwritten signature in cursive script, appearing to read "James E. Word".

JAMES E. WORD
Commissioner

JEW/rns

Enclosure

State of Tennessee
Comments on
Draft Government Accounting Office Report
"Nuclear Waste: Status of DOE's Implementation of the
Nuclear Waste Policy Act"
(GAO/RCED-87-17)
November 22, 1986

Appendix VIII
Comments From the State of Tennessee

APPROACH AND SCOPE. If GAO wishes to evaluate DOE's implementation of the NWPA, it should accurately identify both the specific activities required and the specific deadlines established by the Act and evaluate DOE's performance against this standard.

Tennessee has no objection to the measurement of DOE's performance in implementing the NWPA against stated program activities listed in the budget document, or milestones established by the Mission Plan, so long as these comparisons are used as secondary indicators of performance and are described as such. The primary focus must be on the statutory requirements and deadlines, not on whether DOE accomplished "most of the program activities it had planned" (page 2, 107).

Now on pp 2 and 82

DOE program documents incorporate agency interpretations the plan/budget may not accurately reflect statutory requirements. For example, in the Executive Summary, page 2, GAO states that the NWPA . . . required that DOE prepare a proposal for the construction of a monitored retrievable storage facility where the waste could be packaged, stored, monitored, and subsequently retrieved . . . This description is inaccurate. Section 141 requires that DOE conduct a study of " . . . the need and feasibility of a monitored retrievable storage facility . . . , and that the facility should be designed to provide for retrieval of spent fuel and high level waste for further processing or disposal. **There is nothing in the Act which discussed packaging.** It appears that DOE has interpreted the statutory language and altered the Congressionally mandated concept in order to show additional benefits for an MRS. GAO has accepted DOE's interpretation of the statutory language uncritically. GAO should describe requirements of the Act with precision.

Even by the secondary criteria, DOE's implementation of the NWPA has been marred by significant delays in major program activities. Out of the 22 activities scheduled for initiation or completion by the close of fiscal 1985, DOE met deadlines for 13 activities -- about 60%. DOE failed to meet statutory deadlines, or self-imposed milestones for 8 activities. The delays ranged from 3 months to 15 months, with an average delay of about 8 months.

Appendix VIII
Comments From the State of Tennessee

The missed deadlines include critical activities, such as publication of the Mission Plan (-11 months), issuance of final repository siting guidelines (-7 months), issuance of draft Environmental Assessments for first round repository sites (-3 months), recommendation of three sites for the first repository (-16 months), publication of final EA's for first repository sites (-9 months), and submission of the MRS report and proposal to Congress (-8 months). Many of these key elements are on the 'critical path' for successful implementation of the NWP. A graphic comparison of schedules and performance would be helpful.

Now on pp 34-36

DOE's accomplishments with respect to the 5 activities listed in the Mission Plan for calendar 1985 follow the same pattern. Of five activities described on pages 41 through 43, only 1 was completed on time, 2 were delayed (by 4 months, and 12 months, respectively), and 2 were postponed indefinitely or cancelled.

It is somewhat unusual for an 'annual' audit to cover a period of 21 months. The GAO's third annual program audit covers October 1, 1984 through July 31, 1986. GAO's approach makes it more difficult to compare annual program objectives and deadlines with actual annual increments of progress. GAO's analysis would be more precise and more useful to the Congress if its analysis were divided into two periods: fiscal 1985, and the first three quarters of fiscal 1986.

Several important findings and conclusions set forth in Chapters 4 and 5 of the GAO draft report have not been included in the Executive Summary. They should be. Conclusions that should be brought forward include

Now on p 76

1. The House Subcommittee on Energy Research and Production, Committee on Science and Technology found ... that DOE has not followed appropriate procedures in determining the government's financial contribution for the disposal of defense waste. (page 98, line 27.)

Now on p 79

Should the MRS proposal be substantially delayed, some of its expected advantages may not be realized (page 103, line 13)

Appendix VIII
Comments From the State of Tennessee

Now on p 83

3. ... Program delays have jeopardized DOE's ability to meet its own program schedule and ultimately its unequivocal commitment to begin repository operations by January 31, 1998 (page 109, line 1).

Now on p 83

4. ...The current status of a proposed MRS facility...remains unclear (page 109, line 10)

It should be noted that GAO's conclusion regarding the status of the MRS proposal contrasts with DOE's contention that it will postpone work on the second repository because of the 'growing expectation that an MRS system would be authorized by Congress.'

Now on pp 2, 41-42, and 69-73

MRS PROPOSAL. The State of Tennessee objects strenuously to the GAO report's account of the history of the MRS proposal (as described on page 2 of the Executive Summary, in Chapter 2, pp. 50-51, Chapter 4, pp. 89-95, and other sections as cited.) The account is based on a fact sheet (GAO/RCED-86-104FS, May 8, 1986) derived primarily from DOE documents, to which we vigorously objected when it was issued (cf. letter from James F. Word to Richard King, of the Government Accounting Office, April 15, 1986,) and to which we still object. It is neither accurate nor objective, and fails to describe the state's position adequately.

The focus of this draft report is on implementation. The NWPA established a deadline for DOE to submit a report on the need for and feasibility of a monitored retrievable storage facility by June 1, 1985. DOE clearly did not meet this statutory deadline. Instead, the agency submitted a status report to Congress on that date and arbitrarily established a substitute deadline, January 15, 1986. (DOE later extended this second deadline to February 9, 1986.)

DOE had missed both the statutory deadline (by 7 1/2 months) and its self-imposed programmatic deadline (by 3/4 month) **before** the Nashville U.S. District Court enjoined DOE from submitting its report and proposal to the Congress. Only the delay since February 6, 1986--about 9 months to date -- can be attributed to unresolved litigation.

Appendix VIII
Comments From the State of Tennessee

Now on p 42

GAO reports three different explanations set forth by DOE for its failure to meet these deadlines. On page 51, GAO reports that ..the MRS proposal was not submitted by January 15, 1986, in part, because DOE needed additional time to revise draft versions of the MRS proposal, a program plan, and a draft environmental assessment. From the state's observations, this explanation is probably accurate. The draft documents delivered to the state on November 5, were incomplete, and internally inconsistent. Extensive revisions were needed.

Now on p 69

On page 89, the explanation is slightly different ...the proposal was not submitted to Congress.. (by January 15)...because DOE needed additional time to respond to comments on draft of the proposal. This explanation by DOE is incorrect, self serving and misleading. DOE did not seek public review of the draft proposal and EA. In a telephone conversation on October 17, 1985, Mr. Peter Gross (DOE MRS Program Manager, Oak Ridge Operations Office) informed Mr. Wayne Scharber (Tennessee Department of Health and Environment) that the state would receive draft documents on October 28, and that ...DOE does not intend to actively and formally solicit public comment on the draft EA.'

Neither according to Mr. Gross, did DOE seek, expect to receive, or intend to respond substantively to state or local input. In his October 17 conversation, Mr. Gross stated that they (i.e., DOE) did not intend to make any extensive alternations on the report. Only minor or editorial changes would be made.

DOE further precluded extensive state/local comments by limiting the time for review of the draft documents. The DOE spokesman informed the state that DOE ...will require any input to be submitted to DOE by November 12, 1986... -- a scant 7 days. In response to state protests, that time was extended another week -- a total of 14 days. DOE conducted a one-day briefing session for state and local officials on November 18, 1986, to answer questions and receive oral comments from state and local officials.

The State of Tennessee received a preliminary draft of DOE's proposal and Environmental Assessment not on October 28, but on November 5, 1985 (3

Appendix VIII
Comments From the State of Tennessee

weeks after the state had requested delivery, and one week after DOE had promised to deliver it.)

(It should be noted that the review and comment process for MRS documents is anomalous. It is not comparable in any way to the procedure followed by DOE for public review and comment on the draft EA's for first or second round repository sites. No public hearings were conducted by DOE. The State of Tennessee, Oak Ridge and Hartsville had only slightly more than 14 days to review and comment on the draft documents, as compared to the 90 day comment period (informally extended by several months) allowed to repository states.)

DOE missed its self-imposed January 15 deadline for reasons unknown to the state, however, revision of the preliminary draft MRS documents or incorporation of the state's comments into the final proposal was not one of them. The Review Draft delivered to the state on December 23, 1985, was substantially different from the November 5 version--but the revisions were not in response to state comments or criticisms. Changes included a major change in program justification--a change in emphasis from reducing transportation impacts and relieving at-reactor storage needs to the more subjective improvement of the system." All, or portions of several appendices were deleted.

On page 90, under the heading 'DOE needed additional time to respond to comments on draft MRS proposal, a third explanation is put forward Because DOE needed additional time to revise the draft MRS documents, and to incorporate NRC, EPA, and the state of Tennessee's comments on the documents, it did not meet its January 15, 1986, target date. This explanation is not only patently erroneous, it is impossible.

DOE did not receive comments from any of these agencies until well after January 15. To be specific, EPA submitted its comments on the December 23 review draft on January 31, 1986, NRC and the state of Tennessee submitted their comments to DOE on February 5, 1986. (The February 5 date was established by the need for DOE to provide a draft to NRC and EPA 45 days before submission to Congress, the review draft was delivered to these

Appendix VIII
Comments From the State of Tennessee

agencies on December 23.) However, DOE announced that it intended to submit its MRS Proposal, EA and program plan to Congress on February 9. The state was told that its comments--and those of EPA and NRC--would be duplicated and submitted to Congress along with the DOE MRS proposal. Clearly, no revisions to the proposal were contemplated or performed.

To represent the substantive issues between DOE and the state of Tennessee as resolved (page 2, Executive Summary) is wrong, and to offer it as a reason for delay is offensive. DOE has not resolved the issues raised by the state in its comments, nor attempted to do so. DOE's interactions with the state can best be described as information delivery--through documents, briefings and workshops. Between April 1985, and December 1985, DOE responded to written questions and requests for technical information by state officials adequately, if not rapidly. The development of the MRS proposal process was neither interactive nor iterative, designed to improve the proposal. There were no active negotiations to resolve substantive issues raised by the state.

DOE has never even acknowledged receipt of the state of Tennessee's formal comments on the December 1985, review draft. DOE has not responded to the state's comments in any way. To have 'resolution' of these issues cited as a reasons for DOE's failure to meet its target date is patently wrong...and misleading to the Congress.

DOE's failure to submit its MRS proposal on time is also attributed to ongoing litigation. On page 91, GAO presents a brief chronology of the legal action under the subtitle Ongoing litigation delays submission of MRS proposal. In Chapter 5, GAO concludes that 'While DOE was prohibited by a court order from submitting the MRS proposal to the Congress, its execution of state cooperation and consultation responsibilities under NWPA was a contributing factor that also delayed the proposal.' In the Executive Summary, GAO reports that After DOE resolved comments on the draft, it was prohibited from submitting the proposal by a U.S. District Court....' (page 4) and that DOE did not submit its proposal on monitored retrievable storage to the Congress because of a court injunction." (page 5)

Now on p 71

GAO has not adequately differentiated between delays in the MRS program which occurred **before** February 5, 1985 and those which occurred after **that** date. The injunction issued by the Court, and the time required for DOE's appeal of the District Court's ruling can account for only half of the total 18 months delay in the MRS program.

Throughout its report, GAO focuses on the ongoing litigation as a cause of DOE's failure to meet its statutory obligations, rather than on the state's contention that DOE's **failure to meet its statutory obligations to consult and cooperate is the cause for legal action**. The state's point of view should be described more clearly in the narrative (Chapters 2 and 4) and in the Executive Summary.

The following are GAO comments on the state of Tennessee's letter dated November 25, 1986

GAO Comments

1 Sections of Tennessee's letter were not included in this final report because they were either technical or editorial comments, which were considered in preparing the report and incorporated in the report as appropriate. Other parts of the letter are discussed in the agency comments section, pp 84-87

Comments From the State of Washington

Note GAO comments supplementing those in the report text appear at the end of this appendix

ANDREA BEATTY RINKER
Director



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Mail Stop PV 11 • Olympia Washington 98504-8711 • (206) 459-6000

December 2, 1986

Mr. Sam Madonia, Group Director
Resources, Community and
Economic Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Madonia:

Thank you for the opportunity to comment on your draft report, "Nuclear Waste: Status of DOE's Implementation of the Nuclear Waste Policy Act" (GAO/RCED-87-17). An audit of this complex program is a very challenging endeavor and we appreciate your efforts to document the US Department of Energy's progress and problems through July 1986. However, I believe your draft report does not document the extremely serious problems associated with USDOE's implementation of the Act. The problems which surfaced during the October 1984 through July 1986 audit period, resulting from USDOE actions, have destroyed the credibility of the repository site selection process.

The May 28 decisions to recommend Hanford for characterization, although it is the least safe and it is the most expensive site, together with the unlawful decision to abandon the search for a second repository and the unlawful early preliminary determination of suitability, were not spur of the moment decisions. The decisions were the culmination of long-term efforts by OCRWM and USDOE management which subverted the Nuclear Waste Policy Act.

Your draft recommendations leave one with the erroneous perception that the only significant impediment to achieving the NWPA 1998 goals are delays from litigation which lead to unrealistic target dates. Very clearly, Congressional oversight should include a review of USDOE's distortion of its own scientific data, its deletion of unfavorable information, and its disregard of the findings and recommendations of its own technical and legal staff and the National Academy of Sciences (NAS).

Even a cursory review of the final Environmental Assessment, the Multiattribute Utility Analysis, and the Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization clearly shows a disregard by USDOE management of USDOE technical staff findings and recommendations. Recent revelations identified data distortion and deletion by USDOE management which occurred during this audit period. Your final report should address the failings of USDOE management during this period and discuss the resulting destruction of credibility.

Appendix IX
Comments From the State of Washington

Sam Madonia
December 2, 1986
Page 2

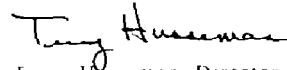
Your draft report misstates the National Academy of Sciences role in the site selection process. NAS did review ranking methodology but had a very minor role in reviewing the application of the ranking methods. Your final report should make a clear distinction among ranking methods, implementation of the ranking methods, and the site selection methodology. I recommend that you ask the Academy to describe in writing their role in the site selection process and that you include a description in the final report of what NAS did and did not review and/or approve.

Your final report should include a complete list of technical and legal reports or memos which were ignored or subverted by USDOE management during the audit period. This list will illustrate why the states and affected Indian tribes are concerned about the implementation of the Act and have had to resort to lawsuits against USDOE.

See comment 1

Again, thank you for the opportunity to comment. Please call me if you have questions.

Sincerely,



Terry Husseman, Director
Office of Nuclear Waste Management

The following are GAO comments on the state of Washington's letter dated December 2, 1986

GAO Comments

1 Sections of Washington's letter were not included in this final report because they were either technical or editorial comments, which were considered in preparing the report and incorporated in the report as appropriate. Other parts of the letter are discussed in the agency comments section, pp. 84-87

Comments From the State of Utah



355 West North Temple
3rd Floor, Suite 330
Salt Lake City, UT 84180-1204
Telephone: 801-538-5545

high level nuclear waste office

South Hill, Ogden, UT 84403

Patrick D. Sullivan, Director
Dick Wetmore, Assistant Director

October 27, 1986

J. Dexter Peach
Assistant Comptroller General
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Thank you for the opportunity to review the draft of a proposed report prepared by the staff of the GAO entitled, "Nuclear Waste: Status of DOE's Implementation of the Nuclear Waste Policy Act." We offer the following comments for your consideration.

The report discusses the role of other federal agencies under the NWPA on pages 20 and 21. The report discusses the role of the Department of Interior's U.S. Geological Survey, noting its responsibility for conducting investigations in support of the nuclear waste program. Other organizations within the Department of Interior play vital roles in the nuclear waste program. The Bureau of Land Management, for example, is responsible for land use authorizations on certain public lands. This authority is relevant to activities at the Utah and Nevada sites. Comments by the Department of Interior on the draft Davis Canyon environmental assessment and the Project Decision Schedule reflect a view that the environmental impacts associated with site characterization and repository development at the Davis Canyon site are probably unacceptable and otherwise conflict irreconcilably with the Secretary of the Interior's mandate under the National Park Service Organic Act and the congressional intent underlying the establishment of Canyonlands National Park. Accordingly, it is not clear that the Bureau of Land Management could, consistently with apparent DOI policy, grant land use authorization for site characterization activity at the Davis Canyon site in the event that one of the three currently approved sites is disqualified. This observation is significant with respect to GAO's recommendation that DOE evaluate potential delays that could result from program activities.

The role of affected states and tribes is also discussed on page 21 of the report. GAO notes, "In addition, states and Indian tribes have an opportunity to disapprove of presidential repository site designation." Please note that, under the terms of the Nuclear Waste Policy Act, an Indian tribe only has authority to issue a notice of disapproval if the proposed repository site is on reservation land.

Appendix X
Comments From the State of Utah

J Dexter Peach
October 27, 1986
page two

The report discusses the delay in the issuance of the final FAs on pages 84 and 85. The report notes, "The issuance of draft FAs was not required by NWPA, and it entailed delaying DOE's schedule for recommending sites for characterization." In our view, this sentence is somewhat misleading. Although the NWPA does not expressly state a requirement for the issuance of a draft environmental assessment, the issuance of such a draft is clearly consistent with Section 117(b) of the Act because of the relationship between the final environmental assessment and potential state concerns regarding public health and safety, environmental, and economic impacts. Please see our comments on your earlier draft report on the consultation and cooperation process.

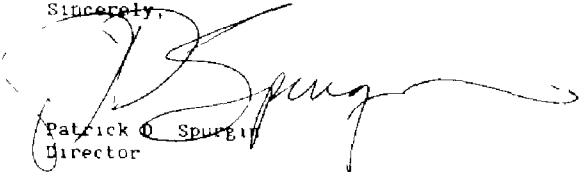
Now on p 77

Similarly, on page 100 of the report, GAO states, "Rather than specifying the level of participation expected, NWPA encouraged DOE to enter into formal consultation and cooperation agreements with DOE and affected states and Indian tribes as a mechanism for resolving questions on the amount of communication and participation and differences of opinions." As we noted in our comments on the GAO consultation and cooperation report, we believe that the NWPA in Section 117 provides guidance on consultation and cooperation above and beyond procedurally oriented consultation and cooperation agreements. One of the difficulties with the consultation and cooperation agreement concept is that it presents, under certain circumstances, a potentially dangerous restriction on the expansive provisions for state involvement contained in Section 117(b).

Last, and perhaps least, we note that Table IV I indicates the units in the two right hand columns as being "dollars in millions." Based on our knowledge of past grants to the State of Utah, we believe that the units should be "dollars in thousands."

Thank you again for the opportunity to review the report. Please feel free to contact us if you have any questions concerning these comments.

Sincerely,



Patrick O. Spurgin
Director

PDS/hud

Comments From the Confederated Tribes of the Umatilla Nation



NUCLEAR WASTE
STUDY PROGRAM

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation

P O Box 638
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Area Code 503 Phone 276-3018

Mr. J. Dexter Peach
Assistant Comptroller General
Resource Community and Economic
Department Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Enclosed please find the comments of the Confederated Tribes of the Umatilla Indian Reservation on the GAO report entitled Nuclear Waste: Status of DOE's Implementation of The Nuclear Waste Policy Act. Thank you for the opportunity to provide comments.

Sincerely,

Bill Burke
Bill Burke, Director
Umatilla Nuclear Waste
Study Program

Enclosure

TREATY JUNE 9 1855 ♦ CAYUSE UMATILLA AND WALLAWALLA TRIBES

COMMENTS OF THE CONFEDERATED TRIBES OF THE UMATILLA
INDIAN RESERVATION TO THE GAO PROPOSED REPORT NUCLEAR
WASTE: STATUS OF DOE'S IMPLEMENTATION OF THE
NUCLEAR WASTE POLICY ACT

The CTUIR has a few comments to the GAO Report. They are:

1. Page 21. The section on Role of Affected States, Local Governments, and Indian Tribes needs to better reflect the roles of host states and affected Indian tribes. The Ninth Circuit has determined that Congress intended an oversight role for host states and affected tribes in the repository siting process under the NWPA. The court found the oversight roles necessary to achieve the congressionally mandated function of promoting public confidence in the safety of disposing of nuclear wastes. Nevada ex rel. Loux v. Herrington, 777 F.2d 529, 536 (9th Cir. 1985).

On a tangential point of more symbolic nature, given the status Congress afforded host states and affected tribes, the order of governments in the title of the section ought to have local governments follow tribes. This would more accurately prioritize the importance of the governmental entities listed as well as their sovereign status.

2. Page 23. The section on NWPA Requirements for Financing the Cost of Nuclear Waste Fund was also established to pay for the programs of host states and affected tribes to oversee DOE activities and to engage in other acts allowed under sections 116-118 of the NWPA.

3. Page 52, 53. Your section on Consultation and Cooperation Agreements with States and Affected Indian Tribes is

Now on pp 42-43

Appendix XI
Comments From the Confederated Tribes of
the Umatilla Nation

incomplete in its discussion of which parties have been involved in C and C negotiations to date. The CTUIR initiated C and C negotiations in July of 1985. Three negotiation sessions took place in 1985. In September of 1985, negotiations were suspended by the Tribe. Negotiations were resumed in May of 1986 by the Tribe and continue to this date.

4. Page 57. Your section on Public Outreach is in error. The OCRWM public outreach program is not limited to host and corridor tribes. OCRWM's chief responsibilities are to affected tribes who need not be hosts nor corridor tribes. See Section 2(2)(B) of the NWPA.

5. Page 63. The section on the second repository should include DOE's express statements concerning DOE's intention of meeting the July 1989 requirement of nominating 5 sites for consideration for a second repository. Secretary Herrington testified on July 31, 1986 before Congressman Udall's Energy and Environment Subcommittee that DOE was not going to comply with that statutory requirement.

Major Contributors to This Report

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