

November 1988

# NUCLEAR WASTE

## Quarterly Report on DOE's Nuclear Waste Program as of September 30, 1988



---

**About Our New Cover . . .**

**The new color of our report covers represents the latest step in GAO's efforts to improve the presentation of our reports.**



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

Resources, Community, and  
Economic Development Division

B-202377

November 22, 1988

The Honorable J. Bennett Johnston  
Chairman, Committee on Energy  
and Natural Resources  
United States Senate

The Honorable James A. McClure  
Ranking Minority Member  
Committee on Energy and Natural Resources  
United States Senate

On March 26, 1984, you requested that we provide quarterly status reports on the Department of Energy's (DOE) implementation of the Nuclear Waste Policy Act of 1982 (NWPA). The act established a national program and policy for safely storing, transporting, and disposing of nuclear waste. As part of this program, DOE is required to investigate a site at Yucca Mountain, Nevada, to determine if the site is suitable for a waste repository. If the site is eventually selected for a repository, DOE must submit to the Nuclear Regulatory Commission (NRC) an application for authorization to construct a repository.

This fact sheet (1) discusses recent comments of the nuclear industry and the state of Nevada on DOE's draft plan for investigating the Yucca Mountain site and (2) provides information on the status of DOE's and NRC's efforts to streamline what NRC expects will be the largest and most complex nuclear-licensing proceeding in history, including the development of an electronic information management system called the Licensing Support System.

COMMENTS ON DOE'S DRAFT  
SITE CHARACTERIZATION PLAN

On January 8, 1988, DOE issued a "consultation draft" of its plan to investigate (characterize) the Yucca Mountain site to the state of Nevada, NRC, and others. The objective of the plan is to detail the steps that DOE will take to obtain the geologic and environmental data necessary to address and resolve questions related to the performance of a repository and compliance with regulations. DOE stated that it would revise the draft plan on the basis of comments received

through June 1988 and issue the final plan in December 1988.

NRC commented on the draft plan on May 11, 1988. Our previous quarterly report discussed NRC's comments.<sup>1</sup> Two utility groups and the state of Nevada commented on DOE's draft plan after the June cutoff date. However, their comments will be considered. (See p. 9.) As discussed below and in section 1, the utility groups and the state had differing views on whether the draft plan complies with the applicable requirements of the NWPA. Both the utility groups and the state, however, expressed concern about the adequacy of DOE's plans to determine, as early as possible, if there are factors present at Yucca Mountain that would disqualify it as a repository site.

#### Comments From Utility Groups

On August 12, 1988, the Edison Electric Institute and the Utility Nuclear Waste Management Group, which together represent the majority of utilities operating nuclear power plants, jointly commented on DOE's draft site characterization plan. The utility groups stated that DOE's draft plan is thorough, fundamentally sound, and far more extensive than required by the NWPA. Accordingly, the draft plan forms a sound basis for preparing the final plan and performing site characterization work, they said.

The utility groups also agreed with earlier comments made by NRC and urged that DOE continue its efforts to resolve those comments on a priority basis. Finally, the groups urged DOE to develop a methodology for evaluating the suitability of the Yucca Mountain site separate from the site characterization program to provide an early warning of any conditions that would disqualify the site.

#### Comments From the State of Nevada

On September 6, 1988, the state of Nevada also commented on DOE's draft site characterization plan. Unlike the utility groups, the state said that the plan does not comply with the requirements for site characterization plans contained

---

<sup>1</sup>Nuclear Waste: Quarterly Report on DOE's Nuclear Waste Program as of June 30, 1988 (GAO/RCED-88-204BR, Aug. 29, 1988).

in the NWPA. For example, the state commented that the description of characterization activities is incomplete, plans for decontamination and decommissioning of the repository are absent, and the plan does not contain the required conceptual design of a repository.

According to the state, perhaps the most fundamental shortcoming of DOE's draft plan is the implicit assumption that Yucca Mountain is suitable for a repository. For example, the state believes the plan reflects no credible effort to examine potential disqualifying conditions that are recognized to exist. Finally, the state believes DOE's plan does not ask crucial site suitability questions, does not have necessary specificity, and attempts to cloud and obscure technical issues and divert attention from potentially disqualifying flaws.

PROPOSAL TO STREAMLINE  
REPOSITORY LICENSING

Shortly after the NWPA was passed, NRC decided that it would be impossible, under existing rules of the licensing procedures, to issue a final decision on DOE's license application to authorize the repository's construction within 3 years unless it streamlined its licensing procedures.<sup>2</sup> Consequently, NRC proposed the following:

- NRC would set up a federal advisory committee comprised of the persons most likely affected by the licensing of a waste repository and embark on a negotiated rulemaking to change existing licensing procedures.
- DOE would establish a computerized document data base (the Licensing Support System) capable of producing all relevant documentation associated with its repository-license application.

---

<sup>2</sup>Although the NWPA speaks in terms of an application for construction authorization, in NRC's view, the information it needs to be able to consider the issuance of a construction authorization is generally the same as will be needed prior to the issuance of a license to receive and possess high-level waste. In other words, NRC views its consideration of the construction authorization as a licensing proceeding for a high-level waste repository.

In July 1988, NRC's advisory committee proposed repository-licensing procedures centering on the development and use of the Licensing Support System. In addition to DOE's Office of Civilian Radioactive Waste Management (OCRWM) and the NRC staff, the committee members are the state of Nevada, a coalition of Nevada local governments, a coalition of nuclear industry groups, the National Congress of American Indians, and a coalition of national environmental groups. NRC staff submitted the advisory committee's proposed procedures to the NRC Commissioners for review and approval on September 6, 1988. The proposed procedures will be published for public comment in November 1988.

The proposal sets forth procedures that would govern the repository-licensing proceeding, which include using the licensing system for submitting and managing documentary material generated by DOE, NRC, and other parties to the proceeding that are relevant to licensing the repository. All parties would be required to make documentary materials available to the other parties through submission for entry into the Licensing Support System reasonably concurrent with their creation.

To ensure that progress is made in designing, developing, and loading the Licensing Support System, the proposal provides for evaluating compliance of the requirements for submitting data at 6-month intervals. DOE's license application cannot be accepted (docketed) by NRC under the new proposal unless the system administrator--an NRC official--certifies at least 6 months before the license application is submitted that DOE has substantially complied with submitting relevant data. In addition, any party that is not in substantial and timely compliance with the rules for submitting material to the system will not be permitted to participate in the public hearing on the license application.

Information in the licensing system would be made available to all parties before DOE submits its application and formal NRC review begins. Access to the system is expected in the first quarter of 1991 even though DOE does not expect to file its application until 1995. Because information would be readily available as it is generated, NRC believes the system will help resolve licensing issues early. For example, NRC expects that time-consuming activities such as the production and on-site review of documents by licensing participants will be reduced substantially and mailing time

associated with filling requests for documents may be reduced.

NRC is confident that it can reach a decision on the construction authorization for the repository within the time allowed by NWPA. To assist in meeting the required NWPA time frame, NRC staff prepared a model licensing schedule showing that construction authorization could be granted within 33 months after NRC accepts DOE's application and publishes a notice of public hearing. The model schedule is advisory and, therefore, is not binding on the NRC licensing board that will manage the licensing proceeding.

#### Disagreement by the Industry Coalition

One member of NRC's advisory committee--the industry coalition--did not agree with the draft proposed rule. The coalition believes that the repository-licensing proceeding will likely be among the most hotly contested and complicated proceedings that NRC has ever faced. Although the coalition acknowledged that the total duration of the proceeding is difficult to predict, it estimated that a minimum of 5-1/2 years will be required and that 7 years is probably a more realistic time period. The coalition believes, therefore, that it is implausible that the Licensing Support System, by itself, will enable NRC to meet the 3-year licensing objective.

Also, because electronic management of such a large volume of documentation has not been attempted before, the coalition stated that system failures would occur that would lengthen the time needed to license the repository. Therefore, the industry coalition opposes the development and use of the Licensing Support System until additional measures are taken to further streamline NRC's repository-licensing procedures.

#### DOE Is Developing the Licensing Support System

Although NRC will administer the Licensing Support System, the system is being designed and developed for DOE by a contractor--Science Applications International Corporation. In July 1988, OCRWM compared the cost of a number of alternative systems within the conceptual design of the system that would meet the requirements of the proposed

rule. The analysis concluded that the costs among the alternative systems are similar to the base model, which was estimated to cost \$195 million (in 1988 dollars) over a 10-year period. The similarity in costs among alternatives was attributed to the fact that labor costs accounted for approximately 70 percent of the total cost of each system.

OCRWM did not attempt to estimate the costs or benefits of achieving a licensing decision without a Licensing Support System. However, its analysis did suggest that without the system, the licensing proceeding would be lengthened for a period of years and estimated the cost of a 1-year delay at about \$195 million.

#### METHODOLOGY

To determine the status of activities pertaining to the licensing proceedings for the high-level waste repository, we interviewed the project manager for the Licensing Support System rulemaking, NRC; the Director, Information Resources Management Division, OCRWM; and other OCRWM program officials. We also interviewed a spokesperson for the industry coalition to the High-Level Waste Licensing Support System Advisory Committee. In addition, we reviewed OCRWM program and contract documents and correspondence related to the licensing system. We also reviewed NRC documents and correspondence related to the rulemaking activities.

With regard to comments on DOE's draft site characterization plan, we obtained, reviewed, and summarized comments submitted to DOE by the two groups representing utilities and by the state of Nevada.

We discussed the facts presented here with cognizant NRC and DOE officials. These officials generally agreed with the facts presented and we have incorporated their comments, where appropriate. Our work was performed from August through October 1988.

Section 1 of this fact sheet discusses in more detail industry and state comments on DOE's draft plan for characterizing the Yucca Mountain site. It also discusses the current proposal to streamline the licensing process.

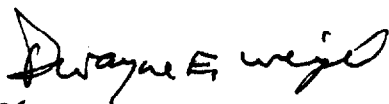
We are sending copies of this fact sheet to the Chairmen of the Senate Committee on Governmental Affairs, the House Committee on Government Operations, and the House Committee on Energy and Commerce; the Secretary of Energy; the



B-202377

Chairman, Nuclear Regulatory Commission; and other interested parties.

Major contributors to this fact sheet are listed in appendix II.

  
for Keith O. Fultz  
Senior Associate Director

## CONTENTS

	<u>Page</u>
LETTER	1
SECTION	
1	
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT AND NUCLEAR REGULATORY COMMISSION ACTIVITIES DURING THE JULY-SEPTEMBER 1988 QUARTER	9
Background	9
Comments on DOE's Draft Site Characterization Plan	9
Efforts to Streamline Repository Licensing	12
APPENDIX	
I	
PRINCIPAL GAO PRODUCTS ON THE NUCLEAR WASTE PROGRAM	21
II	
MAJOR CONTRIBUTORS TO THIS FACT SHEET	22

### ABBREVIATIONS

DOE	Department of Energy
GAO	General Accounting Office
NRC	Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act
OCRWM	Office of Civilian Radioactive Waste Management
SAIC	Science Applications International Corporation

SECTION 1  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
AND NUCLEAR REGULATORY COMMISSION ACTIVITIES  
DURING THE JULY-SEPTEMBER 1988 QUARTER

BACKGROUND

The Nuclear Waste Policy Act of 1982 (NWPA) established a federal program for high-level nuclear waste management. The act's ultimate objective is the safe and permanent disposal of nuclear waste in one or more geologic repositories. NWPA required the Department of Energy (DOE), in consultation and cooperation with affected states and Indian tribes, to develop, site, construct, and operate one repository and select a site for a second one.

On December 22, 1987, the Nuclear Waste Policy Amendments Act of 1987 was signed into law. The amendments, which were contained within the Budget Reconciliation Act for Fiscal Year 1988 (P.L. 100-203), streamlined and focused the waste management program established by the NWPA. The amendments directed DOE to characterize a site at Yucca Mountain, Nevada, and, if it determines that the site is suitable, recommend it to the President for a nuclear waste repository. Characterization of two other candidate sites was canceled. If and when Yucca Mountain is selected as a repository site, DOE is to submit to the Nuclear Regulatory Commission (NRC) an application for authorization to construct the repository. NRC is required to issue a final decision approving or disapproving issuance of the construction authorization no later than 3 years after the date that DOE submits its application, with a possible extension of 12 months for good cause. DOE expects to submit the application to NRC in 1995.

COMMENTS ON DOE'S DRAFT  
SITE CHARACTERIZATION PLAN

On January 8, 1988, DOE issued a "consultation draft" of its plan to characterize the Yucca Mountain site to the state of Nevada, NRC, and others. The objective of the plan is to detail the steps that DOE will take to obtain the geologic and environmental data necessary to address and resolve questions related to the performance of the repository and compliance with applicable regulations. DOE stated that it would revise the draft plan on the basis of comments received through June 1988 and issue the final plan in December 1988. Comments received after June, DOE later said, would be addressed in the first site characterization progress report. (NWPA requires such progress reports at 6-month intervals.)

On May 11, 1988, NRC staff provided DOE with a set of "point papers" discussing about 160 specific concerns resulting from their technical review of the draft plan, 5 of which they considered critically important. One of the NRC staff's five major concerns pertained to DOE's conceptual modeling of the Yucca Mountain site, one to DOE's quality assurance plans for site characterization activities, and three to the exploratory shaft facility that DOE proposes to construct at the site. NRC stated that these five concerns were considered to be of such immediate seriousness that site characterization work should not begin until they are satisfactorily addressed. Our previous quarterly report discussed NRC's comments.<sup>1</sup>

In August and September 1988, two utility groups and the state of Nevada also commented on DOE's draft plan. As discussed below, the utility groups and the state had differing views on whether the draft plan complies with the applicable requirements of the NWPA. Both the utility groups and the state, however, expressed concern about the adequacy of DOE's plans to determine, as early as possible, if there are factors present at Yucca Mountain that would disqualify it as a repository site. Also, each provided other specific comments on various parts of DOE's draft plan.

#### Comments From Utility Groups

On August 12, 1988, the Edison Electric Institute and the Utility Nuclear Waste Management Group, which together represent the majority of utilities operating nuclear power plants, jointly commented on DOE's draft site characterization plan. The utility groups stated that DOE's draft plan is thorough, fundamentally sound, and far more extensive than required by the NWPA. Accordingly, they said, the draft plan forms a sound basis for preparing the final plan and performing site characterization work.

The utility groups also stated, however, that they agree with NRC's five major concerns and urged that DOE continue its efforts to resolve them on a priority basis. They added that for some time, they have been concerned over DOE's slow progress in developing quality assurance plans and procedures but are encouraged by recent DOE initiatives in that area. In this regard, the utility groups noted that DOE's current approach to addressing NRC's quality assurance concerns should serve as a model for resolving the other major NRC concerns. Finally, they stated that in the final site characterization plan, DOE should adopt a conservative treatment of uncertainties in existing data and the results of future site investigations, and should consider a full range of alternative interpretations of existing data. This

---

<sup>1</sup>Nuclear Waste: Quarterly Report on DOE's Nuclear Waste Program as of June 30, 1988 (GAO/RCED-88-204BR, Aug. 29, 1988).

comment parallels NRC's major concern pertaining to conceptual modeling.

The utility groups also urged DOE to develop a methodology for evaluating the suitability of the Yucca Mountain site separate from the site characterization program in order to provide an early warning of any factors indicative of fundamental site unsuitability. In their view, DOE should minimize any possibility, however remote, that the site could be found unsuitable or unlicensable after years of characterization work. They suggested alternative approaches to evaluating site suitability for DOE's consideration. For example, DOE could phase characterization activities so as to identify early both the presence of "qualifying conditions" and the absence of "disqualifying conditions" as those terms are defined in DOE's guidelines for site selection.

#### Comments From the State of Nevada

On September 6, 1988, the state of Nevada also commented on DOE's draft site characterization plan. Unlike the utility groups, the state commented that the plan does not comply with the requirements for site characterization plans contained in the NWA. In the state's view, for example, the description of characterization activities is inadequate and incomplete, required plans for decontamination and decommissioning of the repository site are absent, a description of the possible waste form or package is nonexistent, and the plan does not contain the required conceptual design of a repository.

According to the state, perhaps the most fundamental shortcoming of DOE's draft plan is the implicit assumption that Yucca Mountain is suitable for a repository. For example, the state contends that the plan reflects no credible effort to examine potential disqualifying conditions that are recognized to exist. Although the plan discusses the need to determine if such conditions exist, an evaluation of such findings will, the state said, apparently be made only at the conclusion of the entire characterization program. Specifically, the state noted that no mechanism exists--no key decision points are set out--to uncover the data necessary to make such decisions early in the program before substantial resources are committed. The state urged DOE to structure its site characterization program to search first for information that might disqualify the site, through surface-based testing, before committing further resources to sinking an exploratory shaft for underground testing.

The state also commented that DOE's draft plan does not ask crucial site suitability questions, does not have necessary specificity, and attempts to cloud and obscure technical issues and divert attention from potentially disqualifying flaws. Nevada's expectations, the state said, are that a repository site must be the "best understood piece of geology on earth" to be considered

suitable. Therefore, nothing less than the most rigorous objective scientific research is acceptable to the state. If the site proves too complex to meet this goal, or if its natural waste isolation capabilities will be compromised by the collection of information or the construction of underground facilities, this should be determined as rapidly and efficiently as possible to avoid wasting billions of dollars and a number of years in fruitless pursuit of a repository at Yucca Mountain.

The state agreed with all of the issues that NRC had already raised on DOE's draft plan. Finally, in addition to all of these general comments, the state provided numerous specific technical comments in the areas of licensing, geology, natural resources, rock mechanics, geochemistry, hydrology, DOE's program to develop methods to seal the repository, and its approach to assessing the performance of the repository.

#### EFFORTS TO STREAMLINE REPOSITORY LICENSING

On August 5, 1987, NRC formed the High-Level Waste Licensing Support System Advisory Committee to develop recommendations for revising NRC's rules of practice (10 C.F.R. 2) for repository licensing proceedings. The members of the negotiating committee are DOE's Office of Civilian Radioactive Waste Management (OCRWM), NRC staff, the state of Nevada, a coalition of Nevada local governments, a coalition of nuclear industry groups (Edison Electric Institute, Utility Nuclear Waste Management Group, and U.S. Council on Energy Awareness), the National Congress of American Indians, and a coalition of national environmental groups (Environmental Defense Fund, Sierra Club, and Friends of the Earth).

In July 1988 the NRC advisory committee completed work on a proposed rule for governing NRC's future repository-licensing proceeding. The proposal centers on the early development by DOE and use by potential parties to the licensing proceeding of a computerized document data storage and retrieval system called the Licensing Support System. NRC staff are optimistic that the proposal, if adopted, could permit NRC to reach a licensing decision within 3 years of accepting DOE's license application. One member of the committee, however, challenged this view on grounds that the licensing system may not meet NRC's expectations and that experience in licensing nuclear power plants indicates that a 3-year licensing period cannot be achieved without additional changes in licensing procedures.

#### NRC Determined That It Must Revise Licensing Procedures

Obtaining authorization from NRC to construct and operate the repository will require DOE to demonstrate compliance with

applicable regulatory requirements. In NRC's view, this includes licensing procedures. Under NRC's existing licensing procedures, after it accepts (dockets) DOE's license application, a prehearing conference would be held with the parties involved, such as DOE, the NRC staff, the state of Nevada, and other groups intervening in the licensing proceeding, to define the issues to be pursued in the public hearing on the application. The parties would then begin discovery--a formal process of fact-finding by obtaining information from DOE, the NRC staff, and other parties. The purpose of discovery is to permit parties to develop challenges to the adequacy of the technical data and analyses that support DOE's application, NRC staff positions, and the positions of the other parties. Each party will need access to the documents that the other parties rely on.

Before the Congress amended the NHPA, the Chief Administrative Judge of NRC's Atomic Safety and Licensing Board Panel<sup>2</sup> predicted that the repository-licensing proceeding would be the largest administrative proceeding ever conducted. Discovery would involve hundreds to thousands of requests for information and the preparation and filing of multiple interrogatories, depositions, affidavits, and testimony, which would require significant time and resources to request, search for, retrieve, develop, copy, and mail thousands of documents. Because of the scientific complexity and uncertainty associated with the course of siting, licensing, operating, and monitoring a repository, NRC estimated that millions of pages of documents would be generated by the program, and that satisfying a request for the production of a large number of documents could require 12-18 months of manual effort.<sup>3</sup>

Now that the Congress has eliminated detailed investigation of two other candidate sites, the repository-licensing proceeding is not expected to be as large as NRC originally anticipated. Even so, NRC expects the proceeding to be about twice the size of normal licensing proceedings for nuclear power plants. According to NRC, 25 of the more recent nuclear plant operating licensing

---

<sup>2</sup>Three-member licensing boards selected from NRC's Atomic Safety and Licensing Board Panel preside over NRC public hearings and make initial decisions, as authorized by the NRC Commissioners, on the granting of any license or authorization.

<sup>3</sup>Preliminary estimates, based on a survey of potential Licensing Support System users, show that the total pages of material needed by potential users in August 1990 will range from 9.8 million to 11.1 million pages. The estimate increases to between 31 million to 41 million pages over the first 20 years of licensing system operation.

proceedings took, on the average, about 5 years to complete. NWPA, however, requires an NRC decision on authorizing construction of the repository in 3 years, with a possibility of extension up to 12 months. Shortly after the act was passed, therefore, NRC became convinced that it would be impossible to comply with this time limit unless it streamlined its licensing procedures. NRC proposed the following changes to the licensing procedures:

- NRC would set up a federal advisory committee comprised of persons most likely affected by the licensing of a waste repository and embark on a negotiated rulemaking to make changes to existing licensing procedures.
- DOE would establish a computerized document data base (the Licensing Support System) capable of producing all relevant documentation associated with its repository application.

NRC determined that it would be necessary to facilitate the traditionally long discovery process, including reducing the time normally required for the physical service of documents. Hence, it proposed a process whereby the information and data supporting DOE's application would be made available to all interested parties before DOE submits the application to NRC for its review. NRC proposed to implement this process by developing a rule that would require each party to place all of its relevant documents in the Licensing Support System and to use the licensing system as the sole information base for discovery purposes. Because all relevant information would already be available through access to the system, NRC believed the process would facilitate the early resolution of licensing issues by

- eliminating the traditional filing of first-round discovery requests and accompanying search times by the party from whom the records were requested,
- eliminating the mailing time associated with the request and the response and eliminating or reducing requests for extensions of time because documents were not provided or because adequate search time was not available, and
- helping to ensure that data would be available at the earliest possible time.

NRC decided to form an advisory committee to negotiate proposed revisions to NRC's licensing procedures related to the submission and management of documents and management of the repository-licensing proceeding. The use of the Licensing Support System and its related design would be determined in the process of negotiated rulemaking.



NRC saw many advantages in negotiated rulemaking. It would resolve issues such as what data should be entered into the system, how to ensure that all relevant documents are entered, what types of data will be privileged, access to and security of the system, sanctions for withholding data, and appropriate modification of discovery rules. NRC believed that negotiated rulemaking offered an opportunity for comprehensive treatment of the issues and creative solutions by all potentially affected parties.

Participation by affected interests in the development of the proposed rule would be important in terms of the credibility of the information management system, that is, the belief that all relevant documents have been entered and the system is secure from tampering. NRC also believed that negotiated rulemaking would increase both acceptance and enforcement of the rule. If the committee reached a consensus on a proposed rule, NRC would be committed to obtaining public comment on the consensus proposal unless it determined that the proposal was inconsistent with its statutory authority or not appropriately justified.

#### Advisory Committee Proposes New Licensing Procedures

The NRC advisory committee completed its deliberations in July 1988 and on September 6, 1988, the NRC staff submitted the committee's draft of a proposed rule to the NRC Commissioners for review and approval as a proposed revision to the agency's procedural regulations. The proposal would add a new Subpart J to NRC's rules of practice establishing special procedures for a repository-licensing proceeding. The proposed rule will be published for public comment in November 1988.

The proposal describes how the Licensing Support System would be used for the submission and management of documents. The licensing system is intended to provide full text search capability of, or easy access to, the documentary material of DOE, NRC, and other parties to the proceeding. It requires the submission of documentary materials generated by all parties to the system administrator--an NRC official--reasonably concurrent with their creation. Access to the system by the parties provides the principal document discovery in the proceeding. Some materials, however, would not have to be entered into the licensing system. They include reference and text books, administrative materials, and press clippings and releases. The latter category includes materials related to attorney-client relationships, the government's deliberative process, and privileged or confidential commercial or financial information.

To ensure that progress is made in designing, developing, and loading the licensing system, the proposal would require evaluation of compliance with data submission requirements at 6-month

intervals. NRC cannot docket DOE's license application under the new proposal unless NRC's licensing system administrator certifies at least 6 months before the license application is submitted that DOE is in substantial compliance. In addition, no person would be granted participant status in the public hearing if it is not in substantial and timely compliance with the rules for submitting documentary material to the licensing system.

In addition to provisions governing access to and administration of the Licensing Support System, the proposal would establish procedures for conducting the public hearing on DOE's license application. First, it would permit persons to become "potential parties" during the period before DOE applies for a license. This would permit these persons to gain early access to the licensing system. It would also establish a prelicense application licensing board to manage the proceeding at that stage. Also, the proposal would establish procedures for intervention in the licensing proceeding, appeals of licensing board rulings, and the scope and timing of discovery.

Discovery would be limited to access to documents in the licensing system, inspection and access to raw data, oral depositions, requests for admissions, and informal requests for information. In ruling on a discovery request, a licensing board could consider any "undue delay" that would result by determining if the request creates the potential for unreasonably interfering with meeting the 3-year licensing schedule.

NRC staff are confident that NRC can meet the statutory requirement to reach a construction authorization decision on the repository with effective implementation of the proposed licensing procedures. In particular, the initial time-consuming discovery process would, in the view of NRC staff, be reduced substantially because the relevant information would be readily available through access to the Licensing Support System. To assist in establishing a licensing schedule that will help meet the required time frame, the NRC staff prepared a model schedule for the proceeding. The model, which is enclosed in the draft proposed rule, shows that the initial NRC decision to issue or deny the construction authorization could occur within 33 months after NRC docketed DOE's application and publishes a notice of hearing. The model is advisory and, therefore, not binding on the licensing board that will manage the repository-licensing proceeding.

With the exception of the industry coalition, all members of the advisory committee agreed to the text of the draft proposed rule presented to the NRC Commissioners. The industry coalition believes that because the repository licensing proceeding will likely be among the most hotly contested and complicated proceedings that NRC has ever faced, it will involve technical issues never before litigated by the NRC staff and licensing boards. Also, those opposing DOE's application will have had more

than 10 years to prepare to defeat the application. Although the total duration of the construction authorization proceeding is difficult to predict, the coalition estimated that the minimum duration would be 5-1/2 years and that 7 years is probably a more realistic time period.

The industry coalition agreed that some type of licensing document management and retrieval system is necessary; however, the coalition expressed concern that system failures would occur because the licensing system is an untried system. And, because electronic management of documentation and a data base of the anticipated size has not been attempted before, the system would, in its view, add time to the licensing proceedings. Finally, the industry coalition contended that the system is not cost-effective. The coalition stated that the system cost would actually be at least \$500 million dollars if the estimated 10-year cost of \$195 million in 1988 dollars (discussed later) were inflated over the period of time covered by OCRWM's cost-benefit analysis.

In the industry coalition's view, it appears implausible that the licensing system, by itself, would allow NRC to meet its 3-year statutory time frame even if the system could save as much time as 6 months. Therefore, the coalition decided that it could not support the draft proposed rule without still further changes to NRC's licensing procedures that would guarantee meeting the statutory time limit for licensing. For example, the coalition proposed that the procedures require parties to demonstrate a genuine and substantial issue of disputed fact requiring a hearing for its resolution in order to have a contention admitted. This would, the coalition stated, exclude many frivolous issues and reduce the overall duration of the proceeding.

NRC staff disagreed with the industry coalition's position. In their view, OCRWM's cost-benefit analysis showed that almost \$200 million would be saved for each year of licensing time avoided. The NRC staff added that even if licensing took up to one-third longer than envisioned by the proposed rule, the benefits of the draft proposal would exceed the cost of implementing the licensing system. Also, while the coalition estimated a 10-year life-cycle cost of \$500 million for the system after inflation, the NRC staff stated that all other cost estimates, including cost savings, would likewise have to be inflated and, therefore, the cost-benefit of the system would be the same whether in constant or adjusted dollars. In addition, NRC's project manager for the licensing system rulemaking stated that the system will be operational 4 years before the application is submitted; thus, DOE, NRC, and potential parties will have 3 to 4 years of experience beforehand to see if the design is adequate.

## DOE Will Develop the Licensing Support System

In February 1987, OCRWM and NRC entered into an Agreement in Principle to set forth the mutual policy and commitment by the two agencies for promptly developing the Licensing Support System. They agreed on the need to promptly develop the system as a major step in streamlining the licensing process.

DOE awarded Science Applications International Corporation (SAIC) a \$5.3 million estimated cost-plus-fixed-fee contract on September 30, 1987, for developing the licensing system.<sup>4</sup> (SAIC was among six firms which submitted proposals for system design and implementation.) The contract required the following activities:

- Design of an integrated system.
- Preparation of hardware, software, and telecommunications system specification.
- Development of appropriate application software.
- Testing and implementation of the system.
- Verification of initial operation.
- Development of procedures and training materials for each subsystem.
- Documentation of all systems and procedures.
- Ensuring the satisfactory loading of up to 4 million pages of data into the operational system.

The contract activities would continue for 30 months after award, with an additional 12 months of support following initial licensing system operation, to correct previously undetected operational problems.<sup>5</sup> The system is expected to be operational in the first quarter of 1991. The system is to be designed and developed by DOE, consistent with the requirements in the draft proposed rule but will be administered by NRC.

In May 1988, OCRWM issued a report on the conceptual design of the Licensing Support System. That report followed two earlier

---

<sup>4</sup>The contract amount was revised on August 18, 1988, for a total estimated cost and fixed fee of \$5.7 million.

<sup>5</sup>This was later revised. The total duration of the contract now will not exceed 48 months.

reports on preliminary needs analysis and preliminary data scope analysis of a licensing system prepared in February and March 1988, respectively. The system will be composed of various computer subsystems and physical storage facilities for files that will be integrated into a single system. The system text storage subsystems will contain the full text of all applicable federal, state, and local regulations with which the repository program must comply and the full text of most program documents, abstracts of documents not stored in full text in the computer part of the licensing system, and an index to materials that are not suitable for storage in the computer. The archives (the physical storage facilities) will house copies of all documents in the text storage subsystems and contain most nondocument materials, such as rock core samples, which will be catalogued through the text storage subsystems.

In July 1988, OCRWM prepared a "cost-benefit" report comparing a number of alternative licensing systems within the conceptual design for the Licensing Support System that were formulated to meet the rulemaking requirements. OCRWM's analysis was limited to a comparison of various alternative methods of satisfying the needs for the system because the system was expected to be both required by NRC's regulations and necessary for compliance with the 3-year statutory requirement. The analysis did not estimate the costs or benefits of attempting to achieve the licensing decision without a computerized licensing system. The report concluded that costs among the alternatives ranged from \$192 million to \$236 million (in 1988 dollars). OCRWM estimated that the base model would cost \$195 million. The cost similarity among the alternatives occurred because labor is the predominant cost and is not greatly affected by alternative designs. Also, the designs themselves cannot vary dramatically and still meet the stated requirements.

Because the initial hardware is expected to be suitable for replacement in 10 years, the cost analysis was performed for a 10-year life cycle. This included 2 years of system design followed by 8 years of system operation. The life-cycle costs included data capture (the process of collecting and preparing the information for system loading) and system design, procurement, and operation. Labor for the capture process and systems operation contributed about 70 percent of the total base model costs. Other costs were hardware (16 percent), facilities (7 percent), telecommunications (4 percent), hard-copy production (3 percent), and software (2 percent).

The benefit-cost analysis suggested to OCRWM that if the Licensing Support System helps reduce the licensing period, the benefits of the system would be realized as savings yielded by avoiding costs which would have been incurred as a result of the delay. Although OCRWM stated in its report that the licensing process would probably be extended without a licensing system, it

provided no further information on the basis for this statement. However, it reported that any extensions of licensing time would be expected to also extend the date of operation for the repository. OCRWM estimated that costs associated with a 1-year delay would be about \$195 million; therefore, it concluded that the cost for the licensing system was similar to the cost of a 1-year delay in the repository operation.<sup>6</sup> On that basis alone, OCRWM concluded that if the use of a licensing system in the licensing process for the construction authorization can reduce the time period by more than 1 year, the cost would be justified.

---

<sup>6</sup>This figure was arrived at by estimating the 1-year costs (in 1988 dollars) for development and evaluation of the program and for reactor fuel storage costs. Development and evaluation is the funding category under which most program costs are currently covered. The reactor fuel storage cost would result from the need to establish additional storage capacity to retain more spent fuel at reactors which will be continuing to generate additional spent fuel.

PRINCIPAL GAO PRODUCTS ON THE NUCLEAR WASTE PROGRAMCONGRESSIONAL REPORTS

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

Nuclear Waste: Status of DOE's Nuclear Waste Site Characterization Activities (GAO/RCED-87-103FS, Mar. 20, 1987).

Nuclear Waste: Status of DOE's Implementation of the Nuclear Waste Policy Act (GAO/RCED-87-17, Apr. 15, 1987).

Nuclear Waste: DOE Should Provide More Information on Monitored Retrievable Storage (GAO/RCED-87-92, June 1, 1987).

Nuclear Waste: A Look at Current Use of Funds and Cost Estimates for the Future (GAO/RCED-87-121, Aug. 31, 1987).

Nuclear Waste: Information on Cost Growth in Site Characterization Cost Estimates (GAO/RCED-87-200FS, Sept. 10, 1987).

Nuclear Waste: Fourth Annual Report on DOE's Nuclear Waste Program (GAO/RCED-88-131, Sept. 28, 1988).

Nuclear Waste: Repository Work Should Not Proceed Until Quality Assurance Is Adequate (GAO/RCED-88-159, Sept. 29, 1988).

REPORTS TO AGENCY OFFICIALS

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

Nuclear Waste: DOE Should Base Disposal Fee Assessment on Realistic Inflation Rate (GAO/RCED-88-129, July 22, 1988).

MAJOR CONTRIBUTORS TO THIS FACT SHEET

RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION,  
WASHINGTON, D.C.

Keith O. Fultz, Senior Associate Director (202) 275-1441

Dwayne E. Weigel, Group Director

Emi Nakamura, Evaluator-in-Charge

(301832)







---

**Requests for copies of GAO reports should be sent to:**

**U.S. General Accounting Office  
Post Office Box 6015  
Gaithersburg, Maryland 20877**

**Telephone 202-275-6241**

**The first five copies of each report are free. Additional copies are \$2.00 each.**

**There is a 25% discount on orders for 100 or more copies mailed to a single address.**

**Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.**

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

**Official Business  
Penalty for Private Use \$300**

**First-Class MAIL  
Postage & Fees PAID  
GAO  
Permit No. G100**