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Briefing Report to Congressional Requesters

May 1988

NUCLEAR WASTE

Quarterly Report on DOE's Nuclear Waste Program as of March 31, 1988

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Resources, Community, and
Economic Development Division

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May 19, 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, and, if it determines that the site is suitable, recommend to the President its selection for a nuclear waste repository. December 1987 amendments to the act eliminated the candidate sites at Deaf Smith County, Texas, and Hanford, Washington, from further consideration.

This briefing report addresses key nuclear waste program activities occurring in the quarter ending March 31, 1988, with some discussion of related activities that occurred in April 1988.

NRC COMMENTS ON THE YUCCA MOUNTAIN SITE CHARACTERIZATION PLAN

On January 8, 1988, DOE issued a draft site characterization plan for the Yucca Mountain site to the state of Nevada and the Nuclear Regulatory Commission (NRC). The objective of this plan is to detail the steps that DOE will take to obtain geologic and environmental data for the site. After consultations with state officials and NRC, DOE intends to revise and issue the plan in final form. A 90-day period for public review of the plan will follow, as well as a 6-month period for NRC's formal review and preparation of an analysis of the plan.

On March 7, 1988, the NRC staff provided comments on the plan for DOE's consideration in developing the final plan. Among the staff's comments were five "objections" they believed were serious enough to be resolved before DOE starts site characterization work. One of these pertained to DOE's conceptual modeling of the Yucca Mountain site, one involved the adequacy of DOE's quality assurance plans for site characterization, and three involved the exploratory shaft facility that DOE proposes to construct at Yucca Mountain beginning in June 1989.

The NRC staff commented that, of these objections, the most fundamental technical one is DOE's "failure" to recognize the range of alternative conceptual models of the Yucca Mountain site that can be supported by the limited existing technical data. NRC staff raised the same concern in comments on both the 1985 draft and 1986 final environmental assessments for the site. Mathematical models are used to simulate and evaluate the behavior of a geologic system at a potential repository site over the long period of time that nuclear waste must be isolated from the environment. In the staff's view, the site characterization program presented in the draft plan appeared primarily designed to support a preferred conceptual model rather than to obtain the information necessary to reduce uncertainties over which model best portrays conditions at the site. The NRC staff made four recommendations to DOE related to identifying a full range of conceptual models and taking alternative models into account in planning the sequence of site investigations and tests.

The NRC staff have subsequently discussed with DOE the modeling issue as well as their other major concerns with the draft plan. NRC officials believe that DOE understands the staff's concerns.

DOE officials do not agree that the site characterization approach is designed to support a preferred model; instead it is designed to reduce uncertainties during the characterization process. DOE officials told us that, because the draft site characterization plan is complex and addresses an array of activities required to evaluate the site, the relationship between the testing of alternative hypotheses and the conditions at the site apparently are not yet clear to NRC staff. DOE plans to clarify these relationships and respond to NRC's comments by including in the final plan a list of the various scenarios considered

and the specific hypotheses to be tested. It also plans to demonstrate the relationship of the scenarios and hypotheses to the proposed testing program in the plan. According to DOE officials, the NRC staff has agreed that this approach would provide the information needed and would remove NRC's objection relating to the modeling issue. The final site characterization plan is scheduled for issuance in late 1988.

In our view, the conceptual modeling issue is particularly significant. If DOE begins site characterization without resolving the issue, according to the NRC staff, early site characterization work could physically compromise DOE's ability to conduct future investigations that may be found necessary for repository licensing purposes. Thus, we believe that the two agencies should resolve the issue before site characterization begins so that the risk of encountering significant problems later in the site characterization program is not unnecessarily increased.

TERMINATION OF WORK AT TWO SITES

At the end of this quarter DOE was adjusting the nuclear waste program in accordance with the Nuclear Waste Policy Amendments Act of 1987 (contained in the Budget Reconciliation Act for Fiscal Year 1988, Public Law 100-203). Among other things, the amendments required DOE to terminate, by March 21, 1988, all site-specific activities--except reclamation activities--at the Deaf Smith and Hanford sites.

In December 1987 DOE directed its project offices in Washington and Texas to begin an orderly phase-out of all site-specific repository activities. According to an April 11, 1988, letter to the Chairman of the Senate Committee on Energy and Natural Resources, DOE terminated all activities except for reclamation and managerial and administrative tasks by March 22, 1988. States and Indian tribes receiving grants under the NWPA are also phasing out their activities under DOE's direction. Continuing managerial and administrative activities include completion of key project documents, disposition of records and property, employee outplacement, and management and administration of grants and terminated contracts.

DOE stated that by March 31, 1988, the staffs of the project offices had been reduced by approximately 50

percent. DOE's estimated costs for phase-out of project activities prior to March 21, 1988, reclamation, and completion of all activities are $53 million for the Deaf Smith site and $85 million for the Hanford site, totaling about $138 million.

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Section 1 of this briefing report discusses NRC's principal comments on the Yucca Mountain draft site characterization plan and DOE's actions to terminate work at the other two candidate sites.

To determine the status of the activities discussed in this briefing report, we interviewed officials in DOE's Office of Civilian Radioactive Waste Management who are responsible for planning and managing the waste program. We also interviewed NRC officials regarding that agency's role in nuclear waste program activities discussed in this report. In addition, we reviewed DOE program documents, correspondence, and studies, as well as related NRC documents and correspondence. We discussed the facts presented here with cognizant DOE officials. These officials told us that the facts presented accurately reflect the program's status for the quarter ending March 31, 1988. Our work was performed between January 1988 and April 1988.

We are sending copies of this briefing report 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 Chairman, Nuclear Regulatory Commission; and other interested parties. If you have further questions, please contact me at (202) 275-1441.

Major contributors to this briefing report are listed in appendix II.

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for Keith O. Fultz
Senior Associate Director

CONTENTS

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

SECTION 1

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

ACTIVITIES DIRECTED TOWARD LEGISLATIVE

REQUIREMENTS DURING THE JANUARY-MARCH 1988 QUARTER

BACKGROUND

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

In May 1986 DOE recommended to the President, and the President approved, three candidate first repository sites for further geologic testing (site characterization). The three sites were Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford, Washington. At that time, DOE estimated that site characterization would take 5 to 7 years.

On December 22, 1987, the President signed into law the Nuclear Waste Policy Amendments Act of 1987. The amendments, which were contained within the Budget Reconciliation Act for Fiscal Year 1988 (Public Law 100-203), make substantial changes to NWPA and the manner in which DOE conducts its nuclear waste disposal program. One of the most significant changes was directing DOE to characterize the Yucca Mountain site and terminate all site-specific activities, except reclamation, at the Deaf Smith and Hanford sites within 90 days. The 90-day period ended on March 21, 1988. Subject to existing licensing requirements, a nuclear waste repository is authorized to be sited and constructed only at Yucca Mountain. In conjunction, the amendments provide for terminating financial assistance to all potentially affected states, except Nevada, and Indian tribes.[1]

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[1]Section 116 of NWPA authorized financial assistance for states identified as having potentially acceptable repository sites. Section 118 authorized financial assistance for Indian tribes in affected states.

NRC STAFF COMMENTS ON DRAFT SITE CHARACTERIZATION PLAN FOR YUCCA MOUNTAIN

On January 8, 1988, DOE issued a "consultation draft" of the site characterization plan for Yucca Mountain to NRC and the state of Nevada. The objective of this plan is to detail the steps DOE will take to obtain geologic data for the site. DOE concurrently released to these same groups environmental and socioeconomic monitoring and mitigation plans so that interested parties could have a total picture of detailed testing activities at Yucca Mountain.

DOE plans to hold a series of technical workshops with state of Nevada officials and with NRC staff to discuss the organization and contents of the consultation draft, receive and address major technical questions, and identify any significant technical issues with respect to site characterization. DOE expects that consultations like these workshops will help identify any issues that should be addressed before the final site characterization plan is issued for public review and comment. A general session to explain and discuss the plan with the state and NRC took place in late January 1988 in Nevada, followed by a technical workshop in April.

After all the planned technical workshops are held, DOE intends to revise the plan on a schedule to be determined by the results of the workshops. Subsequently, DOE will provide a 90-day period for public review of the revised plan, hold public hearings, and provide a 6-month period for NRC's review and preparation of an analysis of DOE's site characterization plan. Drilling of an exploratory shaft at the Yucca Mountain site is authorized to begin upon completion of the site characterization plan and public hearings. DOE expects to issue the final plan in late 1988. According to DOE, exploratory shaft construction is now expected to start in June of 1989.

On March 7, 1988, the NRC staff provided DOE with the results of its technical review of the draft plan in the form of draft point papers discussing specific concerns. The NRC staff categorized its concerns into three levels:

-- objections, which are matters of such immediate seriousness to the site characterization program that DOE should not start site characterization work until they are resolved satisfactorily;

-- comments, which are concerns that would result in a significant adverse affect on licensing if not resolved, and which need early attention but should not preclude work from starting; and

-- questions, which indicate important areas where more information is needed before NRC can complete its evaluation.

The NRC staff listed five concerns as objections. One of these pertained to conceptual modeling of the Yucca Mountain site, one related to DOE's quality assurance plans for site characterization activities, and three involved the exploratory shaft facility that DOE proposes to construct at Yucca Mountain.

Insufficient Conservatism In DOE's Site Characterization Approach

Because DOE cannot conduct actual tests and demonstrations of repository system behavior under various conditions and over hundreds or thousands of years, mathematical models must be used to evaluate the long-term behavior of the system. Estimates of repository performance over long periods of time require using mathematical models of such key processes as groundwater flows and transport of radioactive materials. Evaluating a potential site for a geologic repository involves a critical assessment of (1) the performance of the geologic system, (2) the probable future performance of the natural system considering normal change and potentially disruptive events, and (3) the disruption to the natural system resulting from repository site preparation, construction, and operation. An assessment of risk requires reasonable predictions regarding the repository environment.

The NRC staff's most fundamental technical objection with the draft site characterization plan is DOE's "failure to recognize the range of alternative conceptual models of the Yucca Mountain site that can be supported by the existing limited data base." Because of uncertainties in the available data and gaps in the existing data base, the staff believe that DOE needs to consider a range of uncertainties and alternative conceptual models in developing its site characterization programs. Although DOE identifies more than one conceptual model of the Yucca Mountain site in the draft plan, NRC commented that the site characterization program appears primarily designed to collect information that will support DOE's preferred conceptual model. The staff believe that DOE should take the more conservative approach of understanding the site and the data necessary to reduce the uncertainties about which conceptual model is most appropriate for Yucca Mountain. In summary, NRC believes that unless DOE resolves these issues before it begins site characterization, early site characterization work could physically compromise DOE's ability to conduct future investigations that may be found necessary for repository licensing purposes.

NRC made four recommendations to DOE related to identifying a full range of conceptual models and taking alternative models into account in planning the sequence of site investigations and tests:

-- DOE should identify a full range of alternative conceptual models suggested by available preliminary evidence.

-- Site investigations and information needs should take into account alternative conceptual models, and these models should be fully considered in planning the sequence of site investigations and tests.

-- On the basis of a full array of site investigations, DOE should determine which tests would preclude doing other tests that are important to the site characterization program, and these tests should be performed in the appropriate sequence.

-- DOE should give high priority to investigations with the greatest potential for resolving issues that could either make the site unlicensable or substantially change the site characterization program.

In their March 1988 comments, NRC staff stated that they had raised these same concerns in commenting on both the draft and final DOE environmental assessments for the Yucca Mountain site. For example, in March 1985 comments on the draft environmental assessment, the NRC staff said that, in some instances, the full range of uncertainty about factors affecting site suitability is not recognized in the discussion supporting the environmental assessment's findings. In a number of instances the environmental assessments make conclusions and findings that are not supported by existing data or that existing data indicate are not conservative. Further, the staff said that DOE's conceptual model of hydrologic flows is based on assumptions that are not supported by the available data and that DOE should consider alternative conceptual models. Similarly, NRC's December 1986 comments on the final environmental assessments also noted the uncertainties and limitations of DOE's approach to evaluating the Yucca Mountain site.

DOE and NRC staff participated in a workshop on alternative conceptual models in April 1988. This meeting was intended to help ensure that DOE fully understands NRC's concerns and considers them in the development of the site characterization plan. The discussion focused on alternative conceptual models of the long-term performance of the hydrologic and geologic systems at the Yucca Mountain site.

One of the models discussed at the workshop was of the groundwater system developed by a physical scientist at DOE's waste management project office in Nevada. A report prepared by this scientist in November 1987 concludes that serious doubt exists as to the suitability of the Yucca Mountain site, and calls into question the modeling approach being taken by DOE in its technical studies.[2] The report states that

> "A conceptual model of the flow field, indicated by the currently available data from the Yucca Mountain site, points toward serious limitations of this site to effectively isolate radionuclides from the biosphere. These limitations are greater by far than those currently recognized by [DOE]."

We discussed NRC's concerns with officials from OCRWM's licensing and siting branches. These officials said that, overall, DOE's goal is to provide sufficient information to NRC so that it can withdraw its objections. They agreed that DOE should not proceed with site characterization until NRC's major concerns have been satisfactorily resolved.

The OCRWM officials also stated that DOE's approach to modeling the Yucca Mountain site is comprehensive and complete. They noted that DOE conducted a modeling workshop between April 11 and 14, 1988, to ensure that DOE had considered or was considering all possible models of the site. No one attending the meeting identified a model that DOE had not already considered. Nevertheless, the officials said that DOE has agreed to follow NRC's recommendation and provide, in the final plan, information on all the models they have thought of and discarded, those they are pursuing, and the reasons for their decisions. In addition, DOE plans to do a better job of describing its model in the final plan.

We also asked the OCRWM officials why NRC's concern apparently had not been resolved after NRC raised it in commenting on DOE's draft and final environmental assessments. These officials told us that, in their view, NRC's previous comments were fully addressed in the draft site characterization plan. NRC's comments on the draft plan, however, indicate that the NRC staff disagree with this position.

According to the director of NRC's Division of High-Level Waste Management, DOE now appears to understand the NRC staff's concerns, recognizes the need to consider other models in the site

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[2]Jerry S. Szymanski, Conceptual Considerations of the Death Valley Groundwater System with Special Emphasis on the Adequacy of This System to Accommodate the High-Level Nuclear Waste Repository, Waste Management Project Office, Nevada Operations Office, DOE (Nov. 1987).

characterization process, and has made a commitment to address NRC's concerns in the final site characterization plan. He added that NRC must wait until the plan is finalized to determine whether DOE fully understands the NRC staff's concerns and has taken or is taking corrective actions that ensure the issue is resolved satisfactorily before DOE begins site characterization.

We discussed NRC's objection regarding the modeling issue with OCRWM officials. These officials believe that NRC staff's concerns in this regard can be eliminated by a clarification of DOE's conceptual modeling approach in the final plan. These officials told us that alternative conceptual models are used to explain site characteristics when data for the site is incomplete or ambiguous. In the draft site characterization plan, according to these officials, DOE (1) summarized current information about the site characteristics and repository design, (2) defined expected characteristics and conditions at the site, (3) identified processes and events at the site that could lead to different conditions, and defined scenarios in which these processes and events could affect repository performance, and (4) specified alternative hypotheses to be examined to understand the site characteristics. According to these officials, because of the complexity of the plan, the relationships between the testing of alternative hypotheses and the expected conditions at the site are not clear in the plan. To clarify these relationships, DOE plans to provide a list of scenarios considered in its approach and the hypotheses to be tested, as well as the correlation of these scenarios and hypotheses to the testing program. These DOE officials told us that, in the meeting between DOE and NRC staff on alternative conceptual models, the NRC staff agreed that this approach would provide the staff the information they need and would remove their objection regarding DOE's modeling.

In our view, the conceptual modeling issue is particularly significant. If DOE begins site characterization without resolving the issue, according to the NRC staff, early site characterization work could physically compromise DOE's ability to conduct future investigations that may be found necessary for repository licensing purposes. Thus, we believe that the two agencies should resolve the issue before site characterization begins so that the risk of encountering significant problems later in the site characterization program is not unnecessarily increased.

Adequacy of DOE's Quality Assurance Program

Another objection identified in the NRC staff's review of the draft DOE plan is the status of DOE's quality assurance program for site characterization work. Because data collected during site characterization will be used to make licensing decisions about the Yucca Mountain site, NRC's regulations on high-level waste

repositories require DOE to implement a quality assurance program governing the conduct of the work. A quality assurance program is intended to provide a structured system for demonstrating that work performed to establish the site's suitability is credible for making licensing decisions.

DOE has committed to having a quality assurance program in place that complies with NRC requirements before DOE begins site characterization. The commitment is necessary because data collected under programs that do not comply with NRC's quality assurance requirements may not be usable in the licensing process. The NRC staff's review, however, found insufficient basis at this time for confidence in the adequacy of DOE's quality assurance program. This is because (1) none of the quality assurance documents NRC has reviewed fully complies with quality assurance requirements, (2) DOE has not yet provided NRC with all DOE and contractor quality assurance documents for review, and (3) outstanding comments exist on the documents that NRC has reviewed. The NRC staff also stated that they have not been able to selectively verify, through independent audits, that an adequate quality assurance program is in place for site characterization.

The director of NRC's Division of High-Level Waste Management told us that discussions between the staffs of the two agencies indicate that DOE understands NRC's quality assurance concerns. In addition, the acting chief of OCRWM's licensing branch reiterated to us that DOE has committed to having a quality assurance program in place that meets NRC regulatory standards when it begins site characterization. In keeping with this commitment, a separate Office of Quality Assurance reporting to the Director, OCRWM, was created as part of the reorganization implemented in April. He added that both agencies are actively identifying issues that need to be resolved and they plan to meet in May or June to identify resolution approaches.

Plans For Exploratory Shaft Facility

NRC staff also found that DOE's plan for conducting work in the underground exploratory shaft facility was inadequate in a number of areas critical to site characterization. The underground facility includes a primary exploratory shaft, other testing areas in tunnels and rooms, and a second shaft for ventilation, handling of materials, and emergency exit. In particular, NRC's review identified three concerns, categorized as objections, with DOE's plan.

1. The plan does not contain sufficient design information about the proposed exploratory shaft facility to assess whether construction operations in the shafts and tunnels would interfere with DOE's proposed testing programs, and whether individual tests could interfere with other testing programs.

2. DOE's plan will not minimize or avoid infiltration of surface water into the underground facility and does not adequately consider potential adverse effects of locating the exploratory shafts and other planned excavations in areas susceptible to water infiltration and erosion. According to the NRC staff report, for example, DOE's proposed designs for sealing excavated areas would encourage surface water to drain through the exploratory test facility shafts. In addition, the shafts and adjacent testing areas could flood because the proposed locations are subject to water infiltration. The report concluded that the proposed excavation locations could (1) result in significant and unmitigable long-term adverse effects on the site's waste isolation capability and (2) adversely affect DOE's ability to adequately characterize the site.

3. DOE's draft site characterization plan identifies Calico Hills--an underground rock barrier between the planned repository depth and the underlying water table--as a primary waste isolation barrier. However, the plan does not consider the possibility that penetrating or excavating the Calico Hills rock may irreparably damage its ability to contain radioactive waste. Further, DOE did not consider alternate means for obtaining site characterization data without damaging portions of the waste isolation barrier and had not analyzed the consequences of the proposed excavation.

OCRWM licensing and siting officials agreed that the site characterization plan does not contain design information such as how the shafts will be constructed to avoid adverse impacts on testing programs. That information, they said, will be contained in a separate document that will be released prior to the final plans.

Regarding the location of the shafts, the OCRWM officials said that DOE believes it can demonstrate to NRC the appropriateness of the proposed locations described in the draft site characterization plan. DOE anticipates further discussions with NRC on the topic.

With respect to penetrating Calico Hills, the OCRWM officials said that DOE has decided to proceed cautiously and to defer a decision on whether it will disturb the waste barrier. Although DOE intends to begin shaft construction in June 1989, it does not plan to sink the shaft through the area at that time. Instead, DOE plans to stop the shaft at or just below the repository horizon, in the area above the Calico Hills.

STATUS OF DOE ACTIONS TO IMPLEMENT THE 1987 AMENDMENTS

Our previous quarterly status report described DOE's initial efforts to terminate site-specific work at the Deaf Smith and

Hanford sites.[3] On April 11, 1988, DOE reported to the Chairman of the Senate Committee on Energy and Natural Resources on the status of termination activities.

According to DOE's report, on December 24, 1987, it directed project offices in Washington and Texas to begin an orderly phase-out of all site-specific repository activities. The report states that DOE immediately notified all prime contractors, recipients of grants (states and Indian tribes), national laboratories, and other federal agencies of the requirements for termination of site-specific activities and for an orderly phase-out. In addition, DOE has reviewed all activities and developed plans for an orderly phase-out to ensure that site-specific activities would be terminated no later than March 21, 1988, and that information that might be needed for future uses, such as support for litigation, would be preserved.

According to this report, DOE terminated all activities, except for reclamation and managerial and administrative tasks, by March 22, 1988. The continuing managerial and administrative activities include

-- compilation, review, editing, and/or publication of key project documents, including computer programs;

-- disposition of records and documents, and storage of core samples;

-- final cataloging, classification, and disposition of surplus property;

-- determination of payments-equal-to-taxes for Washington State;

-- closing of information offices in Louisiana, Mississippi, Utah, Washington State, and at Vega, Texas, by March 31, 1988; and in Hereford, Texas, by August 31, 1988;

-- employee outplacement; and

-- management and administration of grants and terminated contracts.

All of the prime contractors and subcontractors at the sites had terminated their site-specific activities by March 21, 1988, according to DOE's report. Except for reclamation, records management, and negotiation of termination settlements, most contractor activities are to be completed this summer.

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[3]Nuclear Waste: Quarterly Report on DOE's Nuclear Waste Program as of December 31, 1987 (GAO/RCED-88-99FS, Feb. 18, 1988).

By October 1, 1988, DOE expects the project office staffs to be reduced by approximately 90 percent. Estimated costs from the beginning of calendar year 1988 for phase-out of project activities prior to March 21, 1988, reclamation, and final completion of all activities are $53 million for the Deaf Smith project and $85 million for the Hanford project, totaling about $138 million. This estimate does not include the costs for decontaminating and disposing of materials from a test laboratory at Hanford or for extended storage of borehole core samples. These activities are not expected to increase the total cost by more than 10 percent, according to DOE's report.

The recipients of grants under the NWPA are also phasing out their activities under DOE's direction. As required by the amendments, no new funds have been provided to Louisiana, Mississippi, Texas, Utah, or Washington after December 22, 1987. DOE approved the states' use of funds previously authorized for their phase-out activities.

PRINCIPAL GAO PRODUCTS ON THE NUCLEAR WASTE PROGRAM

CONGRESSIONAL REPORTS

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

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).

REPORTS TO AGENCY OFFICIALS

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

APPENDIX II

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