

September 1994

NUCLEAR WASTE

Comprehensive Review of the Disposal Program Is Needed



**Comptroller General
of the United States**

B-246458

September 27, 1994

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

The Nuclear Waste Policy Act of 1982 created the Office of Civilian Radioactive Waste Management within the Department of Energy (DOE) and tasked it with developing a repository to permanently dispose of highly radioactive waste. The estimated cost of disposing of such waste increased from \$20 billion to \$30 billion over the program's first 10 years despite significant reductions in the program's scope. During recent congressional hearings, Members of Congress and the public have raised many concerns about the pace and direction of the disposal program. Those concerns have focused on such issues as the storage of waste until a repository is operational, funding, the program's organization and management, and alternative approaches to regulating the development of a repository.

This report fulfills the requirement in the 1982 act, as amended, that we audit DOE's Office of Civilian Radioactive Waste Management and report our findings. It discusses why we continue to believe that a comprehensive independent review of the disposal program and fundamental policies guiding the program is needed. Early next year, we also plan to provide the Congress with a report framing key issues in the nuclear waste debate that the Congress may wish to examine as it considers the future direction of nuclear waste policy.

Results in Brief

Recognizing that problems existed in the disposal program, the Secretary of Energy recently undertook several review initiatives. These review initiatives are separate from changes that DOE is implementing in the program to improve its funding and management. The initiatives include a review of past criticisms of the program, a financial and management evaluation of the repository project, and a public inquiry into the continued storage of waste by utilities at their nuclear power reactors after January 1998. Taken together, these initiatives are too narrow in scope and lack sufficient objectivity to provide the thoughtful and thorough evaluation of the program that is needed.

Congressional committees and individual Members of Congress have recognized, in growing numbers, that changes are needed in the disposal program to ensure that the funds appropriated for it are spent wisely.

Many Members have called for a broad-based independent review of nuclear waste management, including the management of highly radioactive waste from civilian nuclear power reactors. Without a comprehensive independent review of the disposal program and its policies, millions—if not billions—of dollars could be wasted in implementing the program over the next several decades.

A review conducted by an entity completely independent of DOE with requisite expertise in public policy and administration and in nuclear waste issues could help ensure that the program is implemented as efficiently and effectively as possible. Analyzing the key issues and options related to waste storage and disposal in a comprehensive manner could ensure that the Congress has the best possible information as a basis for evaluating the performance of DOE's program, making future funding decisions, and making any necessary changes to the program. Such a review could be conducted simultaneously with investigation activities at Yucca Mountain, Nevada, that are critical to determining whether that site is suitable for use as a repository.

Background

In May 1993, we raised concerns about the slow pace and fragmented direction of the disposal program that were caused, at least in part, by the disparity between the program policies DOE has been pursuing and the relatively low budget priority assigned to the program—especially to the scientific and technical activities necessary to determine whether Yucca Mountain is a suitable site for a nuclear waste repository.¹ Because the Secretary of Energy was then new to the position, we recommended that DOE review the program's goals and objectives in the context of the program's low funding priority, the sufficiency of the program's emphasis on the scientific investigation of Yucca Mountain, and the ways that the investigation project could be conducted more efficiently without sacrificing its technical quality. We also called for an independent review of the program that would be performed concurrently with the investigation at Yucca Mountain, such as the review recommended by the Nuclear Waste Technical Review Board. In March 1993, the Board had recommended an independent review of the disposal program because it was concerned about unrealistic deadlines driving the program, significant gaps in DOE's plans for managing nuclear waste, and the diffuse

¹Nuclear Waste: Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties (GAO/RCED-93-124, May 21, 1993).

organizational structure of the program.² Finally, we recommended that the Congress defer consideration of legislation that would have changed the method of funding and increased the funding for the disposal program until the Secretary of Energy had completed the reviews that we had recommended DOE conduct; an independent review of the program, such as that recommended by the Board, had been completed; and appropriate legislative, policy, and/or programmatic changes had been implemented.

In July 1993 testimony before two House subcommittees, in response to questions on how an independent review of the disposal program might be done, we suggested that such a review would need to be chartered at a high level in order to ensure the necessary independence and objectivity.³ In addition, we suggested several possible entities for conducting such a review, including a specially constituted congressional committee, a presidential commission, and/or the National Academy of Public Administration.

As noted in our May 1993 report, one of our primary concerns about the disposal program has been DOE's adherence to schedules for beginning to operate a repository and accept utilities' waste that were unrealistic for both funding and technical reasons. We pointed out that, at the pace at which DOE was then proceeding, it was unlikely that the Department could begin disposing of waste before 2015, 5 years later than its target date of 2010. Also, in 1991 we had concluded that it was unlikely DOE would be able to develop by 1998, as it planned, a facility for accepting and temporarily storing utilities' waste.⁴ Despite these findings and similar conclusions drawn by others, such as the Nuclear Waste Technical Review Board, DOE has continued to pursue these milestones for developing a repository and accepting utilities' waste.

Also, in our May 1993 report we pointed out that an underlying reason for the program's slow progress and escalating cost is that DOE has been spending a relatively small percentage of the program's appropriations directly on scientific investigations of Yucca Mountain. Instead, as DOE acknowledges, it has used about one-half of the project's funds to maintain

²NWTRB Special Report to Congress and the Secretary of Energy, Nuclear Waste Technical Review Board (Mar. 1993).

³Nuclear Waste: Yucca Mountain Project Management and Funding Issues (GAO/T-RCED-93-58, July 1, 1993), before the Subcommittee on Energy and Power, Committee on Energy and Commerce, and the Subcommittee on Energy and Mineral Resources, Committee on Natural Resources, House of Representatives.

⁴Nuclear Waste: Operation of Monitored Retrievable Storage Facility Is Unlikely by 1998 (GAO/RCED-91-194, Sept. 24, 1991).

a supporting structure of contractors and facilities commensurate with the planned level of scientific and technical activities rather than reducing its expenditures for the support structure to correspond with actual budget requests and appropriations that were much lower than planned. When annual budget requests and appropriations for the program fell short of the project managers' expectations, relatively few funds were available for conducting scientific and technical investigations.

Secretary's Initiatives Lack Sufficient Scope, Depth, and Independence

In 1993 and 1994, the Secretary of Energy began several initiatives to review the disposal program. The initiatives include a consultant's review of criticisms of the program, an evaluation of the project to investigate Yucca Mountain, and a Notice of Inquiry to solicit the views of affected parties on the continued storage of waste by utilities at their nuclear power reactors after January 1998. These initiatives are to be used by the Secretary to address the program's problems and improve DOE's performance. Although the initiatives could provide useful information, they are likely to fall short of the independent review we previously called for because they are narrow in scope. As a result, taken together, these efforts lack the necessary breadth and depth of analysis.

Review of Historical Criticisms Has Limited Scope and Lacks Depth of Analysis

The Secretary's review of the historical criticisms of the disposal program resulted in a report issued on March 1, 1994.⁵ The primary purpose of this review was to provide a synopsis of published documents and major written correspondence on the disposal program for the period from January 1, 1989, to December 31, 1993. The report summarizes criticisms in seven major categories: program progress and costs, repository development strategy, repository site selection and Yucca Mountain site suitability, public trust and confidence, waste acceptance, interim (predisposal) storage, and program management.

The consultant's review is essentially a catalogue of criticisms of the program spanning 5 of the 11 years that the program has been in existence. As a result, it does not provide the analytical basis or broad perspective needed to view current options for the program in the context of the program's historical development. For example, the report does not contain information on three hallmark studies issued from 1982 through 1985 that deal with the fundamental problems and policy issues that must be considered, even today, in structuring a successful waste management

⁵Dr. James A. Thurber, Report on Selected Published Works and Written Comments Regarding the Office of Civilian Radioactive Waste Management Program, 1989-1993, Center for Congressional and Presidential Studies, School of Public Affairs, The American University (Mar. 1, 1994).

program.⁶ These reports discuss and provide recommendations on the characteristics necessary for an organization with a very technical and scientific, but well-defined, mission—such as envisioned in the Nuclear Waste Policy Act of 1982—to ensure that the intent of the Congress is carried out most effectively and efficiently.

Narrow Scope Limits Potential Value of Yucca Mountain Evaluation

The Secretary of Energy has chartered a financial and management evaluation of the Yucca Mountain project that is to be managed by persons selected by the Governor of Nevada and the Secretary. On the basis of our review of a statement of work for the evaluation, we believe that the evaluation could help to improve the program by identifying opportunities for more effectively managing the project.⁷ However, the scope of the evaluation is limited to selected aspects of the Yucca Mountain project. For example, the evaluation is designed to focus on the project's schedules and funding rather than on the larger issues of whether the overall disposal program is organized, managed, and funded appropriately to facilitate the accomplishment of its mission.

Narrow Scope and DOE's Budget Actions Limit Potential Usefulness of Notice of Inquiry

DOE issued a Notice of Inquiry in the Federal Register on May 25, 1994, to address the concerns of affected parties on the continued storage of spent nuclear fuel by utilities at their nuclear reactor sites beyond January 1998.⁸

Under the act, DOE was required to enter into contracts with utilities that provided that (1) after the repository begins operation, the Secretary will take title to utilities' high-level waste or spent fuel as soon as possible upon the request of the generator or the owner of the waste or spent fuel and (2) in return for the payment of established fees, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level

⁶See two studies by the Office of Technology Assessment, Managing Commercial High-Level Radioactive Waste (OTA-0-172, Apr. 1982) and Managing the Nation's Commercial High-Level Radioactive Waste (OTA-0-171, Mar. 1985), as well as a study by the Secretary of Energy's Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities, Managing Nuclear Waste—A Better Idea (Dec. 15, 1984).

⁷Independent Evaluation (GAO/RCED-94-258R, July 27, 1994) provides our comments on the initial draft statement of work for the evaluation, chartered by the Secretary, of the Yucca Mountain project. On July 29, 1994, in separate letters to members of the review team for the project, we provided our views on a revised version of the work statement dated July 8, 1994.

⁸The actions of affected parties demonstrate the level of concern over this issue. In June 1994, a number of utilities, as well as states and state utility commissions, filed two separate suits in federal court asserting that DOE has not complied with the waste-acceptance provisions of the Nuclear Waste Policy Act of 1982, as amended. The parties seek, among other things, a declarative ruling that the act imposes on DOE an unconditional obligation to begin accepting radioactive waste by January 31, 1998, in return for the payment of fees and that DOE's decision not to begin accepting waste by that date was not in accord with the law.

waste or spent fuel. DOE's Standard Contract for Disposal meshes these two requirements and provides as follows: "The services to be provided by DOE . . . shall begin, after commencement of facility operations, not later than January 31, 1998. . . ."

DOE states in the notice that the efforts of neither the Department nor the Office of the Nuclear Waste Negotiator have achieved the level of success needed to locate and develop a facility for storing waste.⁹ The notice also states DOE's preliminary legal view that, in the absence of an operational repository or other facility (such as a monitored retrievable storage facility), the Department has no statutory obligation to accept waste beginning in 1998. Nevertheless, the notice goes on to state that the Department may have created an expectation, through its contracts with utilities, that it would begin accepting waste in 1998. Accordingly, the Secretary has indicated DOE's intent to explore with affected parties various options and methods for sharing costs associated with storing waste after January 1998. In view of this premise, the notice seeks comments on (1) the Department's preliminary legal view; (2) the need for an interim, away-from-reactor storage facility; and (3) options for cost-sharing with the utilities. Finally, DOE stated that while seeking comments, the Department is committed to pursuing the permanent disposal of spent nuclear fuel and developing a strategy on the interim storage of waste.

The notice partially responds to our 1991 recommendation that DOE develop plans for the possibility that it cannot begin to accept waste in 1998.¹⁰ Our recommendation was based on our conclusion that DOE was unlikely to have a facility operating by 1998 for the monitored retrievable storage of waste. However, the notice may not generate a full range of potential interim storage options for DOE to consider. For example, the notice does not specifically request comments on waste storage options that do not involve cost-sharing. Hence, we believe the scope of the notice is too narrow. In our view, comments should be sought on the full range of potential interim storage options, including potential options with no cost obligation to the government, and on each option's strengths and weaknesses.

⁹In 1987, the Congress established the independent position of nuclear waste negotiator to work out the terms and conditions under which a state or Indian tribe would agree to host a repository or a facility for the monitored retrievable storage of waste. To become effective, any agreement reached between the negotiator and a state or tribe must be enacted into federal law.

¹⁰(GAO/RCED-91-194, Sept. 24, 1991).

Furthermore, budget actions taken by the Department before issuing the notice may also have compromised the usefulness of the inquiry process. Prior to issuing the Notice of Inquiry in May 1994, the Secretary of Energy made a policy decision to proceed with plans for developing by 1998 a system of waste containers, called multipurpose containers, that would be used initially to store and/or transport waste, and later to permanently dispose of (meaning emplace in a repository with no foreseeable intent to recover) the waste. According to DOE, \$36 million of the fiscal year 1995 budget request is for multipurpose container activities. DOE anticipates that it will spend about \$254 million more in the ensuing 4 years to develop the new container system. However, the Notice of Inquiry states that the Department is not predisposed to any particular form of cost-sharing but goes on to indicate that multipurpose containers should be strongly considered to address both schedule and cost concerns. The cost concerns raised by utilities and other parties relate to when utilities' obligations to store waste—and to bear the costs of waste storage—end and when the government's obligation begins. The notice states that the Secretary has directed that the options to be explored by the Department should include, to the maximum extent possible, the provision and use of multipurpose containers to address both schedule and cost concerns arising from the possibility that a repository or Monitored Retrievable Storage facility may not be available in 1998.

Developing the proposed system now to assist utilities in storing their waste beginning in 1998 poses economic and safety risks for disposing of the waste when a repository becomes available in 2010 or thereafter. Additional investigation of the Yucca Mountain site is required before a disposal container can be developed with reasonable assurance that the waste will be safely disposed of. The Nuclear Waste Technical Review Board and others have repeatedly pointed out, and DOE program managers have acknowledged, that more information about the potential repository site and the potential effects of the heat from the waste on the repository will be needed before a disposal package with a high degree of safety assurance can be developed. Thus, if DOE develops the multipurpose container system as planned, at least one part of the system—the disposal component—may not be acceptable for its intended purpose. As a result, DOE may have to spend more money to rework the container system to be compatible with the actual repository environment, develop and engineer a barrier system within the repository that would solve the problem, or accept certain safety risks.

An Independent Review Is Needed Now More Than Ever

In February 1994, 27 Members of the House of Representatives wrote to the President and urged him to appoint a presidential commission to conduct a comprehensive review of the nation's needs, policies, and programs in the area of nuclear waste management. Similarly, in March 1994, four Senators introduced Senate bill S. 1928, entitled the "Second Generation Nuclear Waste Act," to, among other things, ensure adequate nuclear waste disposal capacity. Also, 12 Senators proposed, in a letter to the President, an independent review by a presidential commission of all nuclear waste programs and policies. Notably, these proposals point out that to enjoy greater credibility, such a review should be conducted by a body that is truly independent of DOE and operates in full public view. Others have called for similar independent reviews.

Building key characteristics, such as independence from DOE, into a review of the disposal program would go a long way toward strengthening the credibility of such a review. Other important characteristics include requisite expertise in such areas as nuclear waste and public policy and administration, clear access to DOE's records concerning the program's performance, and a mechanism to provide public access to the review body's findings and recommendations. For such a review to be most useful, it may need to be chartered at a very high level, perhaps by the Congress.

In commenting on a draft of this report, the Director of DOE's Office of Civilian Radioactive Waste Management said he does not support an independent review, but if such a review is to be done, it should be done by the Congress because the viability of significant changes in policy will be heavily dependent upon the prospects for congressional authorization and funding. The issues involved, he added, are policy issues, some of which will likely be addressed by the Congress next year. In an August 1994 hearing, the Director told the Subcommittee on Energy and Power, House Committee on Energy and Commerce, that DOE could not act alone to define the strategy that should be taken to solve the near-term waste storage problem. He further stated that although there is a growing awareness that policy decisions must be made, there is less consensus on what can and should be done. In his testimony, the Director called for legislation on the program's funding and said that DOE was evaluating, through its Notice of Inquiry, the need for and content of legislation on the interim storage of waste.

The House Committee on Appropriations, in the report accompanying its bill making appropriations for energy and water development for fiscal

year 1995, cited the Nuclear Waste Technical Review Board's recommendation for an independent review of the management and organizational structure of DOE's civilian radioactive waste management program. The report said that the Committee had repeatedly expressed concern about the lack of progress in characterizing the Yucca Mountain site. The Committee called progress on site characterization "dismal at best." Noting that the Department was proposing to respond more aggressively to criticisms of its program, the Committee recommended making available about \$434 million, or about \$99 million less than DOE had requested but about \$54 million more than it had received in fiscal year 1994. In the face of testimony by DOE that it could not begin to operate a repository by 2010 unless it received significant increases in the program's funding, the Senate Committee on Appropriations recommended making available the full amount requested by DOE, or about \$533 million. Subsequently, the conference committee bill recommended and the Congress provided about \$523 million, or about \$143 million more than was appropriated for the program in fiscal year 1994. On August 26, 1994, the President signed the Energy and Water Development Appropriations Act for fiscal year 1995 (P.L. 103-316), providing about \$523 million for the program for fiscal year 1995.¹¹

While recognizing the need to complete the scientific investigation of Yucca Mountain expeditiously, the Congress is aware, as its budget decisions have shown, that changes are needed to ensure that the funds appropriated for the investigation are spent effectively and efficiently. We share these concerns. For example, for fiscal years 1991 through 1994, only about 65 percent of the appropriations for the disposal program has been committed to the Yucca Mountain project and, as discussed earlier, a relatively small percentage of the program's funds, in recent years, has been spent directly on the scientific and technical investigations at Yucca Mountain. Instead, DOE has used about one-half of the project's funds to maintain a support structure of contractors and facilities commensurate with the planned level of scientific and technical activities. DOE has not reduced the expenditures for support to correspond with the actual budget requests and appropriations for the project, which were much lower than planned. DOE has acknowledged these high infrastructure costs and has maintained that they occurred, in part, because it could not predict future appropriations with certainty when it was planning future

¹¹Three elements make up the \$523 million provided to DOE for the disposal program: about \$392.8 million appropriated from the Nuclear Waste Fund; about \$129.4 appropriated for Defense Nuclear Waste Disposal; and about \$0.7 million made available for Civilian Waste Research and Development.

work. However, as we reported in May 1993,¹² DOE typically planned the repository project around a level of funding that was much higher than its budget requests and subsequent allotments of appropriations. Until DOE brings the project's plans into alignment with realistic funding projections, inefficiencies in the allocation of resources will likely continue.

DOE has developed an approach intended to align the planned activities at Yucca Mountain with funding expectations and estimates of the project's schedules and costs. Through this proposed approach, DOE would accomplish its goals, in large part, by deferring some originally planned but relatively lower priority site-investigation work until after a repository's construction was authorized.

The Department's proposed approach for aligning the project's activities and expectations has raised questions about how to strike a balance among the cost, schedule, and public health and safety aspects of developing a repository. For example, both the Nuclear Regulatory Commission and the Nuclear Waste Technical Review Board have concluded, on the basis of limited available information, that DOE's proposed approach would increase the technical and scientific uncertainties inherent in determining whether the site is suitable and can be licensed for use as a repository.

According to the Director of the Office of Civilian Radioactive Waste Management, DOE is also improving the management of the program and the repository project. Actions taken or in progress include reorganizing the federal staff at the project to define clear lines of responsibility and accountability for accomplishing the project's goals, restructuring the contractor establishment to reflect the same philosophy, and realigning the program's headquarters staff with an emphasis on integrating the program's activities. In commenting on a draft of our report, the Director acknowledged that the management problems at Yucca Mountain are deep, long-standing problems that cannot be fixed easily or this year. We agree that the project's management problems are difficult to solve, and we believe that it is important for DOE to continue working to improve the program's management. However, an independent review could address whether more fundamental changes are needed to ensure the effective and efficient management of nuclear waste.

In view of the potential increases in funding for the program over the next several years and of growing congressional and public concern about the

¹²(GAO/RCED-93-124, May 21, 1993).

program's pace and direction, a comprehensive review of key policy issues is more critical now than before. Key issues identified in this report include the storage of waste until a repository is operational, funding, the program's organization and management, and the regulation of a repository's development. These issues have been discussed in recent appropriation and oversight hearings in the Senate and the House of Representatives. Several options discussed at these hearings, if implemented, would require changes to the Nuclear Waste Policy Act of 1982, as amended.

The Director of the Office of Civilian Radioactive Waste Management did not support an independent review of DOE's disposal program and policies because, in his view, the program—especially the repository project—would be effectively relegated to caretaker status during the review. According to the Director, because the review might recommend a major redirection of the project, it would almost certainly put the project at a serious disadvantage in maintaining progress and competing for funds with other federal programs. The Director strongly emphasized that if an independent review is performed, it should not affect the site-investigation work at Yucca Mountain.

Because an independent review of key nuclear waste issues would be focused at a policy level, we see no reason why such a review and site-investigation activities critical to making a site-suitability determination could not proceed in parallel and in a timely manner. The Nuclear Waste Technical Review Board has concluded that an independent review can be performed concurrently with site-characterization activities at Yucca Mountain. We recognize the potential for such a review to affect the project's funding, as the Director pointed out. However, he also told us that next year the Congress may address, possibly through legislation, options for storing the waste and funding the program. In addition, he told us that proposals now before the Congress for storing the waste are unsatisfactory. According to the Director, balance, sophistication, and objectivity are needed in presenting these issues.

Because the issues that need to be resolved are fundamental and need to be addressed objectively, the benefits that an independent review could bring to the Congress may be worth the risk that the Yucca Mountain project may be assigned a lower budget priority during the review. This is an example of the difficult choices decisionmakers are faced with in

weighing and deciding on the most efficient and effective way to proceed with the program.

Conclusions

Mounting congressional and public concern about the pace and direction of the disposal program, along with potential increases in funding for the program over the next several years, add urgency to the need to conduct an independent review of the program and related policies. Such a review should include a review of key issues, such as the interim storage of waste, the adequacy of the program's funding, the management and organization of the program and repository project, and the approach to regulating the program. Although recent initiatives by the Secretary of Energy to review the Yucca Mountain project could make a significant contribution to the program, the initiatives lack the breadth and depth of analysis needed to adequately address the larger program issues.

DOE's recent initiatives to restructure the management organization at Yucca Mountain to make more effective use of human resources are an important step toward improving the performance of the existing Yucca Mountain project team. However, an independent review could potentially determine that more fundamental changes are needed. In addition, DOE's proposed approach to the repository project is still in its formative stages and adds uncertainties and risks to the repository siting and development process.

An independent review of the disposal program could ensure that the Congress has the best possible information as a basis for evaluating the performance of DOE's program, making future funding decisions, and making any necessary changes to the program. Important characteristics that an independent review body should have include requisite expertise in such areas as nuclear waste and public policy and administration, clear access to DOE's records of the program's performance, and a mechanism to provide public access to the review body's findings and recommendations.

Such a review could be most effective if the review body was truly independent of DOE. Given the limitations of the Secretary's review initiatives, the review may need to be chartered at a very high level, perhaps by the Congress. Appropriate entities that might be considered to perform such a review could include a specially constituted congressional committee, a presidential commission, and/or the National Academy of Public Administration.

Agency Comments and Our Evaluation

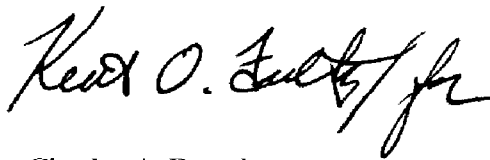
We provided a draft of this report to the Director of the Office of Civilian Radioactive Waste Management and met with him to obtain his comments. The Director stated that the draft report did not recognize other steps that DOE has taken under the current administration to address problems in the program. We added information to recognize changes that DOE is making in an effort to improve aspects of the program's funding and management. The Director also said that he does not support an independent review of the program because such a review would almost certainly put the repository project at a serious disadvantage in maintaining progress and competing for funds. We recognize this possibility, but we also believe that the benefits of an independent review may be worth the risk that the program may be assigned a lower budget priority during the review. We incorporated the Director's comments on the draft report and our evaluations of these comments throughout the report where appropriate.

Scope and Methodology

During our study, we relied primarily on our past reviews of the disposal program (listed in app. I with other studies) and our ongoing review of emerging issues that affect the program. We also monitored the program's current activities, attended professional meetings on nuclear waste issues, and met with the individuals appointed to manage the evaluation, chartered by the Secretary of Energy, of the Yucca Mountain project.

We are sending copies of this report to the congressional committees that oversee the Department's activities, the Secretary of Energy, the Chairman of the Nuclear Regulatory Commission, the Governor of Nevada, and other interested parties. Copies are also available to others upon request.

This work was prepared under the direction of Victor S. Rezendes, Director, Energy and Science Issues, who can be reached on (202) 512-3841 if you or your staff have any questions. Major contributors to this report are listed in appendix II.

A handwritten signature in black ink, appearing to read "Charles A. Bowsher". The signature is written in a cursive, somewhat stylized font.

Charles A. Bowsher
Comptroller General
of the United States

Related Studies

GAO Products

Independent Evaluation (GAO/RCED-94-258R, July 27, 1994).

Nuclear Waste: Yucca Mountain Project Management and Funding Issues (GAO/T-RCED-93-58, July 1, 1993).

Nuclear Waste: Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties (GAO/RCED-93-124, May 21, 1993).

Energy Issues: Transition Series (GAO/OCG-93-13TR, Dec. 1992).

Nuclear Waste: Status of Actions to Improve DOE User-Fee Assessments (GAO/RCED-92-165, June 10, 1992).

Nuclear Waste: DOE's Repository Site Investigations, a Long and Difficult Task (GAO/RCED-92-73, May 27, 1992).

Nuclear Waste: Development of Casks for Transporting Spent Fuel Needs Modification (GAO/RCED-92-56, Mar. 13, 1992).

Nuclear Waste: Operation of Monitored Retrievable Storage Facility Is Unlikely by 1998 (GAO/RCED-91-194, Sept. 24, 1991).

Nuclear Waste: Changes Needed in DOE User-Fee Assessments (GAO/T-RCED-91-52, May 8, 1991).

Nuclear Waste: DOE Expenditures on the Yucca Mountain Project (GAO/T-RCED-91-37, Apr. 18, 1991).

Nuclear Waste: Changes Needed in DOE User-Fee Assessments to Avoid Funding Shortfall (GAO/RCED-90-65, June 7, 1990).

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

Key Elements of Effective Independent Oversight of DOE's Nuclear Facilities (GAO/T-RCED-88-6, Oct. 22, 1987).

Other Products

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Nuclear Waste: Is There a Need for Federal Interim Storage? Monitored Retrievable Storage Review Commission (Nov. 1, 1989).

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Managing Nuclear Waste—A Better Idea. Secretary of Energy's Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities (Dec. 15, 1984).

Managing Commercial High-Level Radioactive Waste. Office of Technology Assessment (OTA-0-172, Apr. 1982).

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