

HISTORY AND CURRENT STATUS OF SITING A FACILITY FOR THE INTERIM STORAGE OF SPENT NUCLEAR FUEL IN THE UNITED STATES

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ABSTRACT

With the Nuclear Waste Policy Act of 1982, and subsequent 1987 Amendments, the United States Congress set forth its plan to manage the disposal of spent fuel from commercial nuclear reactors. Under these Acts, an interim facility for spent nuclear fuel storage is to be established by 1998, at a yet-to-be-determined location. Careful selection of a site on which to establish a proposed industrial or waste management operation enhances the likelihood of the project's success. Judicious siting of a new facility may avoid, or at least reduce the magnitude of, undesirable consequences to the environment and human community, as well as improve operating efficiency of the facility. This paper presents a review of spent nuclear fuel interim storage concepts and the 1982 Nuclear Waste Policy Act provisions regarding the siting of such a facility. An analysis is then made of the U.S. Department of Energy's unsuccessful attempt to site an interim storage facility at Oak Ridge in Tennessee. Congressional reaction to the Oak Ridge siting experience, through promulgation of the Nuclear Waste Policy Amendments Act, is then examined. Finally, the current approach to nuclear waste interim storage facility siting is outlined, and the status of such siting activities identified.

INTRODUCTION

Approximately 20 percent of electricity currently generated in the United States is from commercial nuclear power plants. These power plants use nuclear materials in the form of uranium fuel pellets encased in metal fuel rods. After energy is expended from these rods, they become a solid waste called spent nuclear fuel (SNF), which remains highly radioactive for thousands of years. Spent fuel rods are currently stored at nuclear reactor sites, usually under water in specially designed pools. By the year 2000, some 40,000 metric tons of uranium (MTU) will have accumulated at nuclear reactors, and by the time the last license for the current generation of nuclear reactors expires, an estimated total of 84,000 MTU will require disposal. (1)

With passage of the Nuclear Waste Policy Act (NWPA) of 1982, (2) and subsequent 1987 Amendments, (3) Congress set forth its plan to manage the nation's high-level radioactive waste, including SNF. The NWPA established the Office of Civilian Radioactive Waste Management (OCRWM) within the U.S. Department of Energy (DOE) to oversee and administer the civilian radioactive waste management system. Under these Acts, Yucca Mountain in Nevada is being studied as a possible permanent geological repository, with a planned operational date of 2010. Congress also authorized that an interim storage facility be established at a yet-to-be-determined location. This interim facility, termed Monitored Retrievable Storage (MRS), is to be a centralized SNF receiving operation with above-ground engineered storage capabilities. It is currently planned to be operational in 1998.

Careful selection of a site on which to establish a proposed industrial operation enhances the likelihood of the project's success. Judicious siting of a new facility may avoid, or at least reduce the magnitude of, undesirable consequences to the environment and human community, as well as improve operating efficiency of the facility. This paper presents an overview of interim SNF storage and the 1982 NWPA provisions

regarding MRS facility siting. An analysis is then presented of DOE's attempt to site an MRS facility, in accordance with NWPA provisions, at Oak Ridge in Tennessee. Congressional reaction to the Oak Ridge siting experience, through enactment of the Nuclear Waste Policy Amendments Act, is then examined. Finally, the current approaches to siting an interim SNF storage facility, being negotiations with a willing host, as well as DOE-directed activities, are outlined.

EVOLUTION OF THE CONCEPT FOR INTERIM SNF STORAGE (4)

In the United States, commercial nuclear reactors began producing electricity, and the spent nuclear fuel byproduct, in the 1950s. Nuclear waste disposal experiments were conducted during the 1960s in Kansas salt mines, but due to the small volume of waste, there was little urgency in establishing a disposal program. Plans were developed to chemically reprocess SNF, with the residual uranium and plutonium to be recycled as nuclear fuel. When these plans were initially implemented, technical problems arose and reprocessing has not been established as a commercially viable technology in the United States.

In 1970, the U.S. Atomic Energy Commission (AEC), a forerunner to DOE, formalized its policy dealing with civilian high-level waste: such waste at reprocessing plants was to be converted to solid form within five years of its generation; and the solidified waste had to be transferred to a federal repository within 10 years after the irradiated fuel was reprocessed. (5)

In that same year (1970), AEC tentatively selected a full-scale geological repository site in salt deposits near Lyons, Kansas, pending confirmation tests. By 1972, AEC abandoned the Lyons site because of problems encountered with the geologic formation.

With no deep geologic location in sight, AEC shifted emphasis to aboveground, engineered structures (6). In June

1972, AEC revealed plans to develop at the defense installation in Hanford, Washington, a Retrievable Surface Storage Facility (RSSF), conceived as an array of vaults where waste-containing canisters would be stored (7). In 1973, AEC's "near-term objective" was stated as having an engineered retrievable storage facility, although the "major effort" was a federal repository "to be ready in the early 1980s." (8)

A year later, the then AEC chairman informed Congress that one of its major waste management efforts was "the engineering development of a facility to be ready in the early 1980s for the retrievable storage of solidified high-level waste from the commercial nuclear power industry... [The] objective is to provide a surface facility based on proven technology where the waste can be safely stored until further treatment or disposal is available." (9)

In September 1974, AEC issued a draft Environmental Impact Statement (EIS) on the civilian nuclear waste program, including the RSSF (10). The RSSF was to store all commercial high-level radioactive waste generated through the year 2000. RSSF features included retrievability of waste, ability to receive and store waste canisters, and safety in operations. The U.S. Environmental Protection Agency criticized AEC's draft EIS, saying that the document underemphasized the development of a geologic repository. (11)

The Energy Reorganization Act of 1974 reorganized the nation's energy program on 17 January 1975. This act abolished the Atomic Energy Commission and created two agencies -- the Nuclear Regulatory Commission (NRC), and the Energy Research and Development Administration (ERDA) (12). ERDA, in its budget request for fiscal year 1976, asked for funds for an RSSF at a site to be selected by July 1976, but withdrew its request and the EIS in April 1975 (13). This first approach to monitored retrievable storage did not reach the site selection stage mainly because of concern that it could be a permanent storage facility, preventing or delaying development of a geologic repository.

Nuclear waste storage entered a new phase when, on 7 April 1977, President Jimmy Carter indefinitely deferred all reprocessing of spent fuel from civilian nuclear power reactors. This step was taken to reduce the likelihood that derived plutonium would be diverted from reprocessing to nuclear weapons construction (14). With energy policy high on the public agenda, Congress created a federal Department of Energy which began operation on 1 October 1977 (15). Seventeen days later, the federal government proposed the federal away-from-reactor (AFR) storage of spent fuel. Under this proposal, the fuel owner would pay the federal government for storage and disposal. DOE said that its acceptance of, and taking title to, spent fuel from nuclear utilities would remove uncertainties about indefinite at-reactor storage of spent fuel (16). Because both interim and permanent spent fuel storage facilities were needed, the plan included a geologic repository that would allow retrieval of spent fuel. One or more surface storage facilities would provide interim storage until the repository became available (17).

An Interagency Review Group (IRG) made its recommendations to the President in March 1979 on policies for nuclear waste management (18). The group reported that "interim storage of spent fuel is required during the period ... before disposal facilities are available." While utilities should keep spent fuel at reactors until a repository is available, the Federal government "should provide storage capacity as

needed for limited quantities of spent fuel" at the utilities' expense (19).

In February 1980, President Carter set forth a nuclear waste management policy that reflected the IRG's recommendations. He emphasized the goal of permanent geologic disposal of nuclear waste; said SNF was the utilities' responsibility until the federal repository was built; and asked for authority to build or otherwise acquire away-from-reactor facilities for storing any spent fuel that utilities could not accommodate at their reactor sites (20). Congress began working on comprehensive nuclear waste management legislation. However, the House-Senate conference committee could not agree on nuclear waste management bills.

In 1981, DOE reviewed the status of above-ground SNF storage and analyzed its impact on the nuclear waste management system (21). Potential above-ground storage roles examined were: i) long-term storage (for 100 years) to allow relatively short-lived isotopes to decay before being disposed in a geologic repository; ii) dry away-from-reactor storage facilities; and iii) permanent storage, replacing the deep geologic repository.

Meanwhile, Congressional conferees reached a compromise agreement which led to enactment of the Nuclear Waste Policy Act of 1982 on 20 December, and its signature by President Reagan on 7 January 1983 (22). The NWPA directed DOE to consider the need for an MRS facility as part of an overall nuclear waste management system.

MRS FACILITY PROVISIONS OF THE 1982 NUCLEAR WASTE POLICY ACT

The Act created the DOE Office of Civilian Radioactive Waste Management to implement the legislation, which included the following mandates: i) a study of potential sites for a geological repository; ii) payment for the program by owners of operating nuclear power plants charging user fees; and iii) that a consultation and cooperation approach be undertaken by DOE, whereby states and Indian Tribes participate in the siting process. Long-term isolation of high-level radioactive waste in geological repositories was to be the primary element of the nation's nuclear waste management system, with emphasis on an MRS facility subordinate to the repository. Congressional intent regarding the MRS concept was somewhat unclear since NWPA did not actually authorize the establishment of such a facility. NWPA Section 141(b) directed that by 1 June 1985, DOE complete a detailed study of the need for and feasibility of, and submit to Congress a proposal for, construction of one or more SNF monitored retrievable storage facilities. The proposal was to include: i) a federal program for siting, development, construction and operation of one or more MRS facilities; ii) a plan for funding construction and operation; and iii) site-specific designs. The proposal was to also include at least three alternate sites, and at least five alternate combinations of proposed sites and facilities.

The NWPA also mandated that DOE, when determining the suitability of an area for development of a repository or MRS facility, should cooperate with states and affected communities.

DOE'S RESPONSE TO THE NWPA MANDATE: THE CLINCH RIVER MRS PROPOSAL

In dealing with nuclear waste management, NWPA had to be flexible in terms of its wording with regard to specific procedures pertaining to MRS facility siting and

development, because the MRS concept had never been successfully implemented before. However, the Act was very specific with regard to the MRS study timetable. DOE was given 29 months to "complete a detailed study of the need for and feasibility of" an MRS facility (23). The short MRS study schedule, together with the requirement of DOE to take title to SNF from electricity utilities by 1998, placed DOE in an extremely difficult position with regard to its ability to comply with NWPA provisions (24).

DOE presented its initial MRS plans in April 1984, in a draft Mission Plan (25) pursuant to NWPA requirements. Under this plan, DOE conceived that the MRS facility would serve as a backup in the event of significant delays in developing the geological repository. Over the next year, DOE reassessed and amended this plan to what it called an "integrated waste-management system" including both interim storage and disposal components. As part of the "integrated system" an MRS facility was to perform "most, if not all, of the waste-preparation functions before emplacement" in a deep geologic repository (26). Thus, the MRS facility would have as a primary role the preparation of nuclear waste before emplacement in the permanent repository; its role in providing storage, unlike that originally envisioned, was now secondary -- although DOE still planned on using the MRS facility for storage in the event that the repository was delayed.

Having decided on an integral MRS facility option, DOE proceeded with site screening and evaluation so that a candidate location could be designated for Congressional approval. Toward that end, DOE between 1983 and 1985 evaluated sites as candidates for the MRS facility. This evaluation was conducted without much involvement by potentially affected parties. The primary considerations in identifying a preferred and two alternate sites for an MRS facility were (27):

- to locate in a place which would result in "minimal adverse impacts on the local community or environment"
- be at a location that would enhance the MRS facility role as an integral part of the federal nuclear waste disposal system.

These considerations led DOE to focus on sites in the east-central portion of the United States (where the majority of civilian nuclear reactors are located), having at least 1100 acres (to accommodate estimated processing and storage requirements of 70,000 MTU), and which were owned by DOE or had been docketed by NRC for licensing as nuclear facilities (thus allowing the use of existing data for site selection and approval) (28). Eleven such sites were identified, and these were then "thoroughly analyzed by a task force of specialists in eight areas important to evaluating site suitability." (29) The siting criteria applied to the 11 locations were: i) ease of regulatory compliance; ii) existing environmental setting; iii) geotechnical site characteristics; iv) socioeconomic setting and changes which might be induced by MRS development; v) institutional and administrative structure of the state; vi) local transportation characteristics; vii) access to physical infrastructure; and viii) capital cost of construction (30).

On 25 April 1985, DOE announced the Clinch River Breeder Reactor site near Oak Ridge as the preferred, and DOE's Oak Ridge Reservation and the Tennessee Valley Authority's (TVA) Hartsville Nuclear Plant site as the two alternate sites, for the MRS facility. All three sites were located in Tennessee. The DOE announcement also stated

that it intended to submit its MRS study proposal to Congress in January 1986. Before its submission to Congress, DOE would keep the public and state and local government agencies informed of decisions and supporting analyses leading up to the proposal's submittal, thus assuring that they would have ample opportunity to express their views to Congress (31).

TENNESSEE'S REACTION TO DOE'S MRS FACILITY SITING PROPOSAL

Tennessee's initial reaction to DOE's announcement was "surprise and consternation," (32) as state officials, including the Governor, had not been informed of DOE's intentions prior to the announcement. Upon learning of DOE's proposal, the then Tennessee Governor instructed the state's Safe Growth Cabinet Council (SGCC) to prepare a study detailing the need for, as well as the potential impact to the state of, the MRS facility. The state was granted \$1.4 million by DOE to assist in determining the impact of the MRS facility on the state, and to develop an opinion on its acceptability. A portion of this money was used to fund the SGCC study, while the remainder was distributed to potentially affected local communities. Both localities established task forces to weigh the costs and benefits of the proposed facility:

- The City of Oak Ridge and Roane County (the local government areas in which two of the MRS facility alternate sites were proposed) created the Clinch River MRS Task Force (CRTF). The primary objective of the CRTF was to "determine whether the proposed Monitored Retrievable Storage facility should be accepted by the local governments, and if so, under what conditions." (33) The CRTF did not consider the need for the MRS facility, and was not concerned with the process by which DOE selected its candidate sites.
- For the Hartsville alternate MRS facility site, local government officials chartered an organization called the Five-County Review, Evaluation, Analysis and Liaison (REAL) Committee. This committee was chartered to: i) provide a forum for communication between the five county governments; ii) assist government entities by providing information useful in making siting decisions for projects in the region; and iii) make recommendations to appropriate governments and assist in the reduction of adverse effects associated with proposed facilities. (34)

The SGCC provided the Governor of Tennessee with an independent state analysis of the MRS proposal, largely financed by the DOE, that was extremely critical of the need, cost and benefits of the facility -- but which conceded it did not incur unacceptable danger to citizen health and safety. On 21 January 1986, the Governor presented his MRS facility decision to the Secretary of Energy and the Tennessee congressional delegation. While the Governor essentially agreed with DOE's position that the MRS facility "could be operated safely," he rejected the MRS facility because he felt that DOE had not adequately demonstrated the facility's need and because it would place an undue economic burden on the state (35).

At the local government level, a survey commissioned by the REAL Committee in October 1985 found that 100 percent of the officials and 90 percent of the citizens disapproved of locating the facility near Hartsville (36). The REAL

Committee urged that a recommendation be made to state and federal governments that an MRS facility not be constructed at the TVA Hartsville location (37).

In contrast to reactions by the state and the Hartsville community, citizens at Oak Ridge conditionally favored the DOE proposal, and were complimentary of DOE's "consultation and cooperation." The CRTF found that the "Nuclear Waste Policy Act establishes a unique process of consultation between DOE and state and local governments. This is a welcome step in the improvement of intergovernmental relations. In its prompt response to ... requests ... for information, the Department ... has been most cooperative." (38) The task force concluded that: i) SNF could be safely transported; ii) either of the two proposed Oak Ridge sites could environmentally accommodate the proposed facility; iii) the proposed facility could be safely constructed and operated; and iv) the proposed facility could benefit the economies of the local communities, the region, and the state (39). However, the CRTF concluded that the MRS facility would not be acceptable unless DOE addressed some "critical concerns" and mitigated some anticipated impacts. The task force developed conditions under which it would accept the MRS facility. Thus, while the CRTF clearly indicated to DOE that the local community could be induced to accept the MRS facility, it nevertheless required additional assurances to accentuate the benefits, and mitigate the impacts, of the facility. Oak Ridge may have conditionally accepted the MRS facility because the community had extensive experience in dealing with the federal government, including issues involving nuclear materials. Further, the city's economy was historically dependent on income derived from federal facilities (40).

DOE was not swayed by opposition at the state level to the MRS facility announcement. The Department drafted a proposal for the Tennessee MRS facility in December 1985 and said that it would submit its proposal, along with formal review comments (including those from Tennessee) to Congress on 9 February 1986. However, on that date, Tennessee secured in federal district court an injunction preventing the Secretary of Energy from presenting the MRS proposal to Congress (41). In February 1986, a federal district court ruled that DOE had violated the "consultation and cooperation" provision of the NWPA when it selected the sites without consulting with the state, and granted an injunction prohibiting DOE from submitting its proposal to Congress. In November 1986, the U.S. Court of Appeals for the Sixth Circuit reversed the district court's decision. On 31 March 1987, the Supreme Court let stand without review the U.S. Court of Appeals decision that NWPA did not require DOE to consult with any state before DOE submitted its proposal to Congress. Thus, litigation and appeals delayed DOE's submittal (42) of its Tennessee MRS facility proposal to Congress for 14 months, until 31 March 1987.

DOE's 1987 submittal to Congress included revisions to its original 1985 proposal. These revisions were based in part on comments submitted by the State of Tennessee and the Clinch River MRS Task Force, particularly with regard to MRS facility capacity restrictions and construction schedules linked to the first repository. Revision of the proposal established an important precedent for DOE, as it demonstrated that interactions with potential host communities could establish conditions to satisfy the needs and concerns of both the host and DOE.

Under NWPA, DOE was given one of the most difficult jobs in federal government. It was the agency's responsibility to site nuclear waste facilities, within a relatively short period, using a process whereby the states have the power, subject to Congressional override, to veto agency actions. An analysis was prepared by a Tennessee researcher of DOE's and the state's performances with regard to the Tennessee MRS facility proposal (43). The analysis concluded that DOE and the state began with fundamentally different conceptions of what Tennessee's evaluation was supposed to accomplish. "Federal officials thought that the state expected far too much in the way of formal consultation at this stage of the facility siting process. DOE felt that binding negotiations and written agreements, as well as environmental assessments based on new data, were required only after the Congress authorized the MRS -- not before as the state insisted." (44) DOE felt that the state had a federally funded opportunity to familiarize itself with a proposal that had already been established as being in the national interest, as this was why Congress enacted NWPA in 1982. DOE extended to Tennessee the opportunity to form its own view, expecting the state to make its case for mitigation and compensation of impacts, and express these views to DOE. DOE would then take the state's views under advisement (45).

AMENDING MRS PROVISIONS OF THE NUCLEAR WASTE POLICY ACT

In response to Congressional concern over the lack of progress with regard to nuclear waste management, and because of public outcry over activities undertaken by DOE in keeping with its view of responsibilities under NWPA, Congress passed the Nuclear Waste Policy Amendments Act (NWPAA) (46). This was signed by President Reagan on 22 December 1987.

Apart from nullifying DOE's Oak Ridge MRS facility proposal, the NWPAA provided greater statutory guidance on the MRS element of the high-level radioactive waste management system, including: i) notification to the Governor and legislature of a state, or the governing body of an Indian Tribe, in which an MRS facility is to be located, some 6 months before announcing selection of such a site; ii) establishment of an MRS Commission; iii) provisions for a DOE-directed siting process; iv) creation of linkages between the repository and MRS, and capacity restrictions on any MRS facility; and v) establishment of a negotiated nuclear waste facility siting process using the services of a newly created Office of the Nuclear Waste Negotiator. Representative Morris K. Udall, then chairman of the Congressional House Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, first introduced the concept of negotiating sites for nuclear waste disposal facilities. In subcommittee hearings, Udall stated "Instead of trying to force this ... on some unwilling community, H.R. 2967 appoints a special negotiator to find a community that has a technically safe site and is willing to accept the [facility] and all of the economic benefits it may bring. Although the Nuclear Waste Policy Act envisioned close cooperation between State, local, and tribal officials and DOE, in practice this cooperation never materialized. The idea behind the special negotiator is to ensure that cooperation between the Federal Government and State and tribal officials forms the basis for finding a suitable ... site." (47)

Linkages between the siting, construction, and operation phases of the MRS facility and the repository were established by Congress to assure that an operational MRS facility would not become the de facto repository. These linkages, based partially on recommendations made by the Clinch River MRS Task Force following its review of DOE's 1985 MRS facility proposal, include the following:

- DOE cannot select a site for the MRS facility until its Secretary recommends the approval of a site for the development of a repository (NWPAA §145(b))
- Construction of the MRS facility cannot begin until NRC has issued a license for construction of a repository (NWPAA §148(b),(d)(1))
- The MRS facility cannot have greater than 15,000 metric tons of heavy metals at the facility at any one time (NWPAA §148(d)(4)).

The NWPAA established a process whereby MRS facility siting can be accomplished by one of two methods: i) DOE-directed siting, including the schedule linkage to repository licensing, and ii) the negotiated siting process, whereby the above-listed linkages might be eliminated or modified through a proposed agreement between a potential host state or Indian tribe and the federal government. As identified by other federal entities, such as the MRS Commission (48), and the Government Accounting Office (49), the value of an MRS facility is questionable if it were to be established with the schedule and volume linkages currently mandated by the NWPAA. This is because the linkages delay acceptance of SNF by DOE, and limit the effective operational duration of the facility to about three years. The negotiated siting process is to be facilitated by the Office of the Nuclear Waste Negotiator. Part D, "Nuclear Waste Negotiator," of the NWPAA (§402 (b)(2)) required that "The Negotiator shall attempt to find a State or Indian Tribe willing to host a ... monitored retrievable storage facility at a technically qualified site on reasonable terms and shall negotiate with any State or Indian Tribe which expresses an interest in hosting [such] a ... facility."

CURRENT STATUS OF NEGOTIATING AN MRS FACILITY SITE

In June 1989, DOE restated its position on the need for an MRS facility, and how it could be best established: "Recognizing the difficulty of DOE-directed siting through national or regional screening, the DOE prefers an MRS facility that is sited through the efforts of the Nuclear Waste Negotiator, especially if the siting negotiations ... allow the advantages of an MRS facility to be more fully realized." (50)

The Office of the Nuclear Waste Negotiator commenced operations in August 1990, and on 3 May 1991 mailed an introduction to all states, Indian Tribes, and U.S. Territories that explained its mission and offered more information upon request. A formal Invitation for Dialogue and Participation followed on 7 October 1991 (51). To promote the voluntary process, the NWPA and Amendments provided for the award of federal grants to jurisdictions potentially interested in hosting an MRS facility. The grants program, administered by DOE, places financial resources directly with prospective hosts so that they are able to address their unique needs and concerns by hiring experts and undertaking studies of their own choosing. Some 21 state and/or local governments and Indian Tribes have applied for initial grants. Many of these applications have been granted, although some have not and

several applicants have withdrawn their requests. As of February 1993, seven grants were still active. Two Indian Tribes have progressed far enough to seek additional funds in order to advance their negotiations.

During negotiations, DOE is providing assistance as requested by the Negotiator's office. This assistance includes responding to requests for information by prospective hosts on technical, environmental, and public health and safety aspects of an MRS facility, as well as providing the Negotiator with data on the technical adequacy of potential MRS facility sites. With regard to the latter, DOE has developed minimum requirements for an MRS facility site, as well as other desirable attributes for such a site (52). These minimum requirements, and other siting attributes, apply to both volunteered and DOE-directed sites. Site requirements are regulations of the NRC and other agencies that must be met otherwise the site will be excluded from further consideration. The requirements currently exclude an MRS facility site from being i) located in the same State in which the repository is to be established, ii) less than 450 acres, iii) single-use protected lands (e.g., a national park), iv) within coastal barriers, v) critical habitat for endangered or threatened species, and vi) near active faults or in wetlands or floodplains.

OTHER CURRENT DOE SNF INTERIM STORAGE FACILITY SITING ACTIVITIES

DOE would prefer that an MRS facility be established by locating it at a volunteer site under an agreement developed by the Negotiator and approved by Congress. However, there is no assurance that the Negotiator will be successful. Because of the importance of an MRS facility as part of an integrated nuclear waste management system, DOE is also proceeding independently with MRS facility siting (53). To this end, it is engaged in contingency planning for the MRS facility (54). This includes consideration of direct negotiation with potential volunteers; approaching private-sector third parties to site, design, construct, and operate a licensed MRS facility under contract to DOE; and investigating other forms of interim storage of SNF, including storage at nuclear power reactors (55) or federal facilities.

In December 1992, concerned that the negotiated siting process had not yet identified a potentially willing host for the MRS facility, the Secretary of Energy recommended that the Department directly engage in efforts that would enhance DOE's ability to commence accepting SNF by January 1998 (56). Such efforts include a Congressional directive for DOE to consider federal government facilities for interim SNF storage, with a proposal for such a site submitted by the Department to Congress by 31 December 1993. The following month, DOE reiterated its support for the negotiated siting process being undertaken by the Nuclear Waste Negotiator, and stated that its strategy of attempting to locate a federal site "is designed only to supplement, not supersede the [negotiated] siting activities." (57) At the same time, DOE outlined several advantages in using federal sites for interim SNF storage: considerable environmental data may already be available, transportation links may already be established, security systems may already be in place, and communities which may be disadvantaged by closure of an existing military or energy facility may gain an economic reprieve (58). In keeping with its December 1992 federal siting initiative, DOE in February 1993 prepared an implementation plan for its acceptance of SNF by January 1998 (59). This plan included

actions necessary to: i) develop a list of federal sites possibly suitable for interim storage of SNF, ii) establish criteria for identifying potential candidate sites, iii) evaluate candidate sites in order to recommend one (or several) to Congress, iv) address concerns of potential stakeholders, v) obtain appropriate assistance from the Nuclear Waste Negotiator, vi) identify ways of reducing NRC licensing and environmental permitting efforts, by maximizing use of existing data and approvals, and vii) initiate steps to modify current legislation in order to allow establishment of interim storage facilities and remove restrictions on establishment of such facilities independent of the geological repository.

CONCLUSIONS

From the beginning of the nuclear age in the United States, an effective radioactive waste management system has been an elusive goal. "An atmosphere of contentiousness and mistrust among the interested parties, fed by a long history of policy reversals, delays, false starts, legal and jurisdictional wrangles, and scientific overconfidence, played out against the background of public concern with nuclear power and weapons issues generally, has dogged society's attempts to come to grips with the radioactive waste management problem." (60) In an attempt to address this situation, Congress passed the Nuclear Waste Policy Act in 1982.

The NWPA presented an enormous challenge to DOE. The Department interpreted its contractual obligations of taking title to SNF in January 1998 as requiring it to have a facility available by then to store such waste on an interim basis until the long-term geological repository became operational. It was given 29 months to study the need for, and feasibility of, an MRS facility, and believed it necessary to also attempt to find a site for the facility within that time. The agency was accustomed to making policy and scientific decisions within its own organization, and proceeded to undertake a siting study based on technical criteria without much interaction with potentially affected parties.

DOE selected MRS facility sites at locations where residents are among the most pro-nuclear in the country. Using federal funds, Oak Ridge residents were able to gather information assuring them that the MRS facility could be safely operated, subject to certain safeguards and mitigation measures, and their task force report recommended conditional acceptance of the facility. Tennessee's access to the same source of funds and the same information allowed it to conclude that the MRS facility also did not present an unacceptable danger to public health and safety and the environment. However, the state rejected the facility mainly because it had not been adequately consulted during DOE's site selection process.

Concerned by the lack of progress in nuclear waste management, Congress introduced the concept of negotiated siting of an MRS facility by amending the NWPA, while still allowing DOE to proceed with its own siting efforts. Prospective hosts have the ability to negotiate an MRS site location, the technology to be utilized, and their level of involvement in facility operation, while receiving monetary reimbursement and financial incentives. DOE has established technical requirements which must be met if a site is to be considered a potential location of an MRS facility. The negotiated siting process, while meeting with some initial success, was not proceeding on a schedule that appeared to allow DOE to commence receipt of SNF by January 1998. DOE recently

initiated its own efforts, as a contingency to negotiated siting of an MRS facility, to seek an interim SNF storage site on federal property. A federal site offers ways of reducing the siting, licensing, and permitting schedule by providing existing data, infrastructure, and security, and, as shown by the Oak Ridge experience, may potentially be acceptable to the local community. Other lessons of the Oak Ridge MRS experience, such as the need for early stakeholder notification and involvement, and the establishment of benefits packages to the host state and community through effective negotiation, are also being pursued.

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