



# *Monitored Retrievable Storage Submission to Congress*

*Volume I*

*The Proposal*

**March 1987**

***U.S. Department of Energy  
Office of Civilian Radioactive Waste Management***



# *Monitored Retrievable Storage Submission to Congress*

*Volume I*

*The Proposal*

**March 1987**

**U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Washington, D.C. 20585**

## PROPOSAL

In response to Section 141 of the Nuclear Waste Policy Act of 1982, the Department of Energy hereby submits a proposal for the construction of a facility for monitored retrievable storage (MRS). The approval of this proposal by the Congress would specifically--

- Approve the construction of an MRS facility at a site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee.
- Limit the storage capacity at the MRS site to 15,000 metric tons of uranium.
- Preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the Nuclear Regulatory Commission.
- Direct the Department of Energy to implement measures responsive to the concerns and recommendations of the State of Tennessee and local governments, as specifically outlined in Section 4 of this proposal.
- Direct the Department of Energy to implement the program plan submitted in this proposal (Volume 3).

The actions recommended herein are consistent with, and meet the requirements of, the Nuclear Waste Policy Act.

## TABLE OF CONTENTS

	<u>Page</u>
1. EXECUTIVE OVERVIEW . . . . .	1
2. INTRODUCTION . . . . .	7
3. THE RECOMMENDED MRS FACILITY: FUNCTIONS, ADVANTAGES, AND COSTS . .	9
3.1 The Waste-Management System and the Plan for Improving Its Performance . . . . .	9
3.2 The MRS Facility and Its Operations . . . . .	11
3.2.1 Location . . . . .	11
3.2.2 Facilities and Operations . . . . .	14
3.2.3 Decontamination and Decommissioning . . . . .	16
3.2.4 Schedule and Other Programmatic Considerations . . . . .	16
3.2.5 Safety and Feasibility . . . . .	17
3.2.6 Management . . . . .	19
3.3 System Configuration . . . . .	19
3.3.1 Waste Acceptance . . . . .	20
3.3.2 Waste Preparation . . . . .	20
3.3.3 Transportation . . . . .	20
3.3.4 Storage . . . . .	21
3.3.5 Disposal . . . . .	21
3.4 Advantages and Benefits of Developing an MRS Facility . . . . .	21
3.4.1 Improvements in System Development . . . . .	21
3.4.2 Accelerated Waste Acceptance from Utilities . . . . .	22
3.4.3 Improvements in System Reliability and Flexibility . . . . .	23
3.4.4 Advantages for the Repository . . . . .	23
3.4.5 Improvements in the Transportation System . . . . .	24
3.4.6 Institutional Benefits . . . . .	24
3.5 The Costs and Impacts of Developing an MRS Facility . . . . .	25
3.5.1 Financial Impacts . . . . .	25
3.5.2 Environmental Impacts . . . . .	26
3.5.3 Perceived and Potential Programmatic Impacts . . . . .	27
4. RECOMMENDATIONS FOR INSTITUTIONAL PROVISIONS . . . . .	29
4.1 The Involvement of State and Local Governments . . . . .	30
4.1.1 MRS Steering Committee . . . . .	30
4.1.2 Consultation-and-Cooperation Agreement . . . . .	32
4.2 Assurances about Safety and Environmental Quality . . . . .	33
4.2.1 Plant Operation . . . . .	33
4.2.2 Transportation . . . . .	34
4.2.3 Decontamination and Decommissioning . . . . .	36
4.2.4 Other Oak Ridge Facilities . . . . .	37
4.3 Financial Assistance . . . . .	37
4.3.1 Preoperational Phase . . . . .	38
4.3.2 Operational Phase . . . . .	39
4.3.3 Specific Actions . . . . .	39

## LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
1	The waste-management system without an MRS facility . . . . .	9
2	The improved-performance system with an integral MRS facility .	11
3	Conceptual drawing of the MRS facility . . . . .	12
4	Cutaway view of the receiving-and-handling building and the principal operations performed there . . . . .	15
5	Preferred storage concept for the MRS facility: sealed concrete cask . . . . .	17
6	Schedule for the design, construction, and operation of the MRS facility . . . . .	18

## 1 EXECUTIVE OVERVIEW

The U.S. Department of Energy (DOE) proposes to construct and operate a facility for the monitored retrievable storage (MRS) of spent fuel at a site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee. This proposal was prepared in response to Section 141 of the Nuclear Waste Policy Act of 1982 (the Act), which directs the Secretary of Energy to perform a detailed study of the need for, and the feasibility of, monitored retrievable storage and to submit to the Congress a proposal for the construction of one or more MRS facilities.

As required by the Act, the DOE developed designs for two alternative storage concepts at three alternative sites. The preferred storage concept is surface storage in sealed concrete casks; the alternative is storage in field drywells. The three alternative sites are all located in the State of Tennessee on land owned and controlled by the Federal Government. The preferred site is the former site of the proposed Clinch River Breeder Reactor in Oak Ridge; the alternatives are a site on the DOE Oak Ridge Reservation and the former site of a proposed nuclear power plant in Hartsville. The Secretary of Energy is to recommend the site-and-design combination that he deems preferable.

In accordance with the Act, this proposal includes an environmental assessment (Volume 2) that examines the three alternative sites and six site-and-design combinations as well as a program plan (Volume 3) that includes plans for funding and plans for integrating the MRS facility into the DOE's waste-management system. Site-specific designs, specifications, and cost estimates are included by reference in Volumes 2 and 3. Also provided are comments by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency. The facility recommended in this proposal would be capable of performing all of the functions specified by the Act in Section 141(b)(1).

The Act provides the framework for a comprehensive system for the safe and environmentally sound management of spent nuclear fuel and high-level waste,\* including disposal in one or more geologic repositories that would permanently isolate the waste from the accessible environment. An important objective of the study of MRS need and feasibility was to determine whether and how an MRS facility could most effectively contribute to the achievement of this goal.

Having completed the need-and-feasibility study, a careful analysis of the provisions of the Act, and an evaluation of programmatic options, the DOE has concluded that an MRS facility located at the Clinch River site and designed to be an integral component of the waste-management system would significantly improve the performance of the system. This conclusion was also influenced by the experience of the past 4 years in implementing the provisions of the Act and the resultant perception of the managerial, regulatory,

---

\*For brevity, the terms "radioactive waste" and simply "waste" are often used here to denote both spent fuel and high-level waste.

and institutional complexities of waste management, particularly of the activities that must precede final disposal, which are often underestimated.

The DOE's proposal was ready for submittal to the Congress in February 1986, but litigation has delayed the submittal for more than a year. Since the planned submittal date, the DOE's Civilian Radioactive Waste Management Program (CRWM) has progressed and undergone various changes. These changes range from the programmatic changes and proposals outlined in the January 1987 Draft Mission Plan Amendment to further refinements of the program's analytical data base. While the program as presented in the Draft Mission Plan Amendment represents the DOE's current plan for the Federal waste-management system, it must be recognized that the plan may change in response to comments from affected parties or other events. The programmatic change that most affects the DOE's planning for the MRS facility is an extension of the date for the start of operations at the first repository; this date is extended from January 31, 1998, to 2003 to allow time to carry out necessary technical program activities and to provide additional opportunity for consultation and cooperation with affected States and Indian Tribes. The revised schedule shows that the DOE expects to receive from the Nuclear Regulatory Commission a construction authorization for the repository by the first quarter of 1998. Given this extension of the first-repository schedule and the DOE's recommendation that MRS operations start only when the construction authorization for the first repository has been received, the MRS facility would start receiving waste in the first quarter of 1998 and be the only CRWM facility available at that time. Thus, the MRS facility would be critical to the DOE's ability to accept waste for disposal in 1998.

An MRS facility would receive and prepare spent fuel for emplacement in the geologic repository. The principal waste-preparation functions would be spent-fuel consolidation and loading into canisters. Being uniform in size and free of surface contamination with radioactive material, these canisters would facilitate handling, shipping, and further processing at the repository. Consolidation would be performed by extracting the spent-fuel rods from the hardware that holds them together in assemblies and rearranging them in a tighter array for greater efficiency in storage, handling, transportation, and disposal.

The canisters of spent fuel would be loaded into shipping casks and shipped to the repository in dedicated trains. An area for temporarily storing the spent-fuel canisters pending shipment to the repository would be provided in the principal waste-handling building of the MRS facility. The MRS facility would also contain a large storage yard in which the canisters of spent fuel would be stored in sealed concrete casks that would allow radiation monitoring and easy retrieval for shipment to the repository. The DOE is proposing that the total storage capacity be limited to 15,000 metric tons of uranium (MTU); this will provide significant operational benefits to the Federal portion of the waste-management system and provide a firmer and earlier basis for the utilities to plan their storage needs.

The MRS facility would be designed and operated with the fundamental objective of protecting the health and safety of the public, the workers at the facility, and the quality of the environment. It would be licensed by the Nuclear Regulatory Commission and hence subject to both routine and unannounced inspections by NRC staff. It would be a shielded confinement-and-

containment facility that would limit any releases of radioactive material to well below established regulatory limits, and its safety-related features would be based on available and proven technology.

For improved logistics, it is envisioned that the MRS facility would not receive spent fuel from reactors located in the western United States (west of the Rocky Mountains) under expected circumstances. The spent fuel discharged by these reactors, which will constitute less than 10 percent of the total U.S. spent-fuel inventory, would be shipped directly to the repository for preparation and disposal. Under special circumstances, fuel could be shipped to the MRS facility--for example, to meet contractual obligations in the event of interruptions or delays in repository acceptance.

The construction and operation of the MRS facility would be under the purview of a DOE project office established in the DOE Oak Ridge Operations Office. The day-to-day management of the facility would be the responsibility of a DOE project manager during the preoperational phase and a plant manager during operations. This DOE manager would have formal responsibilities relative to an MRS Steering Committee that would include members recommended by and representing the State and local governments.

The most significant advantages of an integral MRS facility can be summarized as follows:

1. **Improvements in system development.** The MRS facility would allow the DOE to separate a major part of the waste-management process (acceptance, transportation from the reactor sites, consolidation, and sealing in canisters) from uncertainties about the repository and to proceed immediately with detailed planning for, and implementation of, that part. This would provide the utilities with a firmer basis for planning the transfer of spent fuel to the DOE. The development of the transportation system would also be advanced because the approval of the MRS facility would allow specific routing, logistics, and equipment requirements for shipments from reactors to be determined up to 8 years earlier. The early accomplishment of these separable steps of the waste-management process would significantly enhance confidence in the schedule for the operation of the total system. Moreover, the facility would provide a focal point for early system integration.
2. **Accelerated waste acceptance from the utilities.** By starting operations in 1998, the MRS facility would allow the system to receive spent fuel a full 5 years sooner than does the system without an MRS facility under current schedules. This would significantly reduce the need for new temporary storage capacity at reactor sites and the attendant spent-fuel handling operations, licensing efforts, and costs. It would also permit the Federal waste-management system to begin operations by 1998.
3. **Improvements in the reliability and flexibility of the waste-management system.** These improvements would be realized by separating the acceptance of spent fuel from reactors from emplacement in the repository and adding significant operational storage capacity to the system. They would produce identifiable improvements in the



manageability of the system and allow the DOE to better accommodate the circumstances of the future.

4. Advantages for the repository. By performing waste-preparation functions, the MRS facility would simplify the waste-handling facilities and operations of the repository. Furthermore, the repository would receive fewer shipments; the waste canisters received from the MRS facility would be uniform in size and free from surface contamination with radioactive material; and a large portion of the inventory-accountability function would be performed at the MRS facility. Another important advantage would be the increased control of the rate of waste transfer to the repository, which would enhance the efficiency of repository operations.
5. Improvements in the specification and performance of the transportation system. Since consolidated fuel would be shipped in dedicated trains, the MRS facility would significantly reduce the number of shipments to the repository and minimize the distances of spent-fuel shipments in less-efficient truck-mounted casks. Being centrally located for most reactors, it would serve as a hub for transportation operations, focus the control and management of transportation operations, and reduce the number of cross-country shipping routes. Moreover, by allowing early identification of routes to the MRS site, the MRS facility would provide institutional benefits because it would increase the time available to work with the States, Indian Tribes, and the public in route-specific planning.
6. Institutional benefits. The development of the MRS facility would provide institutional benefits through the experience gained from interactions with the State of Tennessee. Institutional benefits would also result from the opportunity to demonstrate earlier that facilities developed under the Act are safe and that in developing and operating these facilities the DOE is a responsible corporate citizen and neighbor. Early progress in waste management, starting with the designation of a specific site and facility construction, would help provide needed momentum for implementing the entire system.

Studies performed for this proposal show that, though there are other ways to achieve some of the advantages of an integral MRS facility, none of the alternatives examined in the need-and-feasibility study presents the same range of benefits while also providing equivalent benefits in terms of feasibility, flexibility, system development, and managerial control.

The expenditures for the MRS project from the time of Congressional approval to the start of operations are estimated at \$907 million in constant 1986 dollars, of which about \$710 million would be used for construction. The annual operating expenses for the facility, which would employ about 600 workers, would be about \$73 million, not including financial-assistance and tax-equivalency payments. The cost of decommissioning the facility at the end of operations would be approximately \$83 million. All costs would be borne by the waste generators and hence paid from the Nuclear Waste Fund. The DOE has made provision for the MRS project in the President's budget proposal for fiscal year 1988 should the Congress approve the system. The cost of the total improved-performance system is estimated to be about 5 percent higher than

that of the system without an MRS facility; the cost is thus within the range of uncertainty associated with cost estimates for a total system without an MRS facility and is considered small in comparison with the benefits. The costs of constructing and operating an MRS facility would be partially offset by savings in the cost of constructing and operating the repository surface facilities, which would be simplified; by the savings realized by the rate-payers in not needing to pay for additional at-reactor storage; and by the savings resulting from the institutional benefits, discussed in this proposal, to the overall waste-management system. The increase of about 5 percent is considered an upper bound because the estimates for MRS implementation are based on well-developed designs at specific sites, whereas the costs of the remainder of the total system are subject to more uncertainty.

No significant incremental adverse environmental impacts are expected from an integral MRS facility. Quantitatively, the estimated total-system risks and environmental costs do not differ significantly between systems with and without an MRS facility. The social and economic impacts that might result from the MRS facility would be prevented or mitigated by the measures proposed herein.

Some potential adverse programmatic effects have also been postulated by various parties, but most are perceived and avoidable rather than inevitable. The one most often cited is concern that an MRS facility would diminish the resolve to develop a geologic repository. To allay such concerns and to reinforce this country's unwavering commitment to the geologic repository program, the DOE proposes that the Congress link the startup of the MRS facility to the schedule of the repository: no waste may be accepted at the MRS facility until a construction authorization for the first repository is received from the Nuclear Regulatory Commission. Furthermore, the DOE proposes that the Congress limit the MRS storage capacity to 15,000 MTU.

The institutional challenges faced by the waste-management program were anticipated by the Congress in the Act, which prescribes unprecedented measures for public involvement as well as consultation and cooperation with affected States and Indian Tribes. The MRS project has an early opportunity to demonstrate the safety of facilities developed under the Act and to establish that in developing and operating these facilities the DOE is a responsible corporate citizen and neighbor. To make the most of this opportunity, the DOE is proposing measures that include (1) the provision of opportunities for State and local governments to participate in the project, (2) assurances about safety and environmental quality, and (3) financial assistance. These measures are based in part on comments submitted by the State of Tennessee and the Clinch River MRS Task Force. The latter is a 31-member group appointed by Roane County and the city of Oak Ridge to determine whether the community they represent should accept an MRS facility and, if so, under what conditions. After the Task Force identified these conditions and formulated recommendations for meeting them, the City Council of Oak Ridge and the Roane County Commission passed conditional resolutions accepting the development of an MRS facility at the Clinch River site.

Immediately after the approval of this proposal, the DOE would seek to enter into a written consultation-and-cooperation agreement with the State of Tennessee. This agreement would serve as an "umbrella" contract between the DOE and the State of Tennessee and would formalize arrangements for further

State and local involvement. The DOE proposes that one of the key features of such involvement be the establishment of an MRS Steering Committee that would provide advice, conduct performance evaluations, and recommend corrective actions. The Committee could play an important role in providing information to the public about the safety of the facility as well as ensuring that State and local perspectives are fully considered in all key programmatic decisions.

To allow the State and the local communities to plan and prepare for the MRS facility, the DOE proposes to provide the State and local governments annual financial-assistance payments in the form of impact-mitigation funds and annual payments equal to the taxes that would have been collected had the MRS facility been subject to taxation. This financial assistance would be in addition to reimbursements to the State and local governments for work performed for the MRS project.

Recognizing the harmful effects incurred by the local community from the canceled breeder-reactor project, mindful of the community's desire to diversify its industrial and commercial base, and aware that the Clinch River site was considered the prime site for this diversification, the DOE also proposes certain considerations in procurement for the MRS facility and in land usage should land at the DOE's Oak Ridge Reservation become surplus to the DOE's programmatic needs.

In summary, the DOE recommends that the Congress approve an integral MRS facility constructed at the Clinch River site in Roane County, Tennessee; limit the interim-storage capacity of the MRS facility to 15,000 MTU and preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the Nuclear Regulatory Commission; direct the DOE to implement its recommended program for State and local participation, including the financial assistance plans proposed for both the preoperational and operational phases; and direct the DOE to proceed in the manner prescribed in the program plan.

## 2 INTRODUCTION

The United States has no facilities for the permanent disposal of the spent fuel and high-level radioactive waste generated during the production of electricity in nuclear power plants and during the production of nuclear materials for national defense. As more commercial nuclear power plants have come on line in recent years, the rate at which the resulting spent fuel has been accumulating has been increasing, and a number of utilities are beginning to run out of storage space.

Although nuclear activities produce small volumes of wastes in comparison with many other activities that generate hazardous wastes, nuclear wastes have the unique characteristic of being radioactive, and therefore they require special handling and storage. While such wastes have been safely stored for decades without significant adverse effects on the health and safety of the public, they will remain potentially hazardous for long periods of time. The Federal Government has established the principle that the management and the disposal of these wastes are the responsibility of the present generation and should not be left for future generations. Recognizing that a national problem has been created by the accumulation of radioactive wastes and that a safe and environmentally acceptable method of permanent disposal is needed, the Congress enacted the Nuclear Waste Policy Act of 1982.

The Act assigned to the U.S. Department of Energy the responsibility for disposing of these wastes and created the Office of Civilian Radioactive Waste Management for that purpose. The method of disposal is to be permanent isolation in geologic repositories. The Act requires the DOE to site, construct, and operate geologic repositories in a manner that "will provide reasonable assurance that the public and the environment can be protected" and establishes a schedule for the siting of two repositories. Recognizing the importance of institutional issues, it provides for a system of checks and balances through public involvement as well as consultation and cooperation with the affected States and Indian Tribes. Furthermore, the Act mandates that the costs of commercial-waste disposal are to be paid in full by those who benefit from the electricity generated in nuclear power plants and establishes a special Nuclear Waste Fund for this purpose.

In addition, Section 141 of the Act directs the DOE to examine the need for monitored retrievable storage (MRS) and to submit a proposal to the Congress for the construction of one or more such facilities. According to Section 141(b)(1), such a facility is to accommodate civilian spent fuel and high-level waste; permit continuous monitoring, management, and maintenance of these wastes; provide for the ready retrieval of these wastes for further processing or disposal; and safely store such wastes as long as may be necessary by maintaining the MRS facility.

As specified in Section 141(b)(2), the proposal is to follow a detailed study of the need for, and feasibility of, an MRS facility and is to include the following:

1. The establishment of a program for the siting, development, construction, and operation of MRS facilities.

2. A plan for the funding of the construction and operation of MRS facilities to be licensed by the Nuclear Regulatory Commission.
3. Site-specific designs, specifications, and cost estimates sufficient to solicit bids for the construction of the MRS facility, support Congressional authorization of the construction, and enable the completion and operation of an MRS facility as soon as practicable after Congressional authorization.
4. A plan for integrating the MRS facilities with other storage and disposal facilities authorized by the Act.

In formulating the proposal, the Secretary of Energy is to consult with the Nuclear Regulatory Commission and the Administrator of the Environmental Protection Agency and is to submit their comments to the Congress at the time the proposal is submitted (Section 141(b)(3)).

The Act (Section 141(b)(4)) also directs the DOE to consider in the proposal at least three alternative sites and at least five combinations of proposed sites and facility designs. The advantages and disadvantages of the six site-and-design combinations considered are to be fully analyzed in an environmental assessment that is required by Section 141(c) to accompany the proposal.

The proposal required by Section 141(b) of the Act is hereby submitted in three volumes. This document (Volume 1) presents the proposal itself and explains the rationale. Volume 2 is the environmental assessment required by Section 141(c). In addition to the site-and-design analyses required by Section 141(b)(4), it includes the need-and-feasibility study referred to in Section 141(b)(1). Incorporated by reference into Volume 2 is a conceptual design report prepared by an architect-engineer; this document contains the site-specific designs and cost estimates required by Section 141(b)(2)(C). Volume 3 is a program plan. It presents the MRS program, a plan for funding the MRS project, and a plan for integrating the MRS facility into the DOE's waste-management system, as required by Sections 141(b)(2)(A), (B), and (D).

Also submitted are comments by the Nuclear Regulatory Commission and the Environmental Protection Agency. Those comments are based on review copies of Volumes 1, 2, and 3 of this proposal, which were made available on December 23, 1985. The "final" versions of these volumes were changed where further clarification, elaboration, or editing was deemed desirable or to reflect changes in the program (e.g., the proposed revision of the first-repository schedule) that have occurred since December 1985. In addition, the presentation of cost estimates in the program plan (Volume 3) was reformatted and updated to better support and explain the DOE budget submittal for fiscal year 1988. A record of all changes made to the review copies in preparing the final copies is available on request.

### 3 THE RECOMMENDED MRS FACILITY: FUNCTIONS, ADVANTAGES, AND COSTS

Summarized in this section are the functions, advantages, and costs of the recommended MRS facility. The discussion is based on the more-detailed descriptions given in Part 2 of Volume 2, the MRS environmental assessment as well as the need-and-feasibility analysis presented in Part 1 of Volume 2. Site-specific designs, specifications, and cost estimates can be found in the conceptual design report that is referenced in Volume 2. To provide some background information, this section begins with a brief description of the DOE's waste-management system and a plan that would improve its performance through the implementation of the MRS project.

#### 3.1 THE WASTE-MANAGEMENT SYSTEM AND THE PLAN FOR IMPROVING ITS PERFORMANCE

As shown in Figure 1, the Act provides for a number of key activities for the DOE's waste-management system: the siting and construction of a geologic repository, the development of a transportation system for moving the waste to the repository, and, if needed, Federal interim storage (FIS) for a small quantity of spent fuel. All of the facilities included in the system (except FIS under certain conditions) are subject to licensing by the Nuclear Regulatory Commission.

The most demanding of the waste-management facilities is the repository, which will permanently isolate the waste from the accessible environment. Because permanent isolation requires the site of the repository and the host rock to have suitable geologic characteristics, the site must be carefully

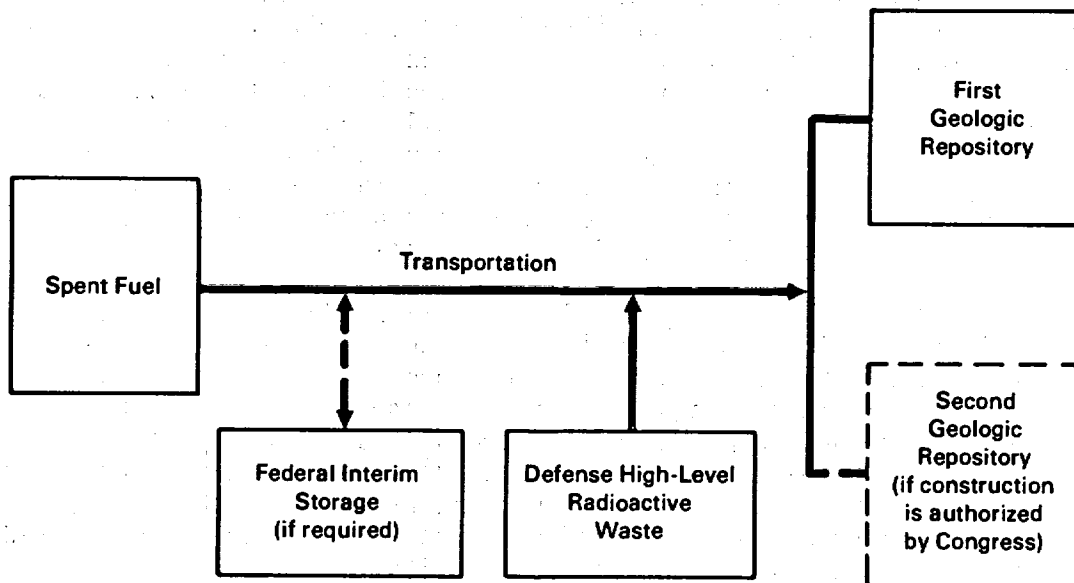


Figure 1. The waste-management system without an MRS facility.

selected; the prescribed site-screening and selection process is complex and requires several years. These tasks are rendered more complex by the institutional challenges attendant on a first-of-a-kind project and the public apprehension associated with radioactive materials. Recognizing these challenges, the Congress set January 31, 1998, as the date for the DOE to begin accepting spent fuel for disposal and specified a schedule for the siting of the repository. In the January 1987 Draft Mission Plan Amendment the DOE proposes extending the date for waste acceptance at the first repository from January 31, 1998, to 2003. The scheduled date for the startup of the MRS facility would permit the DOE to begin receiving spent fuel for disposal by the first quarter of 1998.

The repository will consist of both surface and underground facilities. The most important of the surface facilities will be the buildings in which the waste will be handled and prepared for disposal--that is, emplacement in the underground rooms. The principal steps in waste preparation will be consolidation, which will be discussed later, and encapsulation in a metal disposal container to satisfy regulatory requirements. Together with the waste, this container and packing material between the container and the wall of the repository host rock will constitute the "waste package."

The repository program has completed a number of important milestones. On May 27, 1986, the Secretary of Energy nominated five sites in Mississippi, Nevada, Texas, Utah, and Washington as suitable for characterization and recommended to the President that three of these sites--the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas, and the Hanford site in Washington--be characterized as candidate sites for the first repository. The Secretary's recommendation was approved by the President on May 28, 1986.

Recognizing that options for enhancing the waste-management system may be available, the Congress directed the DOE to study the need for, and the feasibility of, an MRS facility (Section 141 of the Act). Careful analyses of the provisions of the Act and of programmatic options--as well as various studies of the waste-management system--have indeed shown that performance could be enhanced by integrating an MRS facility, centrally located to most of the commercial nuclear reactors, into the system. The resulting improved-performance system is diagrammed in Figure 2. Comparisons of the system without an MRS facility with the improved-performance system are given in Part 1 of the MRS environmental assessment (Volume 2 of this proposal).

The time allowed by the Congress for the MRS study (3 years) has enabled this proposal to benefit from the DOE's experience to date in implementing the requirements of the Act. This experience has produced a keen appreciation for the management complexities, regulatory issues, and institutional challenges involved in the receipt, preparation, and transportation of spent fuel (from more than 100 reactors expected to be operating) in addition to those associated with the development of a geologic repository. During this time, the DOE has also been apprised of the views and concerns of a number of interested or potentially affected parties about an MRS facility. Among them are the Nuclear Regulatory Commission, the Environmental Protection Agency, the State of Tennessee, and the Clinch River MRS Task Force, which represents the local governments sharing jurisdiction over the area of the preferred site.

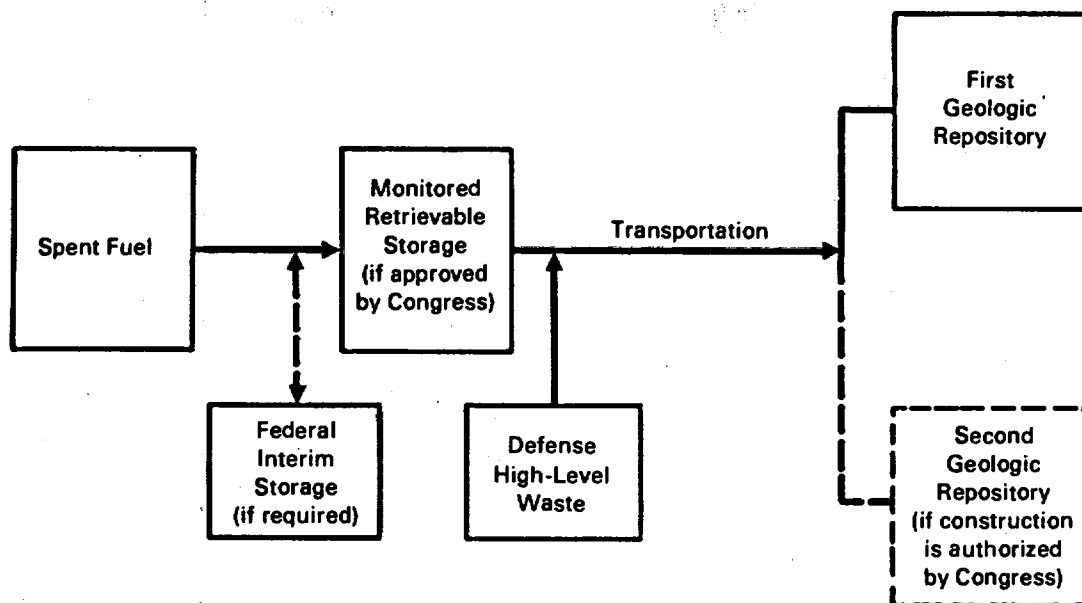


Figure 2. The improved-performance waste-management system with an integral MRS facility.

### 3.2 THE MRS FACILITY AND ITS OPERATIONS

Presented below is a brief description of the location, facilities and operations, decontamination and decommissioning, safety and feasibility, schedule, and management of the MRS facility. A conceptual drawing of the facility is shown in Figure 3.

#### 3.2.1 Location

The MRS facility would be constructed on the Clinch River site in the Roane County portion of Oak Ridge, Tennessee, 25 miles west of Knoxville. The site, approximately 9 miles southwest of Oak Ridge's population center, is owned by the Federal Government and is in the custody of the Tennessee Valley Authority (TVA). The alternative sites are a site on the Oak Ridge Federal Reservation, about 3 miles northeast of the Clinch River site, and a site in central Tennessee on Federal land in the custody of the TVA, near the city of Hartsville. Called the Hartsville site, this land was formerly dedicated to a nuclear power plant whose construction was canceled.

The process for the identification of the three sites mentioned above was based on the following primary considerations:

1. To locate places where an MRS facility could be constructed and operated safely with minimal adverse impacts on the local community and the environment.



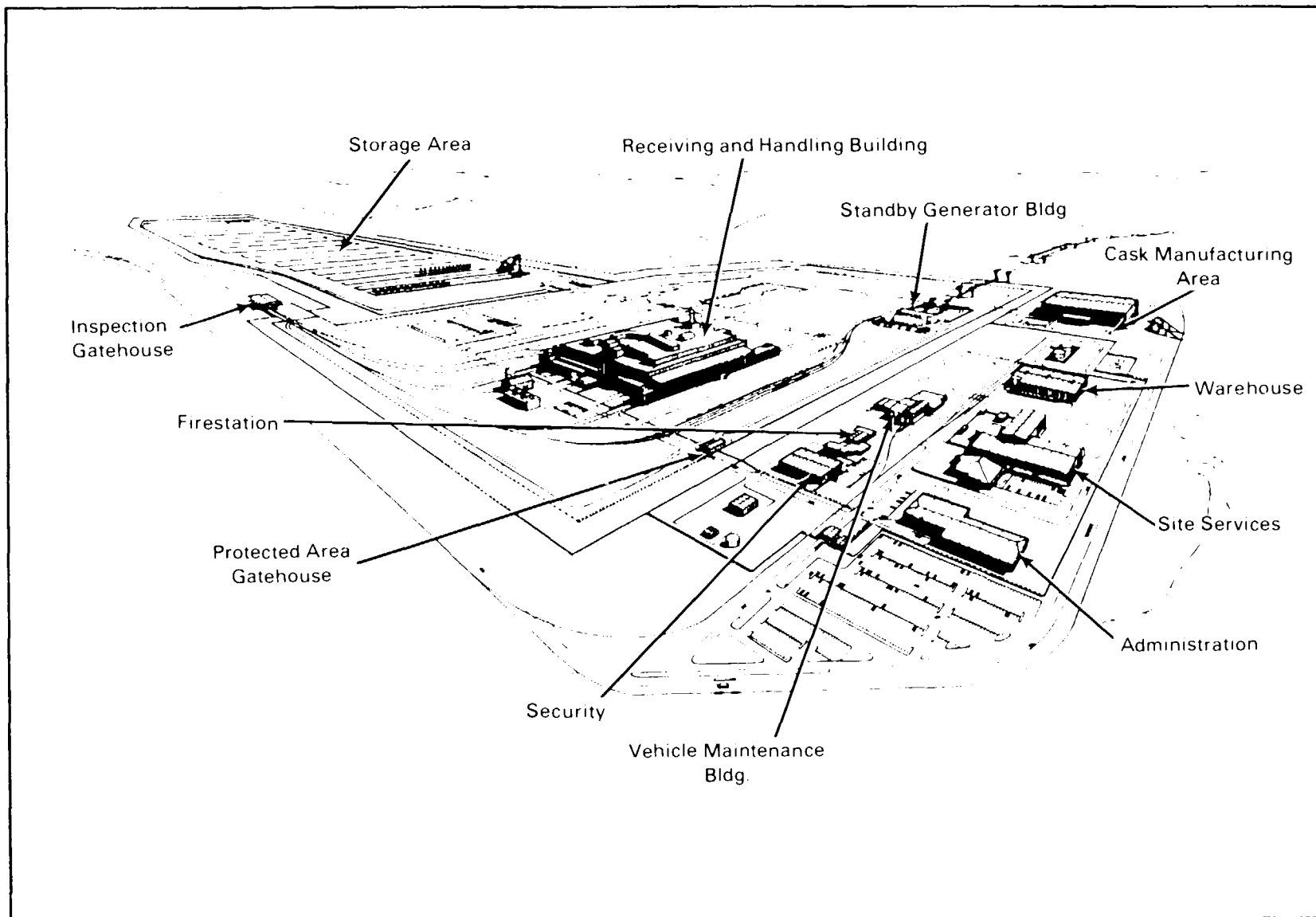


Figure 3. Conceptual drawing of the MRS facility. The principal structure would be the receiving-and-handling building. The storage area is shown to contain a row of upright sealed concrete casks as well as some horizontally stored dual-purpose casks.

2. To enhance the role of an MRS facility as an integral part of the Federal waste-management system.

The process began by considering the transportation of spent fuel and radioactive wastes throughout the Federal system; this disclosed a region of the country in which an MRS facility would substantially reduce the total shipment-miles, thus limiting the impacts of transportation. This region was found to contain sites that are controlled by the DOE and currently used for nuclear activities as well as sites for which license applications have been submitted to the Nuclear Regulatory Commission. The latter have the advantage of having extensive bases of environmental and socioeconomic data that are applicable for assessing the suitability of an MRS site. Only sites with sufficient available acreage without known land-use conflicts (such as operating nuclear reactors or reactors under construction) were considered.

This process led to the identification of 11 sites as potentially suitable, and an evaluation of these sites led to the conclusion that MRS development in compliance with health, safety, and environmental requirements was feasible at any of the sites. Further screening against criteria like Federal ownership, potential land-use competition, potential competition with environmental regulatory objectives (e.g., location in a Class I air-quality area), the presence of geotechnical conditions considered undesirable by the Nuclear Regulatory Commission, access to transportation corridors, proximity to population centers, and the availability of an adequate base of environmental data led to the selection of the three sites mentioned above for more-detailed analyses.

The basis for the identification of these sites, which was announced on April 25, 1985, is presented in a report entitled Screening and Identification of Sites for a Monitored Retrievable Storage Facility (DOE/RW-0023, April 1985). Since that time, additional data have been collected, site-specific MRS designs have been developed, and the environmental effects of constructing and operating an MRS facility at those sites have been studied in considerable detail. A full analysis of the potential environmental effects and the relative advantages and disadvantages of the six site-and-design combinations is presented in Part 2 of the MRS environmental assessment (Volume 2).

Of the three candidate sites, the Clinch River site in the Roane County portion of Oak Ridge is recommended to the Congress as the preferred site for the following reasons:

1. The site is owned by the Federal Government and is in the custody of the TVA.
2. Since the site is adjacent to the DOE's Oak Ridge Reservation, nuclear activities are compatible with the present land usage.
3. Part of the site has already been disrupted by preparation for the construction of the Clinch River Breeder Reactor. The alternative Oak Ridge site is undisturbed.
4. The site has excellent access for any mode of transportation, being within 5 miles of the nearest interstate highway, within 1.5 miles of

a main rail line, and on a navigable waterway. Access to the Hartsville site is not as good.

5. The local community can supply experienced technical personnel for the MRS project.
6. An extensive base of environmental data is available for the site. Data for the alternative Oak Ridge site are not nearly as extensive or current.
7. The NRC had granted for this site a limited work authorization for the construction of a breeder reactor--a far more complex nuclear installation than the MRS facility. The alternative Oak Ridge site has not been similarly reviewed.

As indicated, many of the advantages listed above also apply to the two alternative sites, but neither alternative has all of them. Costs do not provide a basis for discriminating among these sites; cost differences are estimated to account for less than 1 percent of the total costs projected for MRS development and operation and hence are within the uncertainty range of these estimates.

On the basis of informal discussions between DOE and TVA officials, the transfer of the site to the DOE is not expected to be a problem. If this proposal is approved by the Congress, the DOE will initiate actions to transfer full custody and control of the proposed site to the DOE.

### 3.2.2 Facilities and Operations

At the Clinch River site, the MRS facility would require less than 500 acres. In addition to the principal structure--the receiving-and-handling building--it would consist of an area for monitored retrievable storage, a plant for manufacturing the concrete storage casks, and various support facilities (an administration building, visitors center, maintenance shops, warehouse for supplies, fire station, water-treatment facility, etc.).

After arriving by truck or rail in a shipping cask, the waste would be unloaded into the receiving-and-handling building, a multilevel structure with a ground-floor area of about 290,000 square feet, where it would be prepared for emplacement in a repository. Many of the waste-handling operations in this building would be performed by remote control inside shielded "hot cells" to protect the workers from exposure to radiation. Included in the building is a lag storage area. A simplified diagram of the building is shown in Figure 4.

An important step in waste preparation is the consolidation of spent fuel. Its objective is to optimize transportation and emplacement operations by minimizing the number of waste packages that must be handled. Consolidation would be accomplished by removing the spent-fuel rods from the hardware that holds them together in square assemblies and then rearranging them in a tighter, circular, array. The non-fuel-bearing scrap of the fuel assemblies would be compacted and loaded into containers for shipment to the repository. After consolidation, the spent-fuel rods would be loaded and sealed into clean metal canisters for temporary storage at the MRS facility or shipment to the

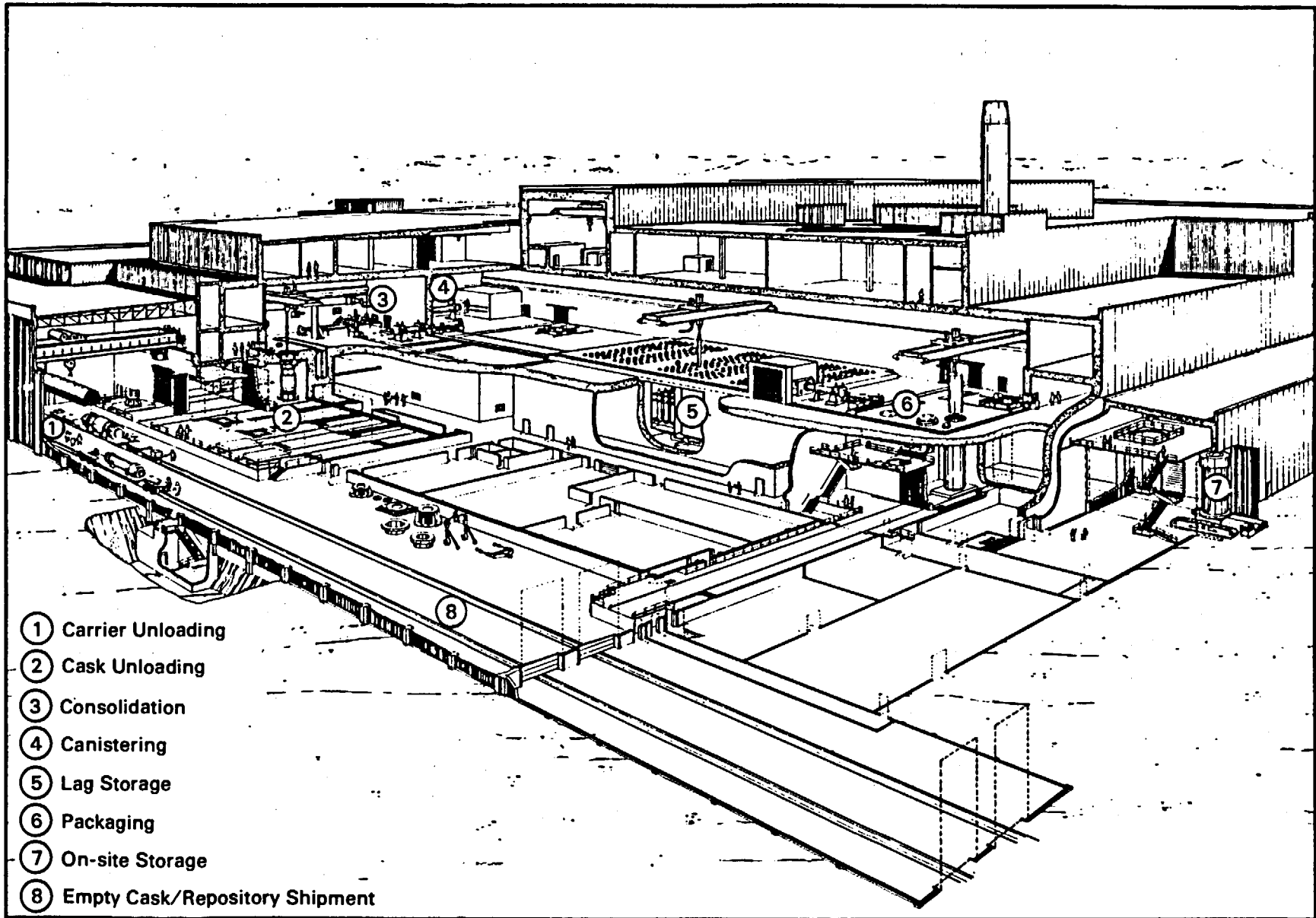


Figure 4. Cutaway view of the receiving-and-handling building and the principal operations that would be performed there.

repository. The exterior surfaces of the canisters would be additionally cleaned to remove any contamination with radioactive material. At this point, the canisters would be ready for any needed temporary storage at the MRS facility.

After a detailed evaluation of eight alternative concepts for dry storage, the DOE selected surface storage in sealed concrete casks as the preferred method for monitored storage, with field drywells selected as the alternative means. (See Part 2 of Volume 2 for a more detailed discussion.) Both methods have been safely used in similar applications for a number of years; both are low in cost, and both are simple as well as flexible in design. The capacity of such storage would be limited to a total of 15,000 MTU.

A sealed storage cask (Figure 5) is a large steel-lined reinforced-concrete cylinder that holds welded stainless-steel canisters of spent fuel and is closed with a thick concrete shield plug and a welded steel lid. Depending on the type of waste being stored, the casks may range from 17 to 22 feet in height, measure 12 feet in outside diameter, and weigh up to 220 tons when loaded.

The field drywell is an in-ground sealed metal enclosure that would extend approximately 20 feet into the ground.

The design would also include provisions for accommodating steel storage casks that can also be used for transportation. Such dual-purpose casks could be used by individual utilities to solve at-reactor storage problems that may occur before the startup of the MRS facility or the repository.

The proposed MRS facility would be capable of a throughput rate equal to the rate of waste emplacement at the repository. The waste-acceptance rate of the overall system would be greater than the rate of spent-fuel discharge from reactors in order to curb and eventually reduce the backlog of spent fuel accumulated at reactor sites.

### 3.2.3 Decontamination and Decommissioning

At the end of its mission, the MRS facility would be decommissioned, and its site would be prepared for unrestricted use. An outline of the decontamination and decommissioning activities is presented in the MRS environmental assessment (Volume 2). As part of the license application for the facility, the DOE is required to include a detailed plan for such activities for consideration by the Nuclear Regulatory Commission.

### 3.2.4 Schedule and Other Programmatic Considerations

The MRS facility could start receiving waste in 1998. The proposed schedule for its construction and operation is shown in Figure 6 and discussed in Volume 3 of this proposal. At the end of its operating period, the facility would be decommissioned and the site made available for other uses.

The relationship of the MRS facility to the second repository is not addressed in Volumes 2 and 3 of this proposal. As planning for the second repository advances and candidate sites are identified, the role of the MRS

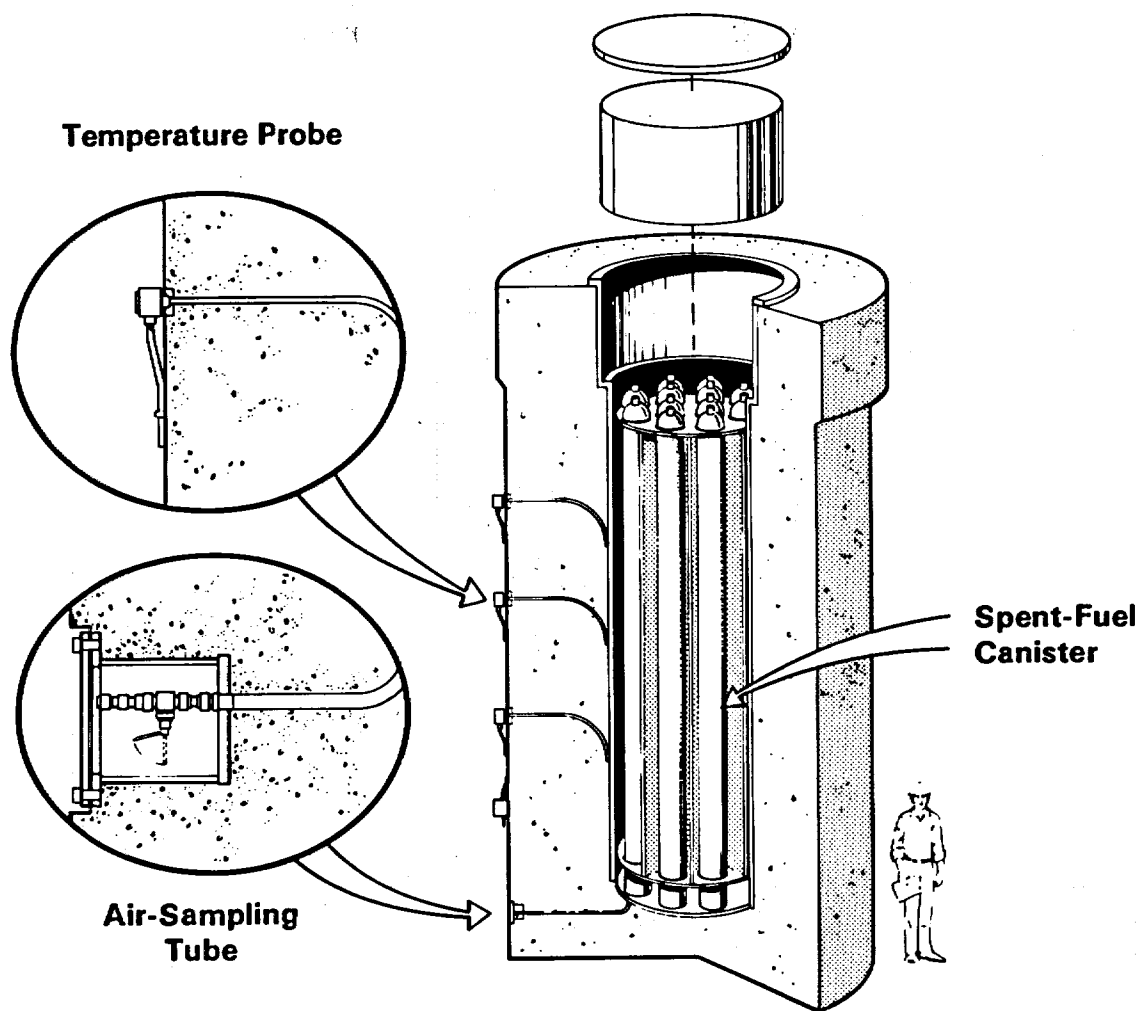
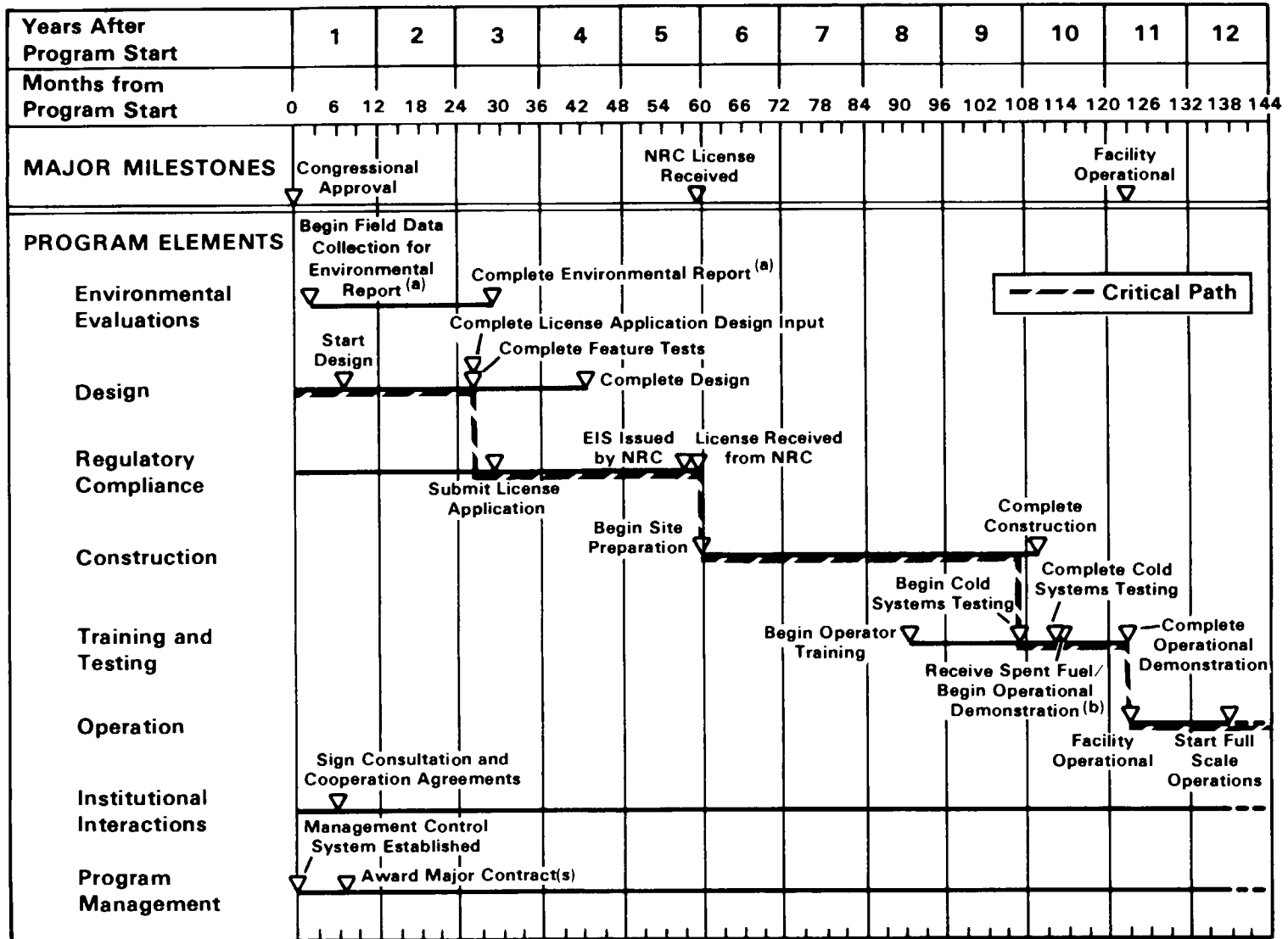


Figure 5. The preferred storage concept for the MRS facility: monitored surface storage in large sealed concrete casks. Each cask would house several spent-fuel canisters; it would be 22 feet high and 12 feet in diameter. The temperature probe and the air-sampling tube would allow continuous monitoring.

facility in preparing waste for the second repository will be examined in detail. Any decision to use the facility in this capacity would be based on the potential for reducing transportation impacts as well as improving the operations and economics of the waste-management system.

### 3.2.5 Safety and Feasibility

The MRS facility has been designed to contain solid radioactive materials, with any gaseous releases kept well below the limits established by regulation. The site-and-design analyses reported in Part 2 of Volume 2 show that



(a) The precise nature of this document will be dependent on the provisions of any authorizing legislation.

(b) The shipment of spent fuel to the MRS is contingent upon receipt of a construction authorization for the first repository. According to the revised first-repository schedule in the Draft Mission Plan Amendment, such authorization is expected by the first quarter of 1998.

Figure 6. Schedule for the design, construction, and operation of the MRS facility.

any exposure of the public to radiation would be far below regulatory limits. Similarly, the occupational exposures received by workers at the facility would be significantly less than the exposures allowed by NRC regulations. The safety performance of the facility would be based on available and proven technologies, such as the use of heavy shielding in waste-handling areas, remotely controlled equipment, multiple banks of high-efficiency air filters in ventilation systems, and appropriate shielding in the storage casks.

Since the DOE must obtain a license for the MRS facility from the Nuclear Regulatory Commission, its safety performance would have to be demonstrated to the satisfaction of the Commission. The data and analyses needed for this demonstration would be reported in the safety analysis report, all environmental documentation, the safeguards contingency plan, the quality-assurance plan, and various other documents that would be submitted with the license application. Furthermore, the demonstrations of safety performance would extend beyond data and analyses: they would include both routine and unannounced inspections by NRC inspectors (including provisions for resident inspectors) throughout the operational lifetime of the facility. Independent inspection and monitoring by the State of Tennessee may also be conducted, as provided for in the consultation-and cooperation agreement.

The MRS facility and its operation are feasible: analyses show that the technical and engineering requirements can be met with current technology; the facility can be constructed and operated for approximately the costs reported in the program plan (Volume 3); and the facility can be licensed as safe and would meet all applicable environmental and land-use requirements of the Federal Government, the State of Tennessee, Roane County, and the City of Oak Ridge.

### 3.2.6 Management

Responsibility for implementing the MRS project would be assigned to the DOE Oak Ridge Operations Office, which would establish an MRS Project Office for that purpose. Guidance and direction for the project would be provided by the Storage Division of the Office of Storage and Transportation Systems, which is part of the Office of Civilian Radioactive Waste Management (OCRWM).

The day-to-day management of the construction or operation of the facility would be assigned to a DOE project manager (a plant manager once the facility starts operating). This manager would be responsible for both safety and the achievement of program goals. The manager would be responsible to the Director of the OCRWM (or his designee) through the manager of the DOE Oak Ridge Operations Office; the manager would also have formal responsibilities relative to the MRS Steering Committee, which is discussed in Section 4.1.

## 3.3 SYSTEM CONFIGURATION

If the integral MRS facility is approved by the Congress, the DOE expects to operate the improved-performance system as described below. The recommended configuration was defined after considering several alternative configurations for the overall system with and without an MRS facility. The evaluation of alternatives is presented in Part 1 of Volume 2.



### 3.3.1 Waste Acceptance

As provided in its contracts with the utilities, the DOE will establish a schedule, independent of reactor location, for accepting spent fuel for disposal, beginning not later than January 31, 1998. Acceptance will occur at the reactor site after the utility has loaded the spent fuel into a transportation cask certified by the Nuclear Regulatory Commission. If this proposal is approved by the Congress, the acceptance schedule will be adjusted for the improved performance of the integrated system. Full-scale operation at a rate of about 2500 to 3000 MTU per year would be achieved by 2004. Under normal circumstances, spent fuel from western reactors (constituting less than 10 percent of the total U.S. inventory) would be shipped directly to the repository, which, as already mentioned, is assumed to be in the west. However, spent fuel from western reactors could be shipped to the MRS facility--if necessary, for example, to meet contractual obligations.

According to current plans, the MRS facility would continue to accept spent fuel for as long as needed to serve an operating repository. In the analyses performed for this proposal, an operating period of 31 years was assumed, because the MRS facility, operating at the throughput rates assumed for this analysis, would have transferred 59,800 MTU of spent fuel to the first repository by the end of this period. Assuming 5600 MTU of spent fuel from western reactors and the equivalent of 4600 MTU in defense waste, the equivalent of 70,000 MTU would thus have been emplaced in the first repository, which is the capacity limit for the first repository until such time as a second repository starts operations (Section 114(d) of the Act).

Defense high-level waste and the small quantity of commercial high-level waste from a demonstration project in West Valley, New York, would be shipped directly to the repository. However, the MRS facility would have the capability to coordinate shipments from nearby defense-waste facilities with its own dedicated-train shipments of consolidated spent fuel should a future need arise.

### 3.3.2 Waste Preparation

At the MRS facility, spent fuel would be prepared for geologic disposal by being consolidated (see Section 3.2.2) and loaded into canisters. At the repository, the canisters would be encapsulated in the disposal container before underground emplacement. The MRS facility would also have the capability to encapsulate the spent fuel into disposal containers if this step proves to be more efficient at the MRS site than at the repository.

The repository would encapsulate the spent fuel it receives directly from the western reactors. It would also encapsulate in disposal containers the high-level waste.

### 3.3.3 Transportation

An MRS facility at the Clinch River site would divide the spent-fuel transportation function into two segments: transportation from reactors to the MRS facility and a longer leg from the MRS facility to the repository. The spent fuel from reactors would be shipped in casks certified by the Nuclear Regulatory Commission. The shipments would be made by truck or rail, depend-

ing on the cask-handling capabilities of the reactor, but wherever possible rail shipments would be used, in order to reduce the number of shipments.

The spent fuel consolidated at the MRS facility would be shipped to the repository by dedicated trains, with each train consisting of several (five to ten) large rail casks also certified by the Commission. Because these rail casks would not be constrained by the cask-handling capabilities of the reactors, they could be somewhat larger than the rail casks expected for the reactor-to-MRS segment. Consolidation and the use of larger rail casks in dedicated trains would significantly reduce the number of shipments to the repository.

#### 3.3.4 Storage

As already mentioned, the proposed MRS facility would be able to store up to 15,000 MTU of spent fuel in sealed storage casks especially designed for easy monitoring and retrieval.

#### 3.3.5 Disposal

The method specified by the Act for permanent disposal is isolation in geologic repositories. The Act provides for the construction of one repository and establishes the process for siting two repositories. (The construction of the second repository is not authorized at present, although the first repository can accept no more than 70,000 MTU of waste before the second repository starts operations.)

### 3.4 ADVANTAGES AND BENEFITS OF DEVELOPING AN MRS FACILITY

The development of the proposed MRS facility would yield significant advantages and benefits for the waste-management system by (1) improving system development by allowing many first-of-a-kind licensing and planning activities in the waste-management program to be carried out in advance of repository activities, (2) accelerating waste acceptance from the utilities, (3) providing increased reliability and flexibility in operating the system, (4) facilitating the operations of the repository, and (5) improving the performance of the transportation system. In addition, the development of the MRS facility is expected to produce institutional benefits that could have a positive effect on the progress of the geologic repository program and enhance the public acceptance of geologic repositories.

#### 3.4.1 Improvements in System Development

The MRS facility would accelerate the system-development schedule because it would allow the DOE to plan, design, and deploy major components of the waste-management system in advance of the geologic repository. These major system components include the pre-waste-emplacment functions: acceptance of spent fuel from the utilities, transportation from the reactor sites to the MRS facility, spent-fuel consolidation, and loading into canisters. The two-step approach to system development (i.e., first the MRS facility and transfer of spent fuel from the reactors and second the geologic repository) would lead to a number of advantages, including the following:

1. The development of the entire waste-management system would be made more manageable and hence easier. The delineation and development of

separable segments of this system would facilitate the enormous task of developing, implementing, and managing the entire system. With early approval of the MRS project, the development of the pre-waste-emplacment functions of the system can proceed on the basis of more-complete and more-certain information. Efforts to develop the repository can be more narrowly focused and made similarly more manageable.

2. The basis for establishing the final schedule for spent-fuel acceptance from the utilities in 1991 would be improved because definitive facility designs for the first part of the system would be available several years earlier.
3. The parameters needed to develop the transportation system would be defined earlier because route-specific planning, logistics planning, and equipment procurement for shipments from the reactors could begin after the MRS proposal is approved.
4. The licensing of the surface facilities of the repository could be simplified since the MRS facility would reduce the size and operations of the waste-handling surface facilities of the repository.
5. A single focal point for early system integration would be established.
6. The detailed planning and management of the first part of the system would no longer be solely dependent on repository-development activities.

#### 3.4.2 Accelerated Waste Acceptance from Utilities

Since the MRS facility would begin operations in 1998, the waste-acceptance rates of the waste-management system would start exceeding reactor-discharge rates 8 years earlier than would otherwise be possible. Without an MRS facility, up to 13,500 MTU of new temporary storage capacity would be needed at about 45 reactors by the year 2003, when the repository would start operating. New temporary storage capacity--and possibly rod consolidation--will have to be provided at some reactor sites in any event, but to a far smaller degree with an MRS facility added to the system. The necessary incremental storage can be provided at the MRS facility more efficiently and at less cost, mainly because a single facility specifically designed and licensed for that purpose would be used instead of many separately designed and licensed independent spent-fuel-storage and rod-consolidation installations at various reactors.

Early progress in the development of the MRS facility with up to 15,000 MTU of storage capacity would allow utilities to plan at-reactor storage requirements with more certainty and efficiency, and it would allow more confidence in agreements with the DOE on spent-fuel transfer amounts, specifications, and dates.

The DOE has entered into contracts with the owners and generators of spent nuclear fuel and high-level waste. The contract provides for the DOE's acquisition of title to the spent nuclear fuel and high-level waste, transportation, and subsequent disposal. Under the contract, these services are to be

provided "after commencement of facility operations, not later than January 31, 1998." The MRS facility would allow the DOE to begin receiving waste for disposal by 1998. Without an MRS facility, waste acceptance would not begin for another 5 years under current schedules.

### 3.4.3 Improvements in System Reliability and Flexibility

The addition of an MRS facility at the Clinch River site would significantly improve the reliability and flexibility of the waste-management system; these improvements would benefit nearly all operations of the waste-management system, from the unloading of reactor storage pools to final waste emplacement in a geologic repository. The inclusion of significant storage capability at the MRS facility would provide a system buffer that would allow the unloading of reactor storage pools to be independent of the loading of the repository. This system-buffer capability is important because the optimal rates and sequences for unloading the individual reactor storage pools will differ from waste-acceptance rates conducive to an efficient loading of the repository. Monitored retrievable storage would also provide additional options for optimizing these separate operations in a coordinated fashion. Furthermore, delays or disruptions in one component of the system would be less likely to affect the progress of the entire system.

The improvement in system flexibility and reliability, which would be realized immediately and thereafter sustained at a notably higher level, would produce identifiable improvements in the manageability of the system. Enhanced flexibility is particularly important in a program of long duration (extending at least 50 years into the future) because it would allow the DOE to better accommodate the circumstances of the future.

### 3.4.4 Advantages for the Repository

The MRS facility would provide several advantages to the repository, both during development and operations. Because many of the major waste-preparation functions would be performed at the MRS facility, the waste-handling surface facilities at the repository and the associated operations would be simplified.

When the repository begins receiving waste, the operations necessary for preparing the spent fuel for underground emplacement would be reduced to the extent that these operations are performed at the MRS facility. Other operational advantages include the following:

1. The repository would receive fewer shipments, all shipments from the MRS facility would arrive in one mode (by rail), and the control over transportation operations (e.g., schedules) would be increased.
2. Because of its large inventory of spent fuel, the MRS facility would be able to selectively prepare or ship canisters with particular heat-generation rates to provide a desired repository heat-loading sequence. Such preparation would not be practical at the repository because the repository would not contain a sufficient inventory of waste during the first years of its operation.

3. The MRS facility would ship to the repository canisters that are free of surface contamination with radioactive material.
4. The MRS facility would perform a large portion of the inventory-accountability function, which will include labeling each canister, coding, etc.
5. The MRS facility would facilitate control of the rate of waste transfer to the repository, which would enhance the efficiency of repository operations.

#### 3.4.5 Improvements in the Transportation System

Since the preferred site for the MRS facility has already been identified, approval of the facility would allow the DOE to proceed with developing the transportation system more efficiently and with greater certainty. If the MRS facility is not approved, some of these developments may have to await the selection of the repository site (currently scheduled for 1994).

Since all of the spent fuel consolidated at the MRS facility would be shipped in dedicated trains, the number of shipments to the repository would be significantly reduced. Furthermore, the MRS facility would minimize the distances of spent-fuel shipments by truck, in less-efficient casks. Being centrally located to most reactors, the MRS facility would serve as a hub for transportation operations, significantly enhance the control and management of transportation operations, and reduce the number of cross-country shipping routes.

Among the most important transportation benefits of the MRS facility would be the institutional ones. By allowing early identification of transportation routes to the MRS site, the MRS facility would increase the time available to work with State and local governments, Indian Tribes, and the public in route-specific planning and the resolution of attendant issues. The affected States would know specific transportation requirements, and site-specific planning for emergency preparedness can begin earlier.

#### 3.4.6 Institutional Benefits

The development of an MRS facility is expected to produce institutional benefits broader than those mentioned above for transportation. For example, the experience gained from interactions with the State of Tennessee would allow better definition of certain institutional arrangements for the repository system. Furthermore, it would demonstrate to the potential repository host States, potentially affected Indian Tribes, local governments, and the public that facilities developed under the Act are safe and that in developing and operating these facilities the DOE is a responsible corporate citizen and neighbor. The expected reduction in transportation impacts should further enhance public confidence. Moreover, the acceptability of the repository may be further enhanced by the perception of siting equity if the site of the repository is located in the Western United States and the MRS facility is sited in the eastern portion of the country. Also not to be overlooked are the licensing and institutional impediments that would be avoided by reducing the need for additional at-reactor storage.

Locally, the MRS facility would result in some economic benefits through the creation of direct and secondary employment, increases in tax revenues, payments, and other economic benefits associated with a large-scale project. It should be noted that the local community, because of its long association with nuclear projects and its technical sophistication, is particularly able to provide skilled and knowledgeable personnel for the MRS facility.

Other benefits include the flexibility of the MRS facility for servicing the second repository, if authorized, and to facilitate the decommissioning of commercial reactors that have reached the end of their useful lives but have spent fuel that has not been sufficiently aged for acceptance at the repository. Without an MRS facility, this fuel would remain at these shutdown reactor sites until the repository is able to receive it.

Most of the benefits cited in this section are not quantifiable, but none is more difficult to quantify than the value of operating a significant portion of the waste-management system as soon as possible.

### 3.5 THE COSTS AND IMPACTS OF DEVELOPING AN MRS FACILITY

The major costs and impacts of developing an MRS facility and achieving the benefits previously described are grouped and discussed in three categories: financial, environmental, and programmatic impacts.

#### 3.5.1 Financial Impacts

Detailed cost estimates based on site-specific conceptual designs have been prepared for the engineering, construction, operation, and decommissioning of an MRS facility and are fully explained in the program plan (Volume 3).

The expenditures for the MRS program from the time of Congressional approval until the facility becomes operational are estimated at approximately \$907 million, of which approximately \$710 million would be used for construction. The annual operating costs of the facility, which would employ about 600 workers, would be approximately \$73 million, not including financial assistance or tax-equivalency payments. The estimates are higher for the initial years of operation, when up to 1600 sealed storage casks must be fabricated, and lower in the later years, when the MRS facility stops receiving spent fuel and is only shipping spent-fuel canisters to the repository. Decommissioning would cost approximately \$83 million. The estimated expenditures do not cover site transfer or the institutional measures proposed in Section 4.

All MRS expenditures would be paid out of the Nuclear Waste Fund established by the Act. The revenues collected for this fund are derived from the fees charged to the generators of the waste; at present these fees include a charge of 1 mill per kilowatt-hour to utilities that generate spent fuel, but this charge may be adjusted by the Congress if needed to cover program costs. The life-cycle expenditures for the waste-management program are estimated to range from \$32 billion to \$38 billion in constant 1986 dollars. The net incremental system costs of the recommended MRS facility are estimated to range from \$1.5 billion to \$1.6 billion, not including avoided costs, financial assistance, and intangible benefits, discussed below. The incremental system costs would therefore constitute a small percentage of the total-system cost;

in fact, they are within the uncertainty range of current cost estimates for a waste-management system without an MRS facility. The current utility fee is considered adequate to fund the program in the near term, and it will be reviewed annually to ensure that it is sufficient to cover all program costs and adjustments proposed to the Congress if needed.

The financial costs of adding an MRS facility are considered small in comparison with the benefits. Furthermore, the costs borne by the utility ratepayers would be offset by savings in at-reactor storage costs; these costs would be avoided because an MRS facility would allow the DOE to accept spent fuel at an earlier time, and, under certain scenarios, it is possible that the addition of an MRS facility would result in net and overall system cost savings. For example, it has been estimated that the deployment of an MRS facility consistent with the Draft Mission Plan Amendment would preclude the need for additional storage capability at more than 15 reactor sites and could offset more than 10,000 MTU of at-reactor storage. If this incremental at-reactor storage costs \$100,000 per metric ton, the result could be a savings of \$1 billion at the reactor sites.

The DOE has included in the President's budget for fiscal year 1988 the funds required for the execution of the program proposed herein. Included are funds for direct costs and for State and local payments. The program plan (Volume 3) presents the projected expenditures for direct program costs. State and local payments will be projected in the consultation-and-cooperation agreement between the DOE and the State of Tennessee.

### 3.5.2 Environmental Impacts

The environmental impacts of the MRS facility are discussed extensively in the environmental assessment (Volume 2). The construction, operation, and decommissioning of an MRS facility at any of the three candidate sites would entail slight environmental impacts, all well below applicable Federal and State standards. The estimated total waste-system risks and environmental costs do not differ significantly for systems with and without an MRS facility. The primary effect of adding an MRS facility would be to redistribute some of these risks and environmental costs among facilities and transportation corridors. In a system with an MRS facility, most spent-fuel shipments would converge at the MRS site rather than the repository site, even though the expected overall transportation-system impacts would be reduced. With an MRS facility, the facility impacts would be reduced somewhat at the repository, but impacts in the MRS host state would obviously increase.

The Act specifies the environmental information that is to accompany this proposal. That information is provided in the environmental assessment that accompanies this proposal. Included in that document are a comparative analysis of alternative overall system designs (with and without an MRS facility) as well as detailed analyses of alternative site-specific designs for an MRS facility.

Should the MRS facility be approved by the Congress, additional documentation will be prepared to fully assess the environmental impacts of the construction and operation of the facility. The environmental documentation to be prepared, in case of Congressional approval, is discussed in the program plan (Volume 3).

### 3.5.3 Perceived and Potential Programmatic Impacts

The perceived and potential programmatic impacts of adding an MRS facility are the weakening of resolve to develop a repository, the potential for diverting the resources needed to develop a repository, and the enlargement of the system to be implemented. Earlier efforts to provide Federal storage facilities have raised the concern that the ready availability of Federal storage would make it easy for the nation to defer the difficult political decisions required to site a geologic repository. Conversely, the history of the waste-management program suggests that the credibility of any interim-storage measures will be suspect unless there is confidence that a permanent repository will be available within a reasonable period of time.

To dispel doubts about the resolve to develop a repository, the DOE proposes a direct linkage of MRS operations to the development of a repository. Specifically, the DOE proposes that waste acceptance at the MRS facility be precluded until a construction authorization for the first repository is received from the Nuclear Regulatory Commission. In addition, the DOE recommends that the storage capacity of the MRS facility be limited to 15,000 MTU. This capacity is sufficient to offset potential storage shortfalls at reactors for approximately 5 years, but it is less than one-third of the spent-fuel inventory expected by the year 2000. Finally, the DOE has a statutory obligation to develop a geologic repository, and progress in achieving this mandate is monitored very closely by a wide range of interested and potentially affected parties (e.g., States, Indian Tribes, and utilities) in addition to the Congress as well as Government audit and accounting groups. This close scrutiny and commitment provide additional assurance that progress will be sustained or else corrective measures taken.

The financial and manpower resources projected for an MRS facility are modest considering the scope of the existing program. Competition for these resources can be minimized, if not prevented, through proper management and planning, as shown in the program plan (Volume 3). By these means the DOE can ensure that a priority on resources is maintained for the repository and that the MRS program does not take away or limit any resources needed by the repository program. Furthermore, the maturity of the technologies for spent-fuel handling and storage and the extensive consideration the DOE has given to the technical, economic, schedule, and institutional feasibility of an MRS facility should minimize the demands placed on the upper management of the DOE and further contribute to confidence that an MRS facility can be constructed and operated without compromising the repository schedule.

In the final analysis, the Congressional mandate that assures that permanent disposal in a geologic repository is the national choice also assures that the MRS facility will serve the intended--and only the intended--purpose for the MRS.



#### 4 RECOMMENDATIONS FOR INSTITUTIONAL PROVISIONS

Recognizing the complex institutional challenges faced by the waste-management program, the Congress set forth in the Nuclear Waste Policy Act of 1982 one of the most comprehensive outreach and public involvement plans ever mandated. The major institutional provisions of the Act include requirements for notifying affected parties of certain of the DOE's planned activities and soliciting their comments; consulting and cooperating with States and affected Indian Tribes and committing plans for such interactions to written agreements; assessing the effects of program activities on States, affected Indian Tribes, and local communities at frequent intervals throughout the program; and a substantial commitment to avoid or mitigate any negative impacts.

One of the potential benefits of developing the integral MRS facility is the early opportunity to demonstrate that a major Federal waste-management facility developed under the Act can be not only safe and environmentally sound but also a responsible "corporate citizen." Such an early demonstration would not only benefit the State and the local community hosting the MRS facility but could also help assure potential repository host States that the DOE's actions in response to their concerns will be similarly addressed.

The participation of the government of the candidate host State is particularly important to an efficient and effective MRS program. To facilitate its participation, the DOE awarded to the State of Tennessee a grant for evaluating the MRS proposal as well as for various preliminary interactions. After the announcement in April 1985 that three Tennessee sites were to be considered for the MRS facility, Governor Lamar Alexander initiated a review of the proposal and directed that it be coordinated by Tennessee's Safe Growth Cabinet Council. The Safe Growth Council then initiated a range of efforts, drawing on the expertise of a large number of State and local officials and respected professionals from the academic and technical communities. Roane County and the City of Oak Ridge, the local governments sharing jurisdiction over the sites identified as the DOE's preferred and alternative choices, were among those invited to participate, and a similar invitation was extended to the local government in the Hartsville area, the location of the other alternative site. To evaluate the acceptability of an MRS facility at the Oak Ridge sites, the Clinch River MRS Task Force was established in July 1985. The Task Force limited its activities to the determination of whether the proposed MRS facility would be acceptable to the Roane County and Oak Ridge governments and, if so, under what conditions.

As discussed in its report, the Clinch River MRS Task Force found that the MRS facility "could be made acceptable to the communities of Roane County and Oak Ridge" if the DOE complies with the conditions recommended by the Task Force. The issues, potential impacts, and mitigating measures identified by the Task Force in this context--and its special insights into local conditions and attitudes--and by the Safe Growth Cabinet Council were important in the formulation of the following portions of this proposal. These items are discussed below under three topics: the involvement of State and local governments, assurance about safety and environmental quality, and financial assistance.

If the Congress approves the MRS facility, the institutional measures summarized here will be critical to the successful implementation of the MRS program. In considering these measures, it should be noted that many of them are a direct result of the unique provisions of the Nuclear Waste Policy Act. The activities proposed here would be funded out of the Nuclear Waste Fund and hence fully paid for by the owners and generators of the waste. They are not intended to establish precedents for other DOE activities, and the DOE's endorsement of the activities proposed here should in no way be construed as an endorsement of their application to other DOE activities.

#### 4.1 THE INVOLVEMENT OF STATE AND LOCAL GOVERNMENTS

Important to the successful implementation of the MRS project is the establishment of an effective working relationship among the DOE, the State of Tennessee, and the local governments. Two measures for achieving such a relationship are proposed here: (1) the establishment of an MRS Steering Committee and (2) the development of a consultation-and-cooperation agreement between the DOE and the State of Tennessee.

##### 4.1.1 MRS Steering Committee

To provide a mechanism for State and local involvement in the implementation of the MRS project and for obtaining input, including recommendations and evaluations, regarding the design, construction, operation, and decommissioning of the proposed MRS facility, the DOE proposes the establishment of an MRS Steering Committee that would provide guidance, conduct performance evaluations, and recommend corrective actions. As described below, State and local governments would have representatives of their choosing serve as members of the Steering Committee.

The DOE MRS project manager will have formally assigned responsibilities to respond to the recommendations of the MRS Steering Committee. Should the project manager take exception to the elements of a formal Committee recommendation, the Committee would be so informed in writing, with a complete explanation of the reason. Should the Committee disagree with the response, it would have recourse to an appeal procedure that would directly involve first the Manager of the DOE Oak Ridge Operations Office and eventually, if necessary, the Director of the Office of Civilian Radioactive Waste Management to ensure that the disagreement is fully and openly aired and resolved fairly, equitably, and promptly.

The membership of the Committee is proposed to be as follows:

1. A chairman named by the DOE in consultation with the Governor of Tennessee.
2. Two members representing the State of Tennessee.
3. One member representing Roane County.
4. One member representing the City of Oak Ridge.
5. One member representing the utilities paying into the Nuclear Waste Fund.

6. One member representing other public interests.
7. Two members representing the DOE, one of whom would represent the DOE's Assistant Secretary for Environment, Safety and Health.

The chairman would serve for a 4-year term and would have staff support from the MRS project.

The Steering Committee would have complete and full access to information concerning the MRS that is available to the manager.

The formation and functions of the Steering Committee could be specified in the consultation-and-cooperation agreement signed with the State of Tennessee and take into account the provisions of the Federal Advisory Committee Act; this agreement could also provide for the periodic examination of the efficiency and effectiveness of the Committee. The DOE expects that the Committee would have complete and full access to the resident NRC inspector and other applicable regulatory authorities, and procedures would be established whereby it could petition these authorities to cause a suspension of MRS operations if conditions so warrant.

The Committee would have the authority to convene and maintain specialized subcommittees or ad hoc committees to review or provide oversight on particular areas of interest or concern. The subcommittees would consist of no more than nine members and have particular expertise or ties with the State and local communities. The specific subcommittees are briefly discussed below; they would work through the Steering Committee. The existence of these subcommittees would not preclude the formation and funding of separate independent groups reporting to other authorities.

#### Subcommittee on Environment, Safety, and Health

This subcommittee would represent the environmental, safety, and health interests of the State and local communities during the final planning, design, construction, operation, and decommissioning the MRS facility. It would participate in the development or review of approaches for meeting regulatory requirements for the environmental, health, and safety performance of the MRS facility and in the review of the final design and operations against these requirements. This would include involvement in the development and review of all environmental documentation prepared by the DOE and subsequent activities related to the Nuclear Regulatory Commission's preparation of an environmental impact statement. The subcommittee is expected to have full access to, and evaluate information from, independent monitoring and inspection of the facility as provided for under the consultation-and-cooperation provisions of the Act.

#### Subcommittee on Transportation

Since transportation is of major concern to both the State and the local community, a transportation subcommittee could be established to oversee or review transportation planning, development, and operational activities applicable to the MRS facility. In particular, it would be involved in planning for road or rail-track upgrades, plans for shipping-cask development and procurement, operational planning (including inspection and enforcement), and the

review of actual operations. (Other measures proposed to alleviate concerns about transportation are described in Section 4.2.2.)

#### Subcommittee on Public Information

Public acceptance is indispensable to the success of any large project, and there is concern, at both the State and the local level, that an erroneous perception of, or misconception about, the MRS facility could adversely affect the project. To promote an understanding of the MRS facility and its operations and to avoid such misunderstandings, a subcommittee on public information is proposed. It would recommend and oversee policies and programs directed at public information. Such involvement by a credible and independent source could improve public confidence in the MRS project, lessen concerns about potential risks and impacts, and minimize misconceptions.

#### Subcommittee on Financial Matters

This subcommittee would recommend and review policies and measures for preventing or mitigating the impacts of MRS construction and operation as well as for assisting the local community in the expansion and diversification of its commercial and industrial base. This subcommittee would help to determine which State and local efforts qualify for direct reimbursement. It would also help ensure that State and local resources (e.g., training facilities and local supplies) are used to the full extent allowed by Federal regulations where applicable.

#### 4.1.2 Consultation-and-Cooperation Agreement

The MRS Steering Committee would provide a mechanism for the direct and continuous involvement of State and local governments in the management and oversight of the MRS project. It would be part of a baseline agreement, called a consultation-and-cooperation agreement, between the DOE and the State of Tennessee. Such an agreement is provided for under Section 117 of the Act, which would become applicable if an MRS facility is approved by the Congress.

In accordance with this provision, the DOE would seek to enter into a binding written consultation-and-cooperation agreement with the State of Tennessee within 60 days of Congressional approval of the proposal. The agreement would be an "umbrella contract" between the DOE and the State of Tennessee. It would cover all items considered important by the DOE, the State, and the local community in addition to or as part of the specific requirements of the Act for this agreement. This would include procedures by which--

1. The MRS Steering Committee would be formed and function to (a) determine the possible impacts of the MRS facility and recommendations with regard to such impacts; (b) provide to the DOE the recommendations of the State and local governments; (c) oversee the administration of the financial assistance, transportation, and other provisions of this proposal; and (d) accomplish other goals envisioned by the DOE, the State of Tennessee, and the local governments.
2. The DOE and the State may review or modify the agreement.

3. The DOE shall assist the State and units of local government in resolving their offsite concerns, including road upgrading, emergency preparedness, and periodic monitoring of the health of residents in neighboring communities.
4. The DOE shall consult and cooperate with the State on a regular basis and provide for an orderly process and schedule for State review and evaluation.
5. The DOE shall notify the State before transporting any waste to the MRS facility and implement other agreements related to transportation.
6. The State or local authorities may conduct reasonable independent monitoring and testing activities at the MRS site.
7. The sharing of technical and licensing information, the use of available expertise, the facilitating of permit procedures, joint project review, and the formation of joint surveillance and monitoring arrangements to carry out applicable Federal and State laws are implemented.
8. The objections of the State are resolved at any stage of the project through negotiation, mediation, or other mechanisms.

Local governments should work with the State to determine the nature and the extent of their involvement in the negotiation and signing of the consultation-and-cooperation agreement. This would include the degree to which issues of direct local concern would be left as a matter of negotiation or agreement directly between the DOE and units of local government.

#### 4.2 ASSURANCES ABOUT SAFETY AND ENVIRONMENTAL QUALITY

The public must be assured that the MRS facility and the overall waste-management program are operated in accordance with the fundamental objective of protecting the health and safety of the public and the quality of the environment. Summarized below are particular measures and policies that should help to provide assurances about plant operation, transportation, and decommissioning and decontamination. The discussion ends with a brief look at an issue of local concern--the waste-management practices at other DOE Oak Ridge facilities.

##### 4.2.1 Plant Operation

As already mentioned in Section 3.2.5, the major goals of the MRS design effort are to provide for the safety and health of MRS workers, the health and safety of the public, and the quality of the environment. Furthermore, the DOE will need to demonstrate to the satisfaction of the Nuclear Regulatory Commission that these goals are met and can be maintained; to this end, the Commission can maintain a resident NRC inspector at the site.

An important role in assuring the public that MRS facilities and operations meet and maintain the design goals of protecting the public and the environment could be played by the MRS Steering Committee, which has been

discussed in Section 4.1.1. For example, the Steering Committee, through one of its subcommittees, could be actively involved in the programs for gathering and evaluating data on the environmental, demographic, and socioeconomic conditions occurring in the local communities before the construction of the facility, including efforts involved in the preparation of all environmental documentation. This effort should begin as soon as possible after Congressional approval in order to establish a firm base of preconstruction data and continue until the decommissioning of the MRS facility has been completed. The data collected during construction, operation, and decommissioning would be used to monitor and document any effects attributable to the facility. The data would be available to the public. These efforts could be part of, supplement, or be patterned after the community environmental monitoring program now being established by the DOE's Oak Ridge Operations Office for other DOE activities and facilities in the area.

The data base can be used by the Steering Committee to evaluate the safety performance of the MRS facility and plans for responding to potential releases of radioactive material. Public hearings on the performance and response plans could be held to ensure public understanding and opportunity to comment.

The DOE will remain sensitive to the concerns of surrounding property owners in the design and construction of the MRS facility. Landscaping and buffers will be used to the maximum extent to mitigate construction and aesthetic impacts. The Steering Committee would have full access to, and be involved in, planning in this regard; it would also have ample opportunity to affect these plans and their implementation.

#### 4.2.2 Transportation

As a potential host State for the MRS facility, Tennessee has a particular interest in, and unique needs in regard to, the transportation of radioactive waste. Transportation is also of major interest to all States through which shipments will pass, with or without an MRS facility. Indeed, the issues identified by State and local entities in Tennessee typify concerns expressed by other States and Indian Tribes need to be considered in a national context. In an effort to foster a climate conducive to the timely resolution of transportation issues, the DOE has been working with State and local representatives from Tennessee and many other interested States. These interactions have led to the identification of many procedural, operational, and financial issues in transportation, and policies responsive to these concerns are being developed.

Because the transportation concerns are not limited to the region in which the MRS facility would be located and to encourage participation by the concerned public, the DOE has taken several actions to open the process of transportation planning to a wide range of parties. In particular, two major planning documents, the Transportation Business Plan and the Transportation Institutional Plan, were first issued as draft documents for public comment and openly discussed in a variety of forums, including national public workshops. As part of the institutional plan, discussion papers on specific transportation issues were developed; these papers are included as an appendix to the plan. They present, for each of the 17 issues discussed, background information, a review of related issue elements, preliminary DOE plans to ad-

dress the issues, and estimated schedules for policy decisions. These discussion papers will be revised in the fall of 1987 and reissued for public comment. In addition, in the summer of 1988 the DOE will issue a comprehensive transportation plan that will incorporate the operational aspects of the transportation program as well as the institutional and the business aspects. The comprehensive plan will also be available for public comment. Tennessee's participation in this national effort will help ensure an integrated transportation system and contribute to a consensus approach in the development of transportation equipment and procedures.

One of the mechanisms for Tennessee's participation in the planning and operation of the transportation system is the subcommittee on transportation of the MRS Steering Committee (see Section 4.1.1). This subcommittee would provide a locally based mechanism for direct State and local participation in the development and operation of the transportation system specific to the MRS facility and in the transportation of the waste into and out of Tennessee. The transportation subcommittee would be able to directly affect and monitor the design and operation of the transportation system through the MRS Steering Committee and help ensure that the recommendations and concerns of State transportation authorities are being adequately considered and addressed.

The DOE will work with the State of Tennessee, local governments, and the Steering Committee to resolve transportation issues. In response to specific concerns expressed by both State and local groups, the following measures are proposed:

1. Upgrading of the Tennessee transportation infrastructure. State officials and the Clinch River MRS Task Force have indicated a need to substantially improve SR-58 and SR-95 to provide for the safe transportation of spent fuel from the nearby interstate system to the proposed MRS site. The DOE will work closely with the State and local representatives to identify the other improvements that may be needed. The process for determining the improvements that are necessary for waste shipments will be addressed in the consultation-and-cooperation agreement with the State of Tennessee. Funding for such improvements should not affect Federal funds regularly allocated the State for transportation-system improvements.
2. Prenotification. The technology for the satellite-based real-time tracking of waste shipments is expected to be available when the transfer of spent fuel to the MRS facility begins. If, however, the technology is not used, the DOE will notify designated State and local officials in advance of each shipment.
3. Emergency response. Assistance and funding as appropriate will be provided to the State of Tennessee in ensuring that adequate emergency-response capabilities and equipment are available. The DOE will work with State and local representatives in developing training standards for emergency-response personnel and will ensure that a comprehensive training program is developed for use by interested officials.

4. Inspections. The DOE encourages and will support funding for the participation of State authorities in comprehensive inspections of spent-fuel shipments arriving and leaving the MRS facility.

Other issues--such as escorts for waste shipments, methods of transportation, intermodal transportation, route restrictions, training provisions, travel speeds, and preferred routes--are of keen interest nationwide, and additional consultations are required for their resolution. To the extent that these issues are not addressed in this proposal, the DOE proposes to address them in the consultation-and-cooperation agreement entered into pursuant to the approval of this proposal by the Congress. The DOE is committed to reinforcing the confidence of States, Indian Tribes, and the public in its ability to operate a safe and efficient transportation system in support of the MRS facility.

If the MRS facility is approved, the State of Tennessee and the DOE Oak Ridge Operations Office will play a significant role in the transportation of the nation's spent fuel to the geologic repositories. Accordingly, the management of the operation of the civilian radioactive-waste transportation system would be assigned to the DOE Oak Ridge Operations Office. In a similar vein, the DOE proposes to establish a Transportation Operations and Research Center in the Oak Ridge area. Such a center would coordinate research on, and the development of, a consistent and comprehensive system for planning and conducting transportation operations. This transportation center would be the location for MRS transportation personnel training and qualification, and it would be expected to play a major role in determining procedures for equipment inspection and maintenance, procedures for real-time satellite tracking and communication, and other procedures for meeting the requirements of Federal, State, and local regulations. In addition, the center could provide emergency-response training for appropriate personnel from all States potentially affected by transportation to or from the MRS facility.

To accommodate the concerns of other States through which waste shipments may pass, the DOE is investigating the potential for informal cooperative agreements. The institutional network necessary for such agreements will be based on established contacts within Governors' offices, other State agencies and legislatures, State and regional organizations, and the governments of Indian Tribes. To the extent practicable, the DOE will incorporate State-supported options in its planning.

#### 4.2.3 Decontamination and Decommissioning

As already mentioned in Section 3.2.3, the MRS facility would be decommissioned at the end of its mission, and the site would be prepared for unrestricted use. Monitoring by the Steering Committee would continue through the completion of decommissioning.

No radioactive material would be left at the site after decommissioning. Any radioactive waste that is generated at the MRS facility during operations would be shipped off the site for disposal; none would be buried at the site. This approach would also be used for any material that remains radioactive after decontamination.



#### 4.2.4 Other Oak Ridge Facilities

The local community has requested that the DOE establish a schedule for bringing all DOE Oak Ridge facilities into compliance with applicable State and Federal environmental regulations and that these programs be implemented before the start of MRS operations. The DOE has been moving aggressively to address the environmental concerns at facilities under its responsibility. This activity is independent of the MRS facility. The discussion that follows briefly summarizes the DOE's efforts to address and resolve the environmental concerns at the Oak Ridge facilities.

Major efforts are under way at the DOE Oak Ridge sites to bring current operations into compliance with applicable State and Federal laws and regulations. During fiscal years 1983-1987, approximately \$500 million will have been spent in these efforts. Each facility has prepared long-range plans to address additional environmental-improvement needs. The DOE is working closely with Federal and State regulatory personnel to define requirements and to determine how these requirements can best be met. As a part of this effort, the DOE has entered into Federal Facility Compliance Agreements with the U.S. Environmental Protection Agency and compliance agreements with the Tennessee Department of Health and Environment. In addition, all three organizations are parties to a memorandum of understanding to address the offsite residual contamination that originated from DOE facilities. Because of the magnitude of these various efforts, it is not possible to accurately determine when compliance will be attained. The DOE will strive, however, to meet its environmental commitments consistent with allotted resources.

The DOE will continue to provide information and periodic briefings to the officials of local governments to ensure full communication about plans, programs, and problems.

#### 4.3 FINANCIAL ASSISTANCE

The MRS facility will result in some economic benefits through the creation of direct and secondary employment and other beneficial effects normally associated with large-scale projects. However, the preparation for, and the accommodation of, a major waste-management facility also imposes a variety of burdens on the host community and the State. The potential effects of MRS development and operation have been evaluated at both the State and the local level. The State and units of local government have both reported on these effects and identified a number of concerns, including potential social and economic impacts, that can be appropriately addressed through some form of financial assistance.

Section 141(f) of the Act mandates impact aid payments to units of general local government in order to mitigate any social or economic impacts resulting from the construction and operation of an MRS facility, but the Act is silent regarding measures beyond those applicable to units of general local government.\* Nonetheless, on the basis of information provided by the DOE,

---

\*Section 116(c) of the Act addresses financial assistance to the States involved in the repository program, but this section is not made applicable to the MRS program.

the State has identified social and economic impacts beyond those that would affect just local jurisdictions, and the DOE believes that actions to address these impacts as well are appropriate. Accordingly, proposed herein are measures that would go beyond the limited requirements of Section 141(f) while also meeting those requirements. In addition, the DOE would take appropriate actions to encourage the diversification of the local industrial base and thus contribute to greater stability in the socioeconomic environment.

Separately and apart from any assistance for mitigating social or economic impacts and payments equivalent to taxes, the DOE would fully reimburse the State for reasonable and direct expenses incurred in association with the MRS facility. The designation of eligible activities would be accomplished through the consultation-and-cooperation agreement.

Financial assistance is proposed for two different MRS phases: the period preceding MRS operations and the period commencing with the start of operations and continuing through decommissioning. During the first phase, financial assistance is required to begin planning for the mitigation and prevention of the effects of the facility and to implement these plans. Financial needs will change as the development of the MRS facility and the transportation system progresses through final design, licensing, and construction. Once the MRS facility starts operating, the financial needs are expected to stabilize.

The financial assistance programs proposed for these two phases would be defined in consultation with, and administered through, the State and local governments. As described below, for the preoperational phase the DOE recommends that, if the Congress approves this proposal, sufficient monies be provided annually to address State and local concerns. The financial assistance proposed for the operational period is payments based on the operations or the assessed value of the facility; such payments would be similar to the taxes paid by taxable facilities.

In addition, the DOE expects to use procurement provisions available under existing Federal regulations and to take other specific measures to ensure that the State and local governments will not be negatively affected by the development and operation of the MRS facility and the transportation of waste to and from the site.

#### 4.3.1 Preoperational Phase

To address State and local concerns regarding social and economic impacts before the startup of the MRS facility, the DOE proposes to provide financial-assistance payments. Such payments may be \$10 to \$15 million per year for the 10-year period preceding facility operation. The necessary funding would be projected in the consultation-and-cooperation agreement.

It is proposed that the payments made annually during the preoperational phase to the State and local governments would approximate the taxes that would eventually be paid to those governments by a fully operational MRS facility valued at \$1 billion. This would provide the State of Tennessee and the local governments with an assured source of funds for financial assistance so that adequate preparation can be made for MRS deployment and transportation operations.

This financial assistance would continue until the end of construction, at which time the operational program, discussed in the next section, would begin. This would meet and exceed the requirements of Section 141(f) of the Act, which directs that impact-mitigation payments to units of local government begin after Congressional authorization to construct an MRS facility.

One of the social and economic impacts of concern to adjacent-property owners is that the MRS facility would have a negative effect on real-estate values. The measures proposed herein should help to prevent or mitigate such impacts.

Another impact of concern is the potentially negative impact of the MRS facility on economic development efforts. The Clinch River MRS Task Force has identified the need for a significant public education program to provide accurate information on the MRS facility. The State's socioeconomic consultants have identified similar problems in their preliminary studies, heightening concern that the MRS facility would negatively affect the region's industrial recruitment activities and eastern Tennessee's vital tourist business. These impacts would be addressed through payments allocated for the mitigation of any such impacts. In addition, the DOE would use its Museum of Science and Energy to provide public information on the MRS facility, would ensure that the appearance of the facility is aesthetically pleasing, and would build and staff a visitors center at the facility so that the MRS makes a positive contribution to the region's favorable image.

#### 4.3.2 Operational Phase

During the operational phase of the MRS facility, it is proposed that State and units of local government be assured that during each fiscal year of facility operations they will receive, in addition to impact-mitigation assistance as under Section 116(c)(2), payments equal to the amounts they would receive from taxing the MRS facility like other real property and industrial activity within their jurisdictions as under Section 116(c)(3). This approach would be consistent with the mandate of the Act for repository States and units of local government. The DOE believes that these provisions should apply to the MRS facility because it will perform many of the waste acceptance and preparation functions that were planned for the repository and because the transportation and other operational impacts would be virtually identical with those otherwise occurring at a repository site.

To implement such a program, the DOE proposes that the binding consultation-and-cooperation agreement define a specific plan for administering this program, including the valuation formulas and the use of a mediation board or alternative means to settle disputes.

#### 4.3.3 Specific Actions

There are several areas where specific actions other than those described above could be taken to ensure responsible corporate citizenship. These actions are mostly related to procurement for the MRS project. For the development of the MRS facility and the transportation system, the DOE would rely to the maximum extent possible on the private sector. Private-sector facilities and operations are taxable, and their use would contribute to the expansion and diversification of the local and regional economic base. Proximity to the

host community and the attendant cost savings would be significant factors in the selection of contractors. Consistent with the above, training programs would be provided, whenever feasible, through State and local educational institutions. In the selection of major contractors, any proposed measures by bidders that would further contribute to the expansion and diversification of the local and State interests would also be considered.

The Oak Ridge community was depending on the availability of the Clinch River site in its efforts to expand and diversify its industrial base, but the approval of the MRS facility would remove the Clinch River site from consideration as a prime site for industrial development. To assist the community's continued industrial-development activities and to compensate for the loss of the Clinch River site, the DOE will make available, under existing Federal law, an industrial site in the Roane County portion of Oak Ridge if the land for such a site becomes excess to the DOE's programmatic needs.