



POLICY ISSUE (Notation Vote)

January 8, 1986

SECY-86-9

For: The Commissioners

From: Victor Stello, Jr., Acting
Executive Director for Operations

Subject: U.S. NUCLEAR REGULATORY COMMISSION (NRC) COMMENTS ON
THE U.S. DEPARTMENT OF ENERGY (DOE) PROPOSAL TO THE CONGRESS
FOR THE CONSTRUCTION OF A MONITORED RETRIEVABLE STORAGE
FACILITY (MRS) FOR HIGH-LEVEL RADIOACTIVE WASTE AND SPENT
NUCLEAR FUEL [NUCLEAR WASTE POLICY ACT (NWPA) SECTION 141]

Purpose: To obtain Commission approval of comments on the DOE MRS
proposal which will be forwarded to DOE. NRC comments will be
submitted to the Congress by DOE with the MRS proposal.

Summary: DOE has submitted for NRC comment a proposal for the storage
of spent fuel in an MRS as required by the NWPA. This proposal
will be submitted to the Congress in February 1986 along with
the NRC's comments and those of the Environmental Protection
Agency (EPA). This paper recommends comments on the proposal
for the Commission's consideration.

Background: Section 141 of the NWPA requires that DOE "...shall complete a
detailed study of the need for and feasibility of, and shall
submit to the Congress a proposal for, the construction of one
or more monitored retrievable storage facilities for high-level
radioactive waste and spent nuclear fuel." [Sec. 141(b)(1)].
The NWPA also specifies that "...in formulating such proposal,
the Secretary shall consult with the Commission and the
Administrator [EPA], and shall submit their comments on such
proposal to the Congress at the time such proposal is submitted"
[Sec. 141 (b)(3)]. In accordance with the NWPA, DOE has consulted
with the staff on the regulatory aspects of an MRS proposal.
NWPA also specifies that an MRS would be subject to licensing
by the NRC.

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The applicable regulation for the MRS is 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (ISFSI)." That rule is being considered for minor revision by the Commission (SECY 85-374) to explicitly provide the regulatory framework for licensing an MRS.

The DOE Mission Plan describes the current DOE outlook on the need for MRS. While originally considered as a backup to the repository, the MRS is now conceived as an integral and important part of a commercial high-level waste management and disposal system. The submission of the MRS proposal to the Congress has been delayed by DOE from June 1985 to February 1986 in order to develop the concept of an improved performance plan which incorporates the MRS as part of the system.

In order to alleviate the perception that the MRS might lessen resolve to complete the first repository without undue delay, DOE has asked the Congress to tie the operation of the MRS to the repository. Specifically, DOE proposes that the MRS could not receive spent fuel until the NRC issues a construction authorization for the first repository. The proposal also recommends that the Congress direct DOE to implement measures responsive to the concerns and recommendations of the State of Tennessee and local governments. Among the specific recommendations is the establishment of an MRS steering committee. The steering committee is intended to provide guidance, conduct performance evaluations, and recommend corrective actions to DOE. It would be composed of representatives of DOE, state and local governments, utilities, and "public interests." The committee would develop its own charter through a consultation and cooperation agreement with the State of Tennessee and might have subcommittees on health and safety, transportation, and public information. The NRC will need to review the function and authority of this steering committee with regard to any involvement in the regulatory process.

As conceived by DOE, the MRS is a large, "hot cell" complex with a throughput capacity of 3600 tonnes of spent fuel per year. The present design can accommodate the receipt and storage of small quantities of commercial high-level waste other than spent fuel, but the proposal indicates DOE's present intention to ship these wastes directly to a repository. The principal operations at the MRS would be the consolidation of spent fuel assembly rods and storage of aged spent fuel in inerted and sealed canisters preparatory to shipment to a repository

for final disposal. The design basis throughput considers that most fuel received from reactors will have decayed for 10 years after discharge. The seismically designed structure would include a lag storage area within the hot cells to accommodate short-term storage prior to transport to the repository. In addition, about 14,000 tonnes of repository-ready fuel could be stored on site in concrete casks (the preferred storage concept) or dry wells, if longer storage periods are necessary. When the repository is ready, the proposal indicates that previously prepared spent fuel will be shipped to the repository on trains dedicated solely for that purpose. The DOE proposal recognizes that all spent fuel may not "pass through" the MRS, but that preparation for the disposal of some spent fuel -- "Western fuel" -- may be done other than at an MRS.

Discussion:

DOE's proposal to the Congress for an MRS is included with this paper as the final enclosure (Enclosure D). A synopsis of the proposal contents prepared by the NRC staff is provided as Enclosure A. The staff also has received additional reference information from DOE, as identified in Enclosure A.

In the staff's initial analysis of the NRC's responsibilities under the NWPA (SECY-83-107) it was indicated that the "NRC may, and presumably would, limit its comments on DOE's MRS proposal to those matters that are pertinent to the exercise of the Commission's licensing and regulatory responsibilities." The staff has limited its review mainly to the technical requirements of 10 CFR Part 72. It has noted the difficulties and uncertainties associated with the procedural approach the MRS would follow. For example, integration of the Commission's NEPA responsibilities with its licensing responsibilities presents some conceptual difficulties. The DOE proposal assumes that DOE would submit an environmental report with its MRS application, and the NRC would prepare the environmental impact statement (EIS). While Section 141(d) relieves the Commission of the responsibility for considering the need for the facility, it is silent concerning alternative sites, the NEPA comment process, and cost-benefit analysis. This creates an anomalous situation where the Commission would be considering such factors after the Congress had approved the MRS and, perhaps, DOE's preferred site. For the repository, DOE is required to prepare the EIS which the Commission is required to adopt to the extent practicable. This may be a better approach for the MRS as well. How these procedural matters are resolved will significantly affect whether the 30-month licensing schedule suggested by the DOE MRS proposal is reasonably achievable. The 30 months assumes an 18-month technical review and a 12-month hearing.

We believe a full adjudicatory proceeding encompassing NEPA issues, safety issues and full state and Indian tribe participation cannot reasonably be accomplished in 12 months. Obviously, a proceeding limited to Part 72 issues could be completed more quickly.

The staff's chief effort has been to evaluate the conceptual design of the MRS against the design criteria of 10 CFR Part 72. In addition, the staff has considered the possible impact of the MRS on other regulatory activities, principally the coordination with a waste disposal repository and the transport of spent fuel. Although the depth of detail at this stage of design development for MRS is less than would be needed for a license application, the staff believes there is sufficient information in the DOE documentation to provide the basis for the recommended comments on the DOE proposal.

Enclosure B is a draft staff report, NUREG-1168, "Staff Evaluation of U.S. Department of Energy Proposal to the Congress on Monitored Retrievable Storage," which focuses in some detail on the safety aspects of the MRS conceptual design and related technical criteria of 10 CFR Part 72. This evaluation reflects the staff's interaction and consultation with DOE during the period of development of the conceptual design. To a large extent, the staff's report forms the basis for its evaluation of the technical aspects of the DOE proposal for the MRS. This draft report, which will include the letter transmitting comments to the DOE (Enclosure C), can be modified to incorporate any additions or deletions to the comments the Commission may decide are appropriate prior to publication as a final report. It is intended that the report be made available for DOE use shortly after the proposal is submitted to the Congress. The conclusions of the report are as follows.

- o Siting - The preferred site identified by the DOE for the MRS is the site of the former Clinch River Breeder Reactor Plant, which has already been shown to be a qualified site from the standpoint of public health and safety for a nuclear power plant. Moreover, based on present information, the staff knows of no information which would disqualify the alternate sites. DOE, however, has recognized the need for further investigations and evaluation of the designated site as related to the particular characteristics of the MRS design.
- o Design - The MRS conceptual design appears reasonable from the standpoint of public health and safety. Although an in-depth review of the detailed design would be required before the facility could be licensed, the conceptual design described in the DOE proposal appears to be capable of meeting the requirements of 10 CFR 72.

- o Cask Certification - DOE must design a safe and reliable transport system, including durable transport equipment. DOE has indicated that transport casks developed under NWPA for transporting commercial spent fuel will be certified by NRC. Based on experience to date, spent fuel can be moved safely in NRC-certified casks.
- o Demonstration of Consolidation - The consolidation of spent fuel needs to be adequately demonstrated to assure that this operation can be performed on the production-scale contemplated for the MRS. To date, a few spent fuel assemblies have been taken apart and the rods consolidated, and a significant number of fuel assemblies have been reconstituted (i.e., the rods have been removed and replaced within assemblies). In this sense the consolidation process is feasible. DOE has indicated in the Design Verification Plan (Appendix C to the Program Plan) its intent to test and demonstrate disassembly/consolidation equipment, principally at the Idaho National Engineering Laboratory.
- o Safeguards - The staff's analysis of the MRS safeguards provisions at the conceptual design stage indicates that NRC safeguards requirements apparently can be met.
- o License Application - For DOE to meet its planned schedule, the MRS license application would have to be complete and technically sound and demonstrate compliance with NRC requirements in order for the staff to complete its technical review in 18 months. The staff will continue to consult with DOE during the preparation of its application.
- o Coordination with Repository Organizations - Because the MRS would prepare spent fuel to be compatible with repository requirements, DOE must closely coordinate efforts with each candidate repository organization. The DOE schedule indicates submittal of a license application in 1989 for the MRS, approximately 2 years prior to the selection of the first repository site from the slate of candidate sites. The designs required for the packages produced at the MRS might be different for each candidate repository site according to the different physical and chemical properties of each repository environment. Therefore, the application for the MRS facility will need to show how DOE will be able to accommodate each repository disposal package design. Another essential aspect to the preparation of the package is the close coordination required between the repository and MRS organizational quality assurance programs to assure that the repository requirements are met. At this time, the staff foresees no impediment at the MRS that would foreclose repository options for package requirements.

- o Transportation Requirements - DOE has clearly indicated that it intends to use NRC-certified casks, but there remains a degree of uncertainty regarding DOE's commitments to other NRC transportation requirements. The DOE Draft Transportation Institutional Plan states that, "Further, when shipping commercial waste to facilities developed under the NWPA, the DOE has made the commitment to comply with DOT and NRC regulatory requirements that pertain to the transportation of nuclear materials." However, except to the extent required by NWPA, DOE is exempt from NRC transportation regulations. Therefore, DOE should clarify its transportation plans to indicate its intention regarding following all NRC transportation regulations applicable to the commercial sector, including physical protection and prenotification requirements.

We estimate that about 5 staff years and \$750K contracting costs will be needed to complete a staff review and evaluation in 18 months. The Department has indicated in the Licensing Plan and the Design Verification Plan, which are part of its proposal, a number of activities related to full definition of design for safe and efficient operation for the MRS prior to submittal of the license application. NRC staff has budgeted to follow this work, including reviewing related topical reports on specific features, which should provide guidance to DOE and expedite the licensing review.

Recommendation: That the Commission:

1. Approve the enclosed letter (Enclosure C) to the Department of Energy which would provide comments on the Department's proposal to the Congress for a monitored retrievable storage facility.

Scheduling: The Department of Energy has indicated a 45-day comment period for the NRC and the EPA. The proposal was received on December 24, 1985. Therefore, comments will be due to DOE by February 6, 1986.


Victor Stello, Jr., Acting
Executive Director
for Operations

Enclosures:

- A. NRC Synopsis of DOE Proposal Contents
- B. Draft Report (NUREG-1168) (Commissioners, SECY, OGC, OPE & EDO only)
- C. Proposed NRC Ltr to DOE from Chairman
- *D. DOE's Proposal to the Congress
for an MRS

*On file in Office of the Secretary

Commissioners comments should be provided directly to the Office of the Secretary by c.o.b. Monday, January 27, 1986.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Tuesday, January 21, 1986, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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WASHINGTON, D.C. 20555

OFFICE OF THE
CHAIRMAN

Mr. Benard C. Rusche, Director
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
Washington, DC 20585

Dear Mr. Rusche:

We are pleased to provide our comments to the Department of Energy (DOE or the Department) on its proposal to the Congress for monitored retrievable storage. Our comments are based on the information provided to us by the Department in our consultative role as required by the Nuclear Waste Policy Act of 1982 (NWSA). This information has been provided primarily in the form of conceptual design information for the monitored retrievable storage facility (MRS). The review schedule issued by DOE did not accommodate an intensive review of the environmental assessment information provided. We note, however, that two of the three specific sites selected by the Department for consideration for the MRS have previously been subject to environmental analysis and evaluation for nuclear power plants by our agency in accordance with the National Environmental Policy Act of 1969. In addition, the NWSA stipulates further environmental evaluation should the Congress approve the DOE proposal for an MRS.

Our comments are limited to our role as a regulatory agency. In this regard the principal regulation governing the licensing of an MRS is 10 CFR Part 72. We are currently considering modifications to that regulation to clarify procedures and requirements the Department will be following if the Congress approves the proposal.

With respect to our review from a regulatory standpoint, we offer the following observations.

1. Siting - The preferred site identified by DOE for the MRS is the site of the former Clinch River Breeder Reactor Plant, which has already been shown to be a qualified site from the standpoint of public health and safety for a nuclear power plant. Moreover, based on present information, the staff knows of no information which would disqualify the alternate sites. DOE, however, has recognized the need for further investigations and evaluation of the designated site as related to the particular characteristics of the MRS design.

CONCURRENCE AND SIGNATURE TAB

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GPO: 1975-O-290-121

Enclosure C

2. Design - The MRS conceptual design appears reasonable from the standpoint of public health and safety. Although an in-depth review would be required before the facility could be licensed, it appears from the conceptual design that each requirement in 10 CFR Part 72 can be met.
3. Cask Certification - DOE must design a safe and reliable transport system, including durable transport equipment. You have indicated that transport casks developed under NWPA for transporting commercial spent fuel to a repository will be certified by NRC. Based on experience to date, spent fuel can be moved safely in NRC-certified casks.
4. Demonstration of Consolidation - The consolidation of spent fuel needs to be adequately demonstrated to assure that this operation can be performed on the production-scale contemplated for the MRS. To date, a few spent fuel assemblies have been taken apart and the rods consolidated, and a significant number of fuel assemblies have been reconstituted (i.e., the rods have been removed and replaced within assemblies). In this sense the consolidation process is feasible. You have indicated in the Design Verification Plan (Appendix C to the Program Plan) your intent to test and demonstrate disassembly/consolidation equipment, principally at the Idaho National Engineering Laboratory.
5. Safeguards - The NRC staff's analysis of the MRS safeguards provisions at the conceptual design stage indicates that all NRC safeguards requirements can be met.

In addition to the above considerations having a bearing on the health and safety of the public, our observations are offered on the procedures and institutional relationships to be followed by the Department.

- a. License Application - For DOE to meet its planned schedule, the license application you submit to NRC would have to be complete and technically sound, meeting all NRC requirements. The NRC staff will continue to consult with DOE during the preparation of its application.
- b. Coordination with Repository Organizations - Because the MRS would prepare spent fuel to be compatible with repository requirements, DOE must closely coordinate efforts with each candidate repository organization. Your schedule indicates submittal of a license application in 1989 for the MRS, approximately two years prior to the selection of the first repository site from the slate of candidate sites. The materials required for the disposal packages produced at the MRS might be different for each candidate repository site according to the different physical and chemical properties of each repository environment. Therefore, the application for the candidate MRS facility will need to show how DOE will be able to accommodate each design. Another essential aspect to the preparation of the package is the close coordination required between the repository and MRS organizational quality assurance programs to assure that the repository requirements are met. At this time, the staff foresees no impediment at the MRS that would foreclose repository options for package requirements.

- c. Transportation Requirements - You have clearly indicated that you intend to use NRC-certified casks, but there remains a degree of uncertainty regarding your commitments to other NRC transportation requirements. The DOE Draft Transportation Institutional Plan states that, "Further, when shipping commercial waste to facilities developed under the NWPA, the DOE has made the commitment to comply with DOT and NRC regulatory requirements that pertain to the transportation of nuclear materials." However, except to the extent required by NWPA, DOE is exempt from NRC transportation regulations. Therefore, you should clarify your transportation plans to indicate your intention regarding following all NRC transportation regulations applicable to the commercial sector, including physical protection and prenotification requirements.

The above comments relate to the NRC staff's technical evaluation of the MRS proposal. There are, however, other difficulties and uncertainties associated with the procedural approach the MRS would follow. For example, integration of the Commission's NEPA responsibilities with its licensing responsibilities presents some conceptual difficulties. The DOE proposal assumes that DOE would submit an environmental report with its MRS application, and the NRC would prepare the environmental impact statement (EIS). While Section 141(d) relieves the Commission of the responsibility for considering the need for the facility, it is silent concerning alternative sites, the NEPA comment process, and cost-benefit analysis. This creates an anomalous situation where the Commission would be considering such factors after the Congress had approved the MRS and, perhaps, DOE's preferred site. For the repository, DOE is required to prepare the EIS which the Commission is required to adopt to the extent practicable. This may be a better approach for the MRS as well. How these procedural matters are resolved will significantly affect whether the 30-month licensing schedule suggested by the DOE MRS proposal is reasonably achievable.

TP In addition to the above, the NRC staff is preparing a report which provides additional detail on its evaluation of the design concepts for the MRS, principally from the perspective of the requirements of 10 CFR Part 72. The report, which will soon be available, should be useful to DOE in developing its definitive design, if Congress approves its proposal.

Sincerely,

Nunzio J. Palladino
Chairman

CONTENTS OF
DEPARTMENT OF ENERGY
PROPOSAL TO THE U.S. CONGRESS FOR A
MONITORED RETRIEVABLE STORAGE FACILITY

Vol. I Proposal

- o Describes the Department's proposal to construct and operate an MRS facility at the Clinch River site in Roane County, Tennessee. The proposed facility would be an integral part of the federal waste management system and would perform most of the high-level waste preparation functions before emplacement in a repository.

Vol. II Environmental Assessment

- o Specified by the Nuclear Waste Policy Act (NWPA) in lieu of an Environmental Impact Statement (EIS)
- o Includes DOE study results of need for, and feasibility of, an MRS as required by NWPA
- o Includes site-specific evaluations for three specific sites and two storage concepts.

Vol. III Program Plan

Contains activities, costs, and schedules as required by NWPA

a. Deployment Plan

Describes how DOE will establish and implement a program for the siting, development, construction and operation of an MRS. It includes a Licensing Plan and a Design Verification Plan. The Licensing Plan outlines the key steps involved in obtaining an NRC license. The Design Verification Plan describes the demonstrations and tests needed to assure safety and efficient operation.

b. Integration Plan

Shows how DOE will integrate MRS with other facilities and systems authorized by NWPA.

Enclosure A

Enclosure A

BACKGROUND AND SIGNATURE TAB

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c. Funding Plan

Shows how MRS costs are borne by the waste generators through the Nuclear Waste Fund and what those costs are likely to be.

Reference DOE Information on MRS Held by staff

Conceptual Design Report including:

- o Design Description
- o Regulatory Assessment Document
Describes DOE's efforts to comply with NRC regulations (primarily 10 CFR Part 72) to obtain a license.
- o Design Drawings
- o Cost Estimate Summary
- o Design Studies

Functional Design Criteria Report, PNL-5673

- o Technical baseline document defining facility design objectives and minimum acceptable requirements.

Conceptual Basis for Design Report

- o A control document that establishes the basis for executing the conceptual design.