

FEB 18 1992

Dr. John W. Bartlett, Director
Office of Civilian Radioactive
Waste Management
U.S. Department of Energy, RW-1
Washington, D.C. 20585

Dear Dr. Bartlett:

SUBJECT: TRANSMITTAL OF THE QUARTERLY PROGRESS REPORT ON THE PRE-LICENSING
PHASE OF THE CIVILIAN HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT PROGRAM

Enclosed for your information is a copy of SECY-92-034, the "Quarterly Progress Report on the Pre-Licensing Phase of the U.S. Department of Energy's (DOE's) Civilian High-Level Radioactive Waste Management Program." The U.S. Nuclear Regulatory Commission (NRC) staff prepares Quarterly Progress Reports in order to provide the Commission with an assessment of progress being made on key aspects of the NRC and the DOE pre-licensing consultation program. This report covers the period from October 1991 through December 1991.

Please note that in this Quarterly Progress Report, a new section has been added which is entitled, "Spent Fuel Storage and Transportation System Compatibility." This section appears in this report as a new Section 7. Although the numbering of subsequent sections has changed from the last Quarterly Progress Report, there are no changes to the sections being covered.

If you have any questions, please feel free to contact me at (301)504-3352/ FTS 964-3352, or Mr. Joe Holonich, of my staff, at (301)504-3387/FTS 964-3387.

Sincerely,

(Signed) Robert M. Bernero

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

Enclosure: As Stated

cc: See page 2

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Date:02/17/92 :02/12/92 :02/11/92 :02/11/92 :02/13/92 :02/14/92:02/18/92

12/91 QPR TO BARTLETT

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POLICY ISSUE **(Information)**

January 30, 1992

SECY-92-034

For: The Commissioners

From: James M. Taylor
Executive Director
for Operations

Subject: QUARTERLY PROGRESS REPORT ON THE PRE-LICENSING PHASE OF THE U.S. DEPARTMENT OF ENERGY'S CIVILIAN HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT PROGRAM

Purpose: To provide the Commission with a Quarterly Progress Report (October 1991 through December 1991) on the pre-licensing phase of the U.S. Department of Energy's (DOE's) civilian high-level radioactive waste (HLW) management program.

Background: In the Quarterly Progress Reports on the pre-licensing phase of DOE's program, the U.S. Nuclear Regulatory Commission (NRC) staff discusses the key aspects of the NRC/DOE pre-licensing consultation program that deserve Commission attention. The previous Quarterly Progress Report, SECY-91-343, discussed activities that occurred from July 1991 through September 1991. It should be noted that a new section has been added to this report. In SECY-91-313, "U.S. Department of Energy and Industry Progress in Developing Cask Designs to Achieve Compatibility for Dry Storage and Transportation Purposes," an October 3, 1991, Information Paper, commitments were made to provide updates on developments in spent fuel storage and transportation system compatibility in future Quarterly Progress Reports. Consequently, "Spent Fuel Storage and Transportation System Compatibility" has been added to the Quarterly Progress Report as a new Section 7.

NOTE: TO BE MADE PUBLICLY AVAILABLE
IN 10 WORKING DAYS FROM THE
DATE OF THIS PAPER

Contact: Ken Kalman, NMSS
504-2428

Executive
Summary:

The most significant activities during this period were related to: (1) DOE Implementation of Scheduled and Systematic Consultations; and (2) the Nuclear Waste Negotiator.

DOE Implementation of Scheduled and Systematic
Consultations

- o In November 1991 the staff transmitted, to DOE, its comments on Revision 1 of DOE's Project Decision Schedule (PDS) and DOE's Draft Mission Plan Amendment (MPA).
- o During this reporting period, DOE continued its site characterization activities at the Yucca Mountain site. Two boreholes were drilled, and additional drilling is scheduled for early 1992. The on-site licensing representatives have been observing the technical and quality assurance (QA) aspects of the work. No significant concerns have been identified during these observations.

Nuclear Waste Negotiator

In October 1991, the Nuclear Waste Negotiator sent information packets to States and Indian tribes. These packets explain the need, challenge, procedure, and the opportunity for the voluntary siting of permanent and temporary facilities for spent nuclear fuel. Several recipients have responded to the information packets and applied for grants for preliminary feasibility studies for a monitored retrievable storage (MRS) facility.

Discussion:

1. DOE Implementation of Scheduled and Systematic
Consultations

During this reporting period, only one technical interaction related to the repository was scheduled with DOE. A technical exchange on scenario development, which was scheduled for October 1991, was postponed to April 1992, because the October date conflicted with other activities scheduled by NRC and DOE.

On November 8, 1991, the staff transmitted, to DOE, its comments on Revision 1 of DOE's PDS for its civilian radioactive waste management program and its comments on DOE's Draft MPA. As noted in the transmittal, the staff found that in Revision 1 of the PDS, DOE had addressed several of the staff's comments on the Draft PDS revision, issued in October 1990, relating to QA and the correction of

inaccurate milestone dates. However, the staff still had some concerns relating to the Licensing Support System (LSS) and the MRS facility. The staff's comments on the Draft MPA covered such areas as: the use of expert judgment; the LSS; clarification of the respective roles of NRC, DOE, and the U.S. Environmental Protection Agency (EPA); and DOE's QA program.

On November 20, 1991, the staff met with DOE to discuss regulatory strategy in the HLW repository and MRS programs. The primary topic was DOE's plan to develop annotated outlines of the license application for the HLW repository and the MRS. DOE intends to develop its license application through successive iterations of the outlines. The first draft of the HLW repository outline was submitted on December 19, 1991, and the first draft of the MRS outline was submitted on December 20, 1991. During the November meeting, DOE and NRC agreed to meet in early 1992 to discuss the type and scope of review that NRC would conduct on these two outlines. The MRS outline is discussed in more detail in Section 6 of this Quarterly Progress Report. Also, at the November 20, 1991, meeting, DOE requested additional pre-licensing reviews by NRC in Fiscal Year (FY) 1992, of topical reports, annotated outlines of the license application, a site suitability evaluation, and performance assessment exercises. These reviews were not previously planned for FY92.

Also on November 20, 1991, NRC and DOE met to schedule technical interactions for the balance of FY92. Interactions were scheduled for the following topics: Waste Form/Spent Fuel; Thermal Loads Staff Technical Position; Air/Vapor Movement; Scenario Development; Erosion; NRC's Standard Format and Content Guide; Trench 14/Calcite Silica Deposits; Lessons Learned from the Waste Isolation Pilot Project; and Total Systems Performance Assessment.

On October 28, 1991, NRC and DOE staffs met to continue discussing proposed revisions to the procedural agreements that implement the pre-licensing consultations for the HLW repository, as provided for in the Nuclear Waste Policy Act (NWPA). This meeting was held as a follow-up to the September 12, 1991, meeting, described in the last Quarterly Progress Report. Most of the proposed revisions were agreed on and the remaining issues are expected to be resolved in early 1992.

Representatives from the State of Nevada participated in both of the meetings held on November 20, 1991. Although on October 7, 1991, the State was invited to attend the October 28, 1991 meeting, on the procedural agreement, the State declined the invitation to participate.

During this reporting period, DOE continued site characterization work at Yucca Mountain. New activities included drilling two boreholes to a depth of 200 feet. Equipment will be inserted into these holes to measure the influx of water from the surface into the shallow subsurface. Core samples were taken from these holes. Additional boreholes are scheduled to be drilled in early 1992. The on-site licensing representatives have been observing the technical and QA aspects of the work. No significant concerns have been identified.

Also, during this reporting period, the staff attended two meetings of the Nuclear Waste Technical Review Board (NWTRB) as observers. On October 8-10, 1991, the staff observed a meeting conducted by the full Board on the thermal loading aspects of geologic repository design. On November 12-13, 1991, the staff observed a meeting of the NWTRB Panel on Structural Geology and Geoen지니어ing on DOE's repository sealing program.

There were no specific interactions between DOE and the EPA on issues concerning high-level radioactive mixed waste and the Resource Conservation and Recovery Act during this reporting period.

2. Early Implementation of a QA Program

During this reporting period, the staff observed DOE's Office of Civilian Radioactive Waste Management (OCRWM) QA audits of OCRWM (Headquarters and the Yucca Mountain Site Characterization Project Office); Reynolds Electrical & Engineering Co., Inc.; Lawrence Livermore National Laboratory; and Raytheon Services Nevada. No findings were identified, during these audits, that would preclude OCRWM from continuing with surface-based site characterization and other quality-affecting activities.

The NRC staff also attended a briefing on the OCRWM Quality Concerns Program, participated in a periodic QA meeting with OCRWM staff, and observed a readiness review by the Management and Operating Contractor, TRW Environmental Safety Systems, Inc.

As noted in the last Quarterly Progress Report, the staff performed an independent audit of the U.S. Geological Survey (USGS) and would be evaluating its results in comparison to similar QA audits performed by OCRWM. During this reporting period, the evaluation of the results of the NRC staff audit of the USGS indicated that the results were consistent with those of the OCRWM QA audits observed by the NRC staff in the last two years.

The staff continued to evaluate the OCRWM request to remove Site Characterization Analysis (SCA) Objection No. 2 related to QA. On December 20, 1991, the staff accepted, without exception, the OCRWM QA program, which covers only DOE headquarters and Yucca Mountain Site Characterization Project Office (YMPO) activities, and not those of the other DOE program participants. The QA program for the Technical and Management Support Services program participant was accepted by the staff, by letter dated October 9, 1991. The staff is working to complete its evaluation of the OCRWM request to lift the SCA Objection.

3. Performance Assessment

In previous Quarterly Progress Reports, the staff committed to inform the Commission of any areas where there was a need for DOE to be sufficiently conservative in its approach to treating uncertainties. The last Quarterly Progress Report noted that the staff had identified several concerns with DOE's Waste Acceptance Process (WAP). During this reporting period, the staff began to develop a position on acceptance criteria for DOE's waste vitrification program. These criteria will form the basis for resolving the staff's concerns relative to DOE's WAP.

DOE indicated it plans to issue a nominal total system performance assessment for the proposed repository at Yucca Mountain, in March 1992. This study is expected to consider a suite of important radionuclides and several disruptive scenarios. The NRC staff plans to review the first steps of DOE's program in order to determine if it is responsive to the staff's Comment No. 1 on DOE's Site Characterization Plan, which dealt with the need to periodically conduct iterative performance assessments.

At the same time, the staff has continued to develop its own capability in performance assessments. This capability is to be applied in staff reviews of the DOE performance assessments that will be done iteratively through site characterization and culminate in the license application as DOE's demonstration of compliance with EPA's HLW standards and 10 CFR Part 60. The staff is now engaged in Phase 2 of its own performance assessment effort. Completion of Phase 2 is planned for June 1992. The NRC and DOE staffs have agreed to a technical exchange on DOE's total system performance assessment studies and the staff's Phase 2 effort, in late 1992.

4. Early Resolution of State and Tribal Concerns

As noted in the past two Quarterly Progress Reports, the Nevada Environmental Protection Division issued the first two of three permits needed by DOE to begin site characterization work at Yucca Mountain. These permits pertained to air quality and underground-water injection control. Although the injection permit was issued, the underground-water tracer tests to study the transmission of groundwater were postponed by DOE.

The third permit that DOE needed was for appropriation of underground waters for industrial and domestic purposes. Nevada held an administrative hearing from September 24 to October 4, 1991, on the issue of the water-appropriation permit. However, the State has not yet issued a decision on the water-appropriation permit.

The last Quarterly Progress Report had also noted that Lander County, Nevada, had applied for affected-party status. On October 4, 1991, affected-party status was granted.

5. Rulemaking and Regulatory Guidance Development

During this reporting period, the staff briefed the Advisory Committee on Nuclear Waste (ACNW) on the final draft staff technical position (STP), entitled "Investigations to Identify Fault Displacement Hazards and Seismic Hazards at a Geologic Repository." This STP will provide guidance to DOE on appropriate investigations that can be used to identify fault displacement hazards and seismic hazards at the proposed site for the geologic repository.

Before meeting with the full ACNW, the staff participated in an ACNW Working Group meeting on concerns related to seismic and faulting investigations for a geologic repository. This Working Group meeting was also attended by representatives of the State of Nevada, the Edison Electric Institute/Utility Nuclear Waste and Transportation Program, the American Society of Civil Engineers, DOE, and DOE program participants. After these interactions, the ACNW recommended that the staff issue the final STP.

On December 17, 1991, DOE briefed the Commission on the status of the OCRWM program. During the briefing, DOE noted that, on April 19, 1990, it had petitioned the Commission to amend its regulations pertaining to the disposal of HLW in a geologic repository, to include a specific dose criterion for design basis accidents.

In a letter to DOE dated July 23, 1991, the staff had noted that it was conducting the necessary technical work to support both its position regarding a specific dose criterion in 10 CFR Part 60 and its views with respect to DOE's petition. The staff also advised DOE that it was continuing to evaluate the merits of both DOE's petition and a November 26, 1990, letter, in which DOE provided specific comments, as it pursues its related regulatory initiative. Upon completion of the necessary technical background work, the staff noted that it would develop its position, which may include a recommendation to the Commission to proceed with rulemaking. The staff expects to make its recommendation to the Commission in September 1992, and will then respond to DOE's petition.

6. MRS

As noted in Section 1 of this Quarterly Progress Report, on November 20, 1991, the staff met with DOE to discuss DOE's overall regulatory strategy for its OCRWM program. During this meeting, DOE discussed its process for developing an annotated outline for the MRS license application. DOE submitted its first draft of an MRS annotated outline, for NRC review, on December 20, 1991. Depending on its progress in the design of the MRS, there may be several iterations per year of the annotated outline.

Current DOE plans include pre-licensing interactions with NRC relating to the development of a safety analysis report (SAR) for the MRS, concurrent with the preparation of a draft environmental impact statement. These pre-licensing interactions include NRC review of several iterations of an annotated outline for the MRS license application. The DOE schedule calls for SAR development in 1993 and submittal to NRC for review in March 1994, nearly one year before the MRS license application. Future topics for discussion with DOE include NRC participation in the National Environmental Policy Act process for the MRS and a possible NRC/DOE memorandum of understanding for pre-license application interactions and SAR review.

Several groups have expressed interest in studying the feasibility of hosting an MRS site. Both the Mescalero Apache Indian Tribal Council, Mescalero, New Mexico, and Grant County, North Dakota, have applied for, and received, \$100,000 grants, from DOE, to study such feasibility of hosting an MRS. During this reporting period, the staff has been in contact with both groups. In early November, general information about dry spent fuel storage and an MRS was sent to the Custer District Health Unit in Mandan, North Dakota, in response to a telephone inquiry. On December 6, 1991,

the staff met with representatives of the Mescalero Apache Indian Tribal Council and their consultants, to discuss transportation safety, spent fuel storage licensing, and issues relevant to licensing an MRS. In addition, DOE is reviewing applications for grants for preliminary feasibility studies for Fremont County, Wyoming; the Yakima Indian Nation, Washington; the Prairie Island Indian Community, Minnesota; the Chickasaw Indian Tribe, Oklahoma, and the Sac and Fox Nation, Oklahoma.

7. Spent Fuel Storage and Transportation System Compatibility

There have been no significant design developments in spent fuel storage and transportation system compatibility since the October 1991 Commission Paper, SECY-91-313. However, there were two noteworthy items relating to storage and transportation compatibility and DOE's systems engineering process for HLW management.

First, on September 26, 1991, DOE OCRWM staff made a presentation, to the NWTRB Panel on Transportation and Systems, about its systems engineering process. At this meeting, spent fuel storage and transportation system compatibility was mentioned in the broader context of DOE's overall systems approach to the HLW management program. One significant point, concerning the issue of compatibility, was that designing for minimized fuel-handling evolutions was only one factor in the systems engineering process and may not necessarily be desirable when attempting to optimize the waste management system.

Second, the NWTRB's "Fourth Report to The U.S. Congress and The Secretary Of Energy," dated December 1991, contained DOE's response to a previous NWTRB recommendation that:

"A workshop should be scheduled on ways to minimize the handling of waste in the life-cycle process. The workshop should address the interactions among the major system components such as storage, transportation, and disposal. The scope should also include potential technologies, possible regulatory impediments, and institutional incentives and barriers to such an integrated system."

DOE agreed to initiate planning for a systems study and a workshop.

8. Transportation

During this reporting period, the staff met with DOE and Babcock and Wilcox to discuss the Model No. BR-100 spent fuel shipping cask being developed under NWPA. The Model No. BR-100 is a barge/rail cask with a capacity of 52 boiling water reactor assemblies or 21 pressurized water reactor assemblies. This meeting was held to discuss the testing of a one-quarter scale model of the cask. Further meetings will be held to discuss the containment design of the cask.

9. Research

In November 1991, approval was given to the CNWRA to begin research on volcanic hazards. This work will be crucial to addressing disruptive scenarios within the context of performance assessment. Because of the history of volcanic and seismic activity in the Yucca Mountain area, it is recognized that disruptive scenarios must include consideration of a range of volcanic and seismic events that may result from the active tectonic structure in this region. This project is the first of several planned in the next few years, as a systematic effort to reduce technical uncertainties in this critical area. At its November 25, 1991, meeting, the Nuclear Safety Research Review Committee reviewed the integrated research programs in volcanism and regional tectonics developed by RES staff.

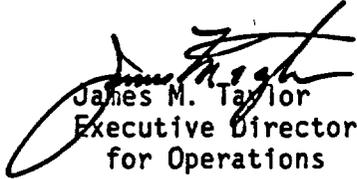
Also, because of DOE's plan to revisit the waste package design for the HLW repository, on December 19, 1991, RES, NMSS, and CNWRA staff met to evaluate possible adjustments to the NRC integrated waste package experiment work plan. OCRWM decisions on waste package design are expected in the fall 1992. A report is being developed on the results of the NRC's evaluation.

10. Nuclear Waste Negotiator

On October 7, 1991, the Nuclear Waste Negotiator sent an information packet to the States and Indian tribes. This information packet was provided as a follow-up to a May 3, 1991, letter that introduced the Office of the U.S. Nuclear Waste Negotiator, and its mission. The documents enclosed explained the need, challenge, procedure, and the opportunity for the voluntary siting of permanent and temporary facilities for spent nuclear fuel. Section 6 of this Quarterly Progress report discusses the responses to this information packet.

Coordination: The Office of the General Counsel has reviewed this paper and has no legal objection.

Conclusion: During this reporting period, there were no issues, between the staff and DOE that required Commission action. The staffs continue to make progress in addressing and resolving issues.


James M. Taylor
Executive Director
for Operations

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