## December 8, 1993

SECY-93-332

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 (QPR) (July through September 1993) 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 QPR on the pre-licensing phase of DOE's program, the Nuclear Regulatory Commission staff discusses the key aspects of the NRC/DOE pre-licensing consultation program that deserve Commission attention. The previous QPR, SECY-93-228, discussed activities that occurred from April through June 1993.

### **EXECUTIVE SUMMARY:**

The most significant activities during this period were related to the areas of "DOE Implementation of Scheduled and Systematic Consultations" and "Early Resolution of State and Tribal Concerns."

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## DOE Implementation of Scheduled and Systematic Consultations

o In an August 20, 1993, letter to DOE, the NRC staff cited specific concerns that it had regarding the Exploratory Studies Facility (ESF) design and design control process as well as the effectiveness of the management controls and quality assurance (QA) program of DOE's Civilian Radioactive Waste Management System Management and Operating Contractor (M&O). The staff stated that it was essential for DOE to explain how it is assuring that ongoing design and construction will not be adversely affected by problems related to the design, design inputs, and design control process and that DOE should inform the staff of changes to the ESF design in a manner that will allow for timely reviews. NRC and DOE staff met on September 17, 1993, to discuss DOE's proposed response to the NRC staff's letter of August 20, 1993, and to clarify what would be needed to respond. DOE plans to respond within the 90-day period requested by the staff.

## Early Resolution of State and Tribal Concerns

On August 12, 1993, on behalf of DOE, the U.S. Environmental Protection Agency (EPA), and NRC, the U.S. Department of Justice (DOJ) filed a Memorandum of Opposition to Nevada's Petition to preserve the testimony of 27 individual scientists by taking their depositions. Although outside of this reporting period, it should be noted that on October 7, 1993, the United States District Court granted the government's motion to dismiss the State of Nevada's lawsuit. The State has sought reconsideration and its motion for reconsideration is still pending.

#### DISCUSSION:

## 1. DOE Implementation of Scheduled and Systematic Consultations

During this reporting period, the staff: (1) conducted two interactions with DOE; (2) participated in DOE sponsored public meetings; and (3) reviewed and provided comments on numerous DOE documents. Also during this period, the NRC On-site Representatives (ORs) continued to observe ongoing DOE site characterization activities.

The first interaction was on August 24, 1993, where representatives of NRC, DOE, the State of Nevada, and Nye County, Nevada participated in a technical exchange to discuss the status of DOE's waste package design activities. Other related topics included interpretation of substantially complete containment (SCC) and its use as a guide in design, and DOE's plans for addressing site characterization open items related to waste package design concepts. This interaction was the first update to NRC staff on waste package activities since DOE's Site Characterization Plan was issued in 1988. Staff participants presented an overview of NRC's approach to reducing the previously identified regulatory uncertainty regarding what is meant by SCC and staff from the Center for Nuclear Waste Regulatory Analyses (CNWRA) presented a discussion of activities related to the engineered barrier system program at the CNWRA.

During this reporting period, there were a series of activities related to NRC concerns regarding weaknesses and deficiencies in the ESF design and design control process. In an August 20, 1993, letter to DOE, the staff cited specific concerns that it had in regard to the effectiveness of the management controls and QA program of DOE's M&O as well as concerns regarding the ESF design and design control process. The staff stated, in the letter, that it was essential for DOE to explain how it is assuring that ongoing design and construction will not be adversely affected by problems related to the design, design inputs, and design control process. DOE was requested to provide information on relevant ESF design documents and to inform the staff of changes to the ESF design in a manner that will allow for timely reviews. The staff also stated, in the letter, that DOE should provide its responses within 90 days of the date of that letter or, within 30 days, notify NRC of the date by which it would submit its responses.

The second interaction was on September 17, 1993, when NRC staff met with representatives of DOE, the State of Nevada, and Nye County, Nevada, to discuss DOE's proposed response to the staff's letter of August 20, 1993, regarding the ESF design and design control process, and to further clarify what would be needed to respond. DOE discussed its plans to respond to specific points in the staff's letter and plans on providing this response to NRC within the 90-day period requested by the staff. During this meeting, the representative of the State of Nevada agreed with many of the NRC staff's concerns, but also took the position that the staff should consider reinstating the resolved Site Characterization Analysis Objection related to the ESF design control process. The staff informed the State that the purpose of the letter was to gather additional information so the staff could determine the extent of the problem and appropriate future actions.

The previous QPR noted that on June 9, 1993, NRC and DOE had conducted a technical exchange on the status of volcanism studies for site characterization. As a follow-up to this exchange, on August 18, 1993, the staff transmitted a letter to DOE noting the staff's concerns related to volcanism. The staff believes that there continue to be significant unresolved concerns related to the methodology and approach used by DOE to address the issue of igneous activity in the vicinity of Yucca Mountain. The staff noted in the letter that DOE should address the concerns in the same manner and with the same degree of oversight that it would give to issues identified as objections, comments, or questions. When DOE issues the final report on volcanism, the staff will review the report against the concerns expressed in the August 18, 1993, letter, as well as those concerns expressed in the technical exchange, and reviews of related study plans.

In July 1993, the staff attended three DOE sponsored public meetings on DOE's June 1993 draft report, "Adequacy of Management Plans for the Future Generation of Spent Nuclear Fuel and High-Level Radioactive Waste." The report, due to Congress by October 24, 1993, was mandated by Section 803 of the Energy Policy Act of 1992. Section 803 required DOE to consult with NRC, the EPA, and others on the adequacy of current nuclear waste management programs and plans, particularly for any additional volumes or categories of waste generated by any nuclear power plants constructed and licensed after

October 24, 1992. DOE concluded that its current programs and plans are adequate for management of nuclear waste from new power plants and its own waste stabilization and disposal programs.

The first two public meetings on the report were held in Las Vegas, Nevada, and were attended by the ORs. These two meetings were forums for discussion by invited speakers from the State of Nevada, affected units of local government (AULG), and members of the general public. DOE held a third public meeting on the draft report on July 29, 1993, in Washington, D.C., that NRC staff attended. Because the draft report was based mainly on program activities that are the responsibility of DOE, the NRC staff did not comment on the validity of the cases, scenarios, and conclusions presented in DOE's draft report. However, the staff did state its concern that DOE should eventually determine how it will equate the different volumes and thermal loading for the various waste types. The staff also noted that DOE's report did not completely analyze all the waste types that will require final disposal. The staff transmitted its comments on the draft report to DOE on August 27, 1993. DOE anticipates addressing these comments and publishing the final report during the next reporting period.

On August 10, 1993, NRC staff observed a DOE sponsored workshop on ways of improving public participation in the HLW program. The purpose of the workshop was "for the participants to recommend a consultative process to provide meaningful opportunities for interested parties to participate in the program's direction and decision making" and to "complement and help inform the Secretary of Energy's current review of the civilian radioactive waste management program." DOE provided a draft report to all participants for comment, and will be publishing a final report to document the workshop.

On September 29, 1993, NRC staff observed the DOE Director's Program Review, which was the first of a series of open bi-monthly meetings, replacing a previous series of DOE internal monthly reviews. This program review was held in Vienna, Virginia, with video-conferencing to DOE Headquarters in Washington, D.C. and the Yucca Mountain Project Office in Las Vegas, Nevada. The program review consisted of a series of presentations covering all aspects of DOE's Office of Civilian Radioactive Waste Management (OCRWM) activities, including repository site characterization, transportation, monitored retrievable storage (MRS), and related support activities. Cognizant DOE managers reported on accomplishments, schedules, and budgeting in their program areas.

During this reporting period, NRC staff continued to review and comment on DOE documents. On July 30, 1993, the staff transmitted a letter to DOE containing its comments on DOE's May 28, 1993, version of "Mined Geologic Disposal System Annotated Outline Skeleton Text for the Preparation of a License Application, Revision 2." Although the skeleton text does not contain significant detail, some new information was provided in the areas of performance assessment and performance confirmation. As a result, NRC staff only had a few minor comments.

On August 18, 1993, the staff received DOE's annotated outline for the proposed topical report, "Methodology for Seismic Hazards Assessment at Yucca Mountain" and reviewed it to determine whether the subject matter and scope of the report are appropriate for a topical report. The staff will transmit the results of its review to DOE in the next reporting period.

On September 23, 1993, the staff received DOE's, "Report on the Origin of Calcite-Silica Deposits at Trench 14 and Busted Butte and Methodologies Used to Determine Their Origin." This technical report documents site characterization activities to investigate the origin of calcite-silica deposits in the area of Yucca Mountain. DOE may use the information contained in this report as a basis for a future topical report; NRC staff is reviewing the report and expects to complete its review by early calendar year 1994.

NRC staff completed its acceptance review of the DOE Topical Report, "Evidence of Extreme Erosion during the Quaternary Period" during this reporting period. A letter will be transmitted to DOE during the next reporting period accepting the topical report and asking DOE to submit several supporting documents so NRC staff can begin its technical review.

DOE transmitted four new and five revised site characterization study plans for NRC staff's review. The staff completed its review of two new plans and one revised study plan during this reporting period. Reviews of 18 study plans, 8 of which are revisions to previous DOE submittals, are currently underway by the staff and are scheduled to be completed during the next two reporting periods.

During this reporting period, the ORs continued to observe DOE's ongoing site investigations, including those regarding DOE's completion of the first phase of the ESF at Yucca Mountain. In September 1993, DOE completed the 200 footlong ESF Starter Tunnel for the Tunnel Boring Machine (TBM). Excavation of the Starter Tunnel began in April 1993 using the drilling and blasting method. The ORs observed the geologic mapping and stereophotography of the last 50 feet of the tunnel on September 10, 1993, and were briefed on routine ground control techniques being used to protect workers from falling rocks in the ESF boxcut and Starter Tunnel.

There were no interactions between DOE and EPA, or significant developments on issues concerning mixed HLW or the Resource Conservation and Recovery Act to note for this reporting period.

The staff continued to implement the revised Procedural Agreement and the Project-Specific Agreement, that were signed into effect on June 3, 1993, by training NRC Headquarters staff on the details of the revised agreements, as well as on NRC policies and procedures for ensuring openness in its interactions with DOE. In addition to these training sessions, the staff also produced a videotape that will be provided to the CNWRA and the ORs. This 40-minute videotape will be used for initial training of new staff and reinforcement for those who have already been trained.

## 2. Early Implementation of a OA Program

During this reporting period, NRC QA and technical staff, supported by CNWRA staff, observed DOE OCRWM audits of Raytheon Services Nevada, the Lawrence Livermore National Laboratory, and the Sandia National Laboratory. An internal audit of the DOE Office of Environmental Restoration and Waste Management Vitrification Project Division, an internal audit of the M&O at Las Vegas, Nevada, and an OCRWM surveillance of the M&O at both Las Vegas and Vienna, Virginia, were also observed. No deficiencies were identified, during the audits and surveillance, that would preclude the auditing/audited/surveilled organizations from continuing their quality-affecting activities.

A periodic NRC-DOE QA meeting was held on July 20, 1993, to discuss items of mutual interest. Representatives of CNWRA; Clark County, Nevada; M&O Headquarters; Edison Electric Institute; USGS; and Science Applications International Corporation/Quality Assurance Technical Support Services were also present, and a representative of the State of Nevada participated by telephone. Topics discussed included the design process for the ESF, the status of implementation of the DOE "Quality Assurance Requirements and Description" document, and the QA overview and status of field activities, including tunnel boring and core drilling.

## 3. Performance Assessment

NRC and CNWRA staff participated with representatives of DOE's OCRWM and the Waste Isolation Pilot Project as members of the United States delegation to the 9th Meeting of the Nuclear Energy Agency (NEA) Radioactive Waste Management Committee (RWMC) Performance Assessment Advisory Group (PAAG) that was held on September 14-16, 1993, at the NEA's office in Paris, France. The PAAG has been instrumental in building consensus on technical issues that affect all repository programs and has assisted in the development of advanced generic tools and methods for safety assessment of radioactive waste repositories. The meeting focused on a discussion of the progress of ongoing activities and international projects, as well as an in-depth technical discussion of approaches to model validation. In addition, the meeting provided an opportunity to discuss international developments in the field of performance assessment. The next meeting is planned for October 1994.

## 4. Early Resolution of State and Tribal Concerns

As reported in the previous QPR, on June 14, 1993, the State of Nevada petitioned the United States District Court in Nevada to preserve the testimony of 27 individual scientists by taking their depositions relative to their findings surrounding the 1989 Szymanski report, which hypothesized possible episodic recurrence of flooding (upwelling of groundwater) at the Yucca Mountain site. The State's petition claimed that it may be a party to potential future lawsuits challenging future decisions by DOE, EPA and NRC relating to Yucca Mountain, and that the State should be permitted to preserve the scientists' testimony under a judicial procedure that allows the perpetuation of testimony by deposition for use in a future judicial proceeding.

On August 12, 1993, DOJ filed a Memorandum of Opposition to Nevada's Petition, on behalf of DOE, EPA, and NRC. The Memorandum of Opposition states that Nevada has failed to demonstrate, pursuant to Federal Rule of Civil Procedure 27, that it seeks to preserve relevant facts that would not otherwise be available and requests Nevada's petition be denied and the proceeding dismissed. Although outside of this reporting period, it should be noted that on October 7, 1993, the United States District Court granted the government's motion to dismiss the State of Nevada's lawsuit. The State has sought reconsideration and this motion for reconsideration is still pending.

During this reporting period, the staff continued to maintain an open and cooperative relationship with those parties deemed affected under the NWPA provisions. On August 24-25, 1993, NRC staff attended a workshop sponsored by Nye County, Nevada, in Pahrump, Nevada, on DOE's HLW repository program. The purpose was to provide a forum by which the AULG could "explore the range of issues and viewpoints regarding DOE's program." The workshop was attended by representatives of various Federal and other governmental agencies involved in the program. NRC staff gave a presentation on NRC's role in the HLW program. Other presentations included discussions on: (1) the EPA standards for the disposal of HLW; (2) DOE's Alternative Licensing Strategy; (3) the status of the Nuclear Waste Negotiator's search for a volunteer host for the MRS Facility; (4) the Nuclear Waste Technical Review Board's role; (5) the General Accounting Office's recent findings and recommendations for the program; and (6) industry and public utility commission viewpoints. Several environmental groups', local governments', and citizens' interests were discussed. The workshop included question and answer sessions on issues, NRC policy, and activities pertaining to the program.

NRC staff also met with two representatives of the Nevada Legislative Counsel Bureau (NLCB) on September 9, 1993, at NRC Headquarters. The purpose of the meeting was to provide information to NLCB on NRC's regulatory responsibilities for HLW disposal, transportation, onsite storage, and MRS licensing. The NLCB supports the activities of the Nevada Legislative HLW Oversight Committee, which was formed in 1985. The representatives indicated that the Committee Chairman is interested in having a similar briefing for new committee members.

#### 5. Rulemaking and Regulatory Guidance Development

The previous QPR noted the preparation of a proposed 10 CFR Part 60 rulemaking package on "Clarification of Assessment Requirements for the Siting Criteria and Performance Objectives." On July 9, 1993, a notice of proposed rulemaking was published in the <u>Federal Register</u>. This proposed rulemaking clarifies several regulatory uncertainties associated with the investigation of siting criteria (defined as favorable and potentially adverse conditions) and their relationship to the post-closure performance objectives in 10 CFR Part 60.

On July 27, 1993, a notice of availability of the Draft Regulatory Guide DG-3009, "Topical Guidelines for the Licensing Support System" appeared in the <u>Federal Register</u>. This responds to the Staff Requirements Memorandum for SECY-93-017, "Response to the Licensing Support System Advisory Review Panel

Comments on the Draft Regulatory Guide, 'Topical Guidelines for the Licensing Support System'."

#### 6. MRS

In July 1993, the staff received Revision 2 to the "Monitored Retrievable Storage Facility Annotated Outline Skeleton Text for the Preparation of a License Application" (MRS AO). This revision incorporated NRC comments on previous versions and expanded sections that address quality affecting work. DOE indicated that it is suspending work on the MRS AO until a suitable site for an MRS is proposed.

On September 24-25, 1993, the joint Radioactive and Hazardous Material Committee of the New Mexico State Legislature held a meeting at the Mescalero Apache Tribe's Inn of the Mountain Gods to hear an update on the tribe's study on HLW storage in an MRS and to receive comments from concerned citizens. An NRC staff representative appeared before the Committee to explain NRC's role in licensing an MRS. Officials for the Office of the Nuclear Waste Negotiator and DOE also appeared before the Committee.

As noted in previous QPRs, a number of groups have expressed interest in hosting an MRS site and have applied for and received grants, from DOE, to study the feasibility of hosting an MRS. The application deadline for Phase II grants expired on March 31, 1993. The following list presents the current status of Phase II grant applicants.

1. Mescalero Apache Tribe, New Mexico Applied March 13, 1992 Phase IIA Awarded April 21, 1992

Letter to Acting Negotiator requesting to enter into negotiations, 8/4/93. Phase IIB application in preparation.

2. Skull Valley Band of Goshute Indians, Utah Applied October 28, 1992
Phase IIA Awarded on January 27, 1993

Letter to Acting Negotiator requesting to enter into negotiations, 8/9/93. Phase IIB application received.

- 3. Ft. McDermitt Paiute Shoshone Tribe, Nevada Applied on February 19, 1993
  Phase IIA Awarded June 1, 1993.
- 4. Tonkawa Tribe of Oklahoma Applied on March 31, 1993 Phase IIA under review.
- 5. Eastern Shawnee Tribe of Oklahoma Applied on March 24, 1993 Denied, not enough land.

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- 6. Prairie Island Indian Community, Minnesota Applied on March 30, 1993
  Rejected June 10, 1993
- 7. Ute Mountain Ute Tribe, Colorado Applied on March 30, 1993 Withdrew application.
- 8. Miami Tribe of Oklahoma Applied on March 30, 1993 Withdrew application.
- 9. Northern Arapahoe Economic Development Commission,
  Wyoming
  Applied on March 26, 1993
  Denied. Cohabits land with another tribe. Other tribe
  refuses to cooperate.

## 7. Spent Fuel Storage and Transportation System Compatibility

On July 1 and 2, 1993, the staff participated in a Multi-Purpose Canister (MPC) Workshop sponsored by DOE's OCRWM. The purpose of this workshop was to provide the participants an opportunity to learn more about the MPC concept and for OCRWM to obtain feedback from the participants regarding their perspectives on the concept. OCRWM was particularly interested in getting comments in the areas of: (1) storage (MRS and reactor site); (2) transportation; (3) disposal/repository; and (4) technical aspects of the MPC design. The workshop was attended by over 100 individuals, including representatives from: utilities; the states of Nevada and Maryland; Nye County, Nevada; tribal groups; and vendors. The participants identified a number of issues that OCRWM should address in developing the MPC concept. OCRWM indicated that it anticipates completing a preliminary Request for Proposals for the MPC program and will conduct a second MPC workshop in November 1993.

On August 27, 1993, DOE, OCRWM, and NRC management staffs met to discuss DOE's initiation of an MPC system for the storage, transportation, and disposal of spent nuclear fuel and the use of burnup credit in criticality control. A representative of the State of Nevada participated in the meeting, by telephone, and a representative of Nye County, Nevada was in attendance. Past DOE efforts, on the use of burnup credit, have been focused on certification of transportation casks and, to some extent, on spent fuel storage. However, with the introduction of an MPC concept, DOE has reassessed its approach to resolving the issues of burnup credit to consider both short-term and long-term phenomena; particularly those long-term issues important to disposal.

The previous QPR noted that the Sacramento Municipal Utility District (SMUD) had selected the standardized NUHOMS-24P spent fuel storage design as part of a DOE cooperative program to demonstrate the licensing of a dual-purpose storage/transport system for its Rancho Seco independent spent fuel storage installation. Pacific Nuclear (NUHOMS-24P vendor) and SMUD currently expect

to submit the application for transportation cask certification and a revised 10 CFR Part 72 spent fuel storage application later this fall.

After receiving a revised license application from Nuclear Assurance Corporation's (NAC) for its NAC STC, dual purpose, storage and transport cask, NRC staff resumed its review for transportation certification. The revised application includes a design change to the cask basket. NAC expects to submit a revised application for storage after an initial staff review for transport.

#### 8. <u>Iransportation</u>

During this reporting period, NRC staff participated in two meetings with DOE and its contractors, to further discuss the design of three casks being developed for transport of spent fuel under the NWPA. These casks were described in the previous QPR. On July 13, 1993, General Atomics Company (GA) discussed Model Nos. GA-4 and GA-9 casks regarding design of the GA-4 fuel basket and the scale-model testing program. On July 15, 1993, Babcock & Wilcox Fuel Company (B&W) discussed the Model No. BR-100 rail/barge cask. The discussion covered changes in the basket and cask designs and the structural analysis.

#### 9. Research

In July 1993, NRC and CNWRA staff worked at the Peña Blanca natural analogue site near Chihuahua, Mexico. Most efforts were spent on geologic mapping and characterization of the site.

NRC staff continued its efforts to respond to Advisory Committee on Nuclear Waste's (ACNW's) comments on the draft NUREG-1406, "NRC High-Level Radioactive Waste Research Program Plan," which was presented to ACNW in May 1993. The revised draft has undergone extensive internal branch- and division-level review and will be distributed for office-level review during the next reporting period.

#### 10. Nuclear Waste Negotiator

NRC staff has continued its relationship with the Office of the U.S. Nuclear Waste Negotiator. Pursuant to a request from the Negotiator's staff, the NRC staff is currently making arrangements for an HLW program briefing for several representatives from Oregon at the conclusion of their tour of on-site storage facilities at Surry, Calvert Cliffs, and Oconee. The briefing is set for the next reporting period.

## **CONCLUSIONS:**

During this reporting period, NRC and DOE continued to make progress in addressing and working toward resolving issues at the staff level. There were a series of activities related to NRC concerns regarding weaknesses and deficiencies in the ESF design and design control process as identified in an August 20, 1993, letter to DOE. One NRC-DOE meeting was conducted, with participation from the State of Nevada and Nye County, Nevada, to discuss NRC

staff's concerns. As a result of these activities, the staff believes that DOE understands its concerns and that DOE will provide its response to NRC within the 90-day period requested by the staff.

# **COORDINATION:**

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

James M. Taylor Executive Director for Operations staff's concerns. As a result of these activities, the staff believes that DOE understands its concerns and that DOE will provide its response to NRC within the 90-day period requested by the staff.

## COORDINATION:

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

Original signed by
James M. Taylor
James M. Taylor
Executive Director
for Operations

## \* See previous concurrence

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# **COORDINATION:**

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

James M. Taylor Executive Director for Operations

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DEPARTMENT OF ENERGY'S CIVILIAN HIGH-LEVEL RADIOACTIVE WASTE

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