



1989 OCRWM Bulletin Compilation and Index

February 1990

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

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OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
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Introduction

The *OCRWM Bulletin* is published by the Department of Energy, Office of Civilian Radioactive Waste Management to provide current information about the national program for managing spent fuel and high-level radioactive waste. This document is a compilation of issues from the 1989 calendar year. A table of contents and one index have been provided to assist in finding information contained in this year's *Bulletins*. The pages have been numbered consecutively at the bottom for easy reference.

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OCRWM Bulletin

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January/February 1989

Fiscal Year 1990 Congressional Budget Request

The Department of Energy has presented a Budget Request to Congress for fiscal year (FY) 1990 in the amount of \$500 million, for the Nuclear Waste Fund (see figure on page 2). The FY 1989 Budget Request was \$369.8 million. The basis for the changes in the FY 1990 Congressional Budget Request for the Nuclear Waste Fund, as compared to the FY 1989 Budget, are as follows:

First Repository

An increase of \$114.9 million is requested to fund an intensified site characterization program at Yucca Mountain, Nevada. This includes the start of full-scale construction of the exploratory shaft facility; beginning of advanced conceptual design engineering studies for waste package and repository activities; and program expansion in quality assurance, regulatory, institutional and environmental areas.

Monitored Retrievable Storage

A decrease of \$5 million is planned due to the delayed submission of the Monitored Retrievable Storage Review Commission Report (see *OCRWM Bulletin*, October/November 1988), thereby delaying initiation of the survey and evaluation of potentially suitable sites.

Transportation and Systems Integration

An increase of \$6.4 million is requested for final design activities on Legal Weight Truck and Rail/Barge casks and associated tests; acceleration of technical development, data systems and test support and an increase in the level of effort associated with systems integration studies, analyses and requirements.

Program Management and Technical Support

An increase of \$7.8 million is requested for Repository Licensing Support System equipment purchases.

Nuclear Regulatory Commission (NRC) Fees

An increase of \$12.1 million is requested due to revised NRC estimates for FY 1988 - FY 1989 licensing activities conducted in accordance with the Nuclear Waste Policy Act, as amended, as described in the NRC budget request.

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Currently Scheduled OCRWM Short-Term Program Milestones

Feb. 1989	Submit Mission Plan Amendment II to Congress.
Mar. 1989	Submit Annual Report to Congress.

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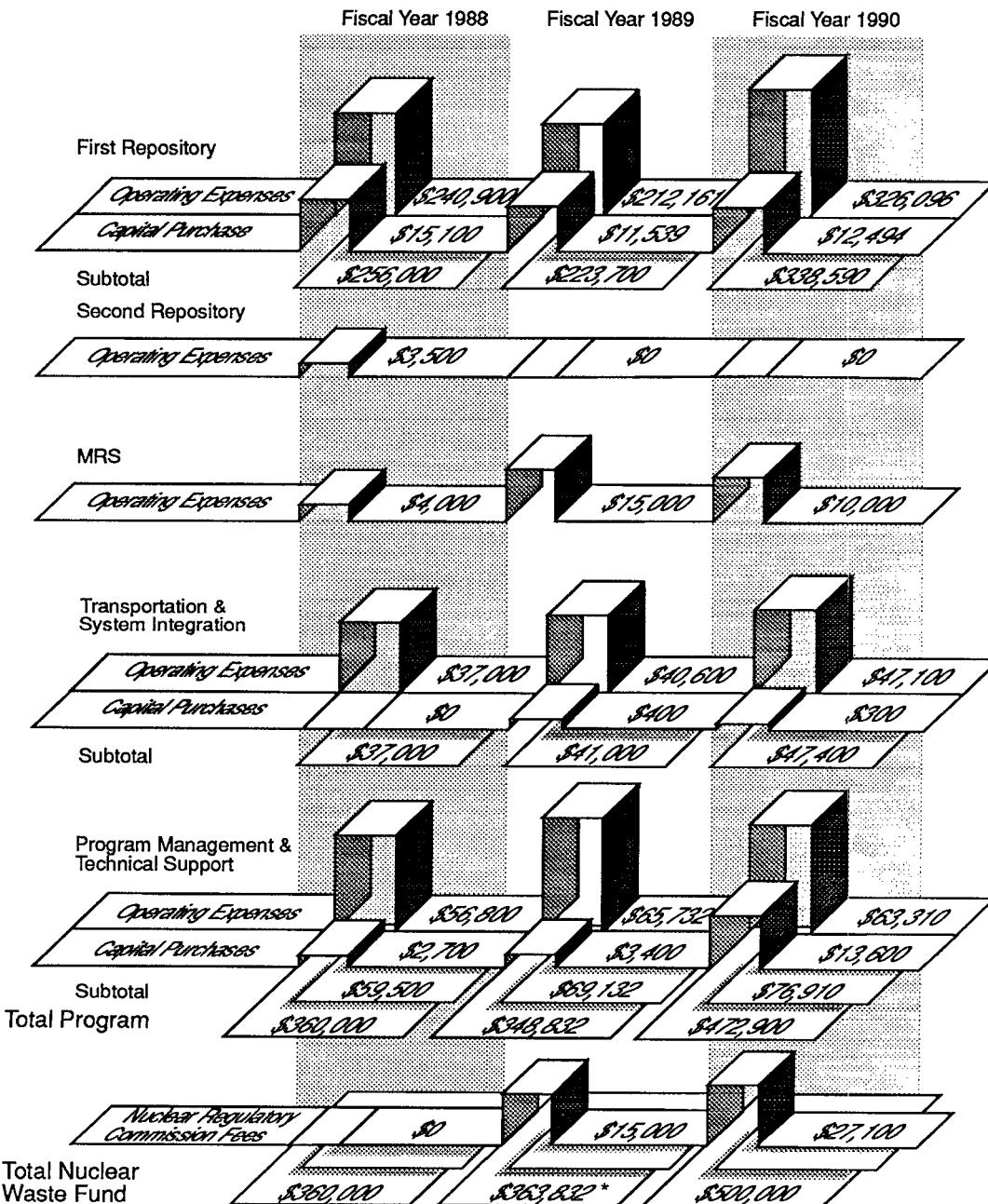
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Published by the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM)

For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

Department of Energy Fiscal Year 1990 Congressional Budget Request
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Nuclear Waste Fund
 (Dollars in Thousands)



* The FY 1989 appropriation (Public Law 100-371) for the Nuclear Waste Fund is \$369,832,000. In FY 1989, an appropriation transfer will be proposed to provide \$3,000,000 Budget Authority for the Nuclear Waste Technical Review Board and \$3,000,000 Budget Authority for the Office of the Negotiator.

Status of Dry Cask Storage Study Report

As one of the last steps in compliance with Section 5064 of the Nuclear Waste Policy Act (NWPA), as amended, DOE submitted the Final Version Dry Cask Storage Study to the NRC on Jan. 23, 1989, for their final review. Information copies were also provided to selected Congressional offices at that time. After receipt of the final NRC comments on the Final Version Dry Cask Storage Study, DOE will formally submit both the Final Version Dry Cask Storage Study and the final NRC comments to Congress, as required by the amended NWPA. Public distribution will also be made at that time.

The Dry Cask Storage Study is a report on the use of dry cask storage technologies at the sites of civilian nuclear power reactors. Section 5064 of the NWPA, as amended, directs the Secretary of Energy to conduct a study and evaluation of using these technologies for the temporary storage of spent nuclear fuel until such time as a permanent geologic repository has been constructed and licensed by the NRC.

In conducting this study, DOE was required to consider such factors as costs, effects on human health and the environment, effects on the costs and risks of transporting spent fuel to a Federal facility and the extent to which the Nuclear Waste Fund can and should be used to provide funds for at-reactor storage.

The report consists of three parts. Part I is divided into 7 chapters and an appendix. After the introductory chapter, Chapter 2 provides background information on the storage of spent fuel at reactor sites, including methods for increasing the capacity of existing spent fuel pools and methods of dry storage. It then briefly examines the licensing of at-reactor storage.

Chapter 3 presents estimates of the additional storage requirements and the basis for the estimate. It briefly examines the principal factors that affect the additional storage requirements, explains how the requirements were estimated and shows the geographic distribution of the requirements.

Chapter 4 discusses options for increasing at-reactor storage, namely, dry storage systems and in-pool rod consolidation. Each option is described together with a discussion of such topics as demonstration and applications, licensing status and estimated unit costs. The chapter ends with a review of various factors that might affect a utility's choice of a particular spent fuel storage option and a summary of utility responses to questions about their plans for providing additional storage capacity and their studies of available options.

Chapter 5 presents estimates of the potential aggregate costs for all U.S. reactors with additional storage requirements and discusses and examines

potential effects on the transportation system. Aggregate impacts on human health and the environment are not presented because the information needed to calculate these impacts are not available. However, it is possible to conclude from the information available for individual storage technologies and particular reactor sites that the aggregate impacts on human health and the environment will be so small as to be negligible.

Chapter 6 considers the use of the Nuclear Waste Fund for providing additional at-reactor storage and concludes that DOE is not authorized to provide direct financial support for storage at reactor sites.

Chapter 7 contains a summary and a conclusion that existing technologies are technically feasible, safe and environmentally acceptable options for storing spent fuel at the sites of civilian nuclear reactors until such time as a Federal facility is available to accept the spent fuel.

Part I ends with an appendix that presents additional information requested by the reviewers of the initial version of the report. Part II of the Dry Cask Storage Study Report is a comment response document that presents synopses of the comments received by DOE on the initial version of the report (see *OCRWM Bulletin*, August 1988) and DOE's responses. Part III reproduces each of the comment letters. ★

DOE Applies for Land Withdrawal at Yucca Mountain Site

DOE has filed an application with the Bureau of Land Management (BLM) to withdraw 4,255.5 acres of public land at the Yucca Mountain, Nevada, site. The purpose of the proposed withdrawal is (1) to prevent interference with site characterization activities, (2) to maintain the physical integrity of the subsurface environment from unplanned or unknown intrusions in order to ensure that scientific studies for site characterization are not invalidated and (3) to ensure that the public is formally notified regarding particularly sensitive areas in and around the Yucca Mountain site that could be adversely impacted by the conduct of mining activities.

On Jan. 13, 1989, the BLM published a proposed withdrawal notice and opportunity for a public meeting in the *Federal Register*. The notice closes the land for up to 2 years from surface entry, mining and mineral leasing. ★

Report on Transportation Coordination Group Meeting

The eighth meeting of the Transportation Coordination Group (TCG) was held on Dec. 7-8, 1988, in Kansas City, MO. Meeting attendees included representatives of DOE, contractors of DOE, various States (Nevada, Washington, Tennessee, Arkansas, Iowa and Illinois), local governments of Nevada, Indian Tribes, regional and national groups of States and Indian Tribes, utilities and the transportation industry.

On the first day of the meeting, DOE representatives provided an overview of recent developments in the OCRWM program and related transportation activities. In addition, reports were provided on the following subjects:

- Transportation studies of the Monitored Retrievable Storage (MRS) Review Commission

The Director of Transportation Analysis for the MRS Review Commission reviewed plans to evaluate existing transportation reports and determine the need for additional studies to support the Commission's review of the need for an MRS facility as part of the national nuclear waste management system. Also reviewed were the Commission's plans and schedule for holding public hearings to solicit input on issues and factors related to an MRS facility.

- Reauthorization of the Price-Anderson Act

A representative from DOE's Office of General Counsel presented an overview of the Price-Anderson Act, which was amended and reauthorized by Congress in August 1988. The Act provides an extensive system of financial protection, for all parties that may be liable, to compensate the public for damages associated with serious nuclear accidents related to certain

activities. Covered activities include the operation of waste management facilities developed under the Nuclear Waste Policy Act (NWPA) and the transportation of nuclear waste to such facilities. The Act establishes a limitation on liability at a level of approximately \$7 billion. In the event that liability for damages were to exceed the limit, Congress would be required to take whatever action is determined necessary to provide full compensation to the public.

Reports were also provided on transportation studies and activities being conducted by the regional and national groups under cooperative agreements with OCRWM. Presentations were made by representatives of the National Congress of American Indians, the National Conference of State Legislatures, the Western Interstate Energy Board (WIEB) and the Southern States' Energy Board.

The second day of the meeting was devoted to review of routing issues. Topics of discussion included an overview of routing regulations established through public rulemaking by the Department of Transportation (DOT) for the highway transportation of radioactive materials, DOT rail routing studies and a WIEB recommendation on a process for selecting highway routes for NWPA transportation. Panels of meeting participants also reviewed State experiences in the designation of preferred highway routes for radioactive materials transportation under DOT regulations and rail routing experience. Also, OCRWM discussed issues and options for addressing routing in OCRWM transportation planning.

Notice of the next TCG meeting, expected to be held in summer 1989, will be provided in a later edition of the *OCRWM Bulletin*. ★

Selected Events Calendar

Feb. 15	Yucca Mountain Project Update Meeting, 7:00-10:00 p.m., Beatty Community Center, Beatty, NV.*
Feb. 16	Yucca Mountain Project Update Meeting, 7:00-10:00 p.m., Aladdin Hotel, Las Vegas, NV.*
Feb. 21	Yucca Mountain Project Update Meeting, 7:00-10:00 p.m., Caliente Girls Training Center, Caliente, NV.*
Feb. 23	Yucca Mountain Project Update Meeting, 7:00-10:00 p.m., Reno-Sparks Convention Center, Reno, NV.*
Mar. 20	Site Characterization Plan Public Hearing, 2:00-5:00 p.m. and 7:00-10:00 p.m., Amargosa Valley Community Center, Amargosa, NV.*
Mar. 21	Site Characterization Plan Public Hearing, 2:00-5:00 p.m. and 7:00-10:00 p.m., Aladdin Hotel, Las Vegas, NV.*
Mar. 23	Site Characterization Plan Public Hearing, 2:00-5:00 p.m. and 7:00-10:00 p.m., Reno Hilton Hotel, Reno, NV.*

* For further information, contact Yucca Mountain Information Office, U.S. Department of Energy, (702) 553-2130 or Office of External Affairs, Nevada Operations Office, (702) 295-3521.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, Ext. 20436. Washington, DC, area residents should call 492-0436.

For information on meetings and events occurring between issues of the *OCRWM Bulletin* use OCRWM INFOLINK, an electronic bulletin board that can be accessed through a standard computer communications capability on (202) 586-9359. The *OCRWM Bulletin* is available through INFOLINK. ★

International High-Level Waste Management Conference Announced

A Conference Steering Committee, consisting of representatives from the University of Nevada, Las Vegas, the State of Nevada, OCRWM and professional and technical societies, has announced the establishment of an annual, high-level waste management conference set for Apr. 9-12, 1990, in Las Vegas, NV. The purpose of the first meeting is to create a national and international focal point and forum for the free and open exchange of scientific, engineering, geophysical and socio-economic information on high-level radioactive waste management. The conference will be dedicated to the presentation and exchange of information related to the management, storage, transportation and disposal of high-level radioactive waste, including the siting, design, licensing, construction and operation of a deep geologic repository. Not included in the scope of the conference are low-level radioactive waste, toxic and chemical wastes, transuranic waste and decommissioning of nuclear facilities.

The Howard R. Hughes College of Engineering at the University of Nevada, Las Vegas, will be the official, permanent host of the conference and will chair the Conference Steering Committee that establishes overall policy for the conference.

The involvement of interested professional and technical societies is actively encouraged. Key scientific and technical societies will serve as co-sponsors to assure the highest professionalism in the planning and conduct of the conference. The 1990 conference will be managed by the American Society of Civil Engineers, and the American Nuclear Society will be responsible for coordinating the technical program.

Conference organizers will be soliciting scientific and technical papers in the spring of 1989 on all aspects of high-level radioactive waste management for presentation at the conference. ☆

DOE Submits Sixth Annual Implementation Plan to Congress for Deployment of Federal Interim Storage Facilities for Commercial Spent Nuclear Fuel

Sections 135 and 136 of the Nuclear Waste Policy Act of 1982 (NWPA) assigned to the Department of Energy the responsibility to provide Federal Interim Storage (FIS) of civilian spent nuclear fuel under certain limited circumstances, including the following:

- The Nuclear Regulatory Commission must determine that the owner and generator of spent fuel cannot reasonably provide the required storage capacity and is diligently pursuing licensed alternatives to FIS.
- The Secretary of Energy shall provide not more than 1,900 metric tons of uranium of storage capacity, when the need is established, through the use of available storage capacity at facilities owned by the government on Jan. 7, 1983, acquisition of spent fuel storage equipment or construction of storage capacity at reactor sites.
- DOE's authority to enter in FIS contracts expires after Jan. 1, 1990.

The NWPA further requires DOE to annually prepare and submit to Congress a report specifying DOE's plans for providing any FIS capacity that is required and to publish the fee schedule and its calculation in the *Federal Register* (the *Federal Register* notice concerning the fee schedule for 1989 was published on Dec. 7, 1988). The sixth and final annual report "Implementation Plan for Deployment of Federal Interim Storage" was submitted to Congress on Dec. 30, 1988.

No utility has applied for FIS to date. Essentially identical FIS implementation plans have been published for the past five years. The only significant changes that have been made this year are projections of additional at-reactor storage requirements. The latest projections are lower than those reported in last year's Implementation Plan, primarily because DOE's No New Order Case was chosen as the basis for this year's projections, while previous projections were based on utility estimates. ☆

DOE Issues Environmental Planning Documents

Environmental Regulatory Compliance Plan (ERCP) for Site Characterization, Revision 1

The ERCP for site characterization of the Yucca Mountain, Nevada, site is one aspect of implementing DOE policy to conduct its operations in an environmentally safe and sound manner and in compliance with applicable environmental statutes, regulations and standards.

The following information is contained in the ERCP:

- Federal environmental laws and regulations, Executive Orders and DOE Orders which may be applicable

to the characterization of the Yucca Mountain site,

- An identification and description of State and local environmental laws and regulations for which Federal law mandates compliance,
- A list of other related State and local laws,
- A description of field activities planned for site characterization that may trigger applicable Federal, State and local laws and regulations,
- Federal, State and local agencies that have responsibilities for assuring compliance with the above,

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DOE Issues Environmental Planning Documents

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- A description of the processes for complying with all applicable Federal environmental laws, regulations and Executive Orders,
- A description of the process for addressing concerns evidenced by related State and local statutes and regulations to the extent practicable, but not inconsistent with DOE's responsibilities under the Nuclear Waste Policy Act, as amended, or other Federal laws,
- A description of a computer based permit tracking system,
- Identification of the organizations within DOE that are responsible for obtaining permits or approvals in a timely manner, and
- A description of the procedures by which DOE will monitor changes to existing or new laws, regulations, DOE Orders and Executive Orders that may affect the conduct of site characterization at the Yucca Mountain site.

The ERCP is being developed in two phases. The first phase represents DOE's current understanding of environmental regulatory requirements for site characterization at Yucca Mountain. This first phase ERCP will be updated and re-released after the hearings to be held on the Site Characterization Plan (see *OCRWM Bulletin*, December 1988 and the "Selected Events Calendar" on page 4 of this Bulletin).

The second phase will identify the environmental regulatory requirements for repository construction and operation and will be coordinated with the analysis developed for the Environmental Impact Statement that will accompany any recommendation by the Secretary of Energy to the President to approve a site for a repository. After consultation with appropriate Federal and State agencies, the ERCP will be updated to reflect the results of these consultations.

Environmental Monitoring and Mitigation Plan (EMMP) for Site Characterization, Revision 2

Section 113(a) of the Nuclear Waste Policy Act of 1982 requires that DOE conduct its site characterization activities in a manner that minimizes any significant adverse environmental impacts to the maximum extent practicable. To document its compliance with the Section 113(a) requirement, DOE has developed an EMMP.

After summarizing the site characterization program, the EMMP identifies potentially significant adverse impacts to be monitored during characterization of the Yucca Mountain site. This is followed by a general discussion of proposed monitoring plans. The variables to be monitored, the techniques for sampling and data collection and measurement are presented in Environmental Field Activity Plans.

After the general discussion, the EMMP delineates the ways in which data generated by monitoring activities will be interpreted and used. The criteria for determining the need for, and extent of, mitigative action are presented as well as the procedures to be followed should those criteria be attained or exceeded. DOE entities responsible for specific steps in the mitigation process are identified and their responsibilities in the reporting process are defined.

The final chapter of the EMMP outlines procedures for modifying the EMMP once site characterization has begun. As site characterization activities are conducted, it may be necessary to modify the EMMP acquisition of new information pertaining to the site or information obtained from the monitoring program itself.

Periodic review of each monitoring program will be conducted to ensure the adequacy of the techniques used and to evaluate the effectiveness of any measures used to minimize environmental impacts. Periodic monitoring reports will be prepared during site characterization to provide a feedback mechanism for establishing or modifying individual monitoring programs. ★

OCRWM Publications Issued in 1988

DOE/RW-0153 OCRWM Bulletin (December 1987 and January 1988 Combined)
 DOE/RW-0154 OCRWM Bulletin (July)
 DOE/RW-0155 OCRWM Bulletin (February)
 DOE/RW-0156 OCRWM Bulletin (March and April Combined)
 DOE/RW-0157 OCRWM Bulletin (August)
 DOE/RW-0158 OCRWM Bulletin (May and June Combined)
 DOE/RW-0159 OCRWM Bulletin (September)
 DOE/RW-0160 Site Characterization Plan Consultation Draft: Yucca Mountain Site, Nevada
 DOE/RW-0161 Site Characterization Plan Consultation Draft Overview: Yucca Mountain Site, Nevada
 DOE/RW-0162 Site Characterization Plan Consultation Draft: Deaf Smith County, Texas
 DOE/RW-0163 Site Characterization Plan Consultation Draft Overview: Deaf Smith County, Texas
 DOE/RW-0164 Site Characterization Plan Consultation Draft: Hanford Site, Washington
 DOE/RW-0165 Site Characterization Plan Consultation Draft Overview: Hanford Site, Washington
 DOE/RW-0166 Additional Information on Monitored Retrievable Storage
 DOE/RW-0167 OCRWM Backgrounder: Radiation and High-Level Waste
 DOE/RW-0168 OCRWM Backgrounder: Geographic Distribution of High-Level Waste
 DOE/RW-0169 OCRWM Backgrounder: Health and Safety Protection in the Management of the Nation's High-Level Waste
 DOE/RW-0170 OCRWM Backgrounder: Multiple Barrier System of Geographic Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste
 DOE/RW-0171 Opportunities for Participation in the OCRWM Transportation Program
 DOE/RW-0172 Environmental Monitoring and Mitigation Plan (EMMP, Washington State)
 DOE/RW-0173 Environmental Regulatory Compliance Plan (ERCP, Washington State)
 DOE/RW-0174 Socioeconomic Monitoring and Mitigation Plan (SMMP, Washington State)
 DOE/RW-0175 Environmental Field Activity Plan (EFAP, Washington State)
 DOE/RW-0176 Environmental Monitoring and Mitigation Plan (EMMP, Nevada)
 DOE/RW-0177 Environmental Regulatory Compliance Plan (ERCP, Nevada)
 DOE/RW-0178 Environmental Field Activity Plan (EFAP, Nevada)
 DOE/RW-0179 Socioeconomic Monitoring and Mitigation Plan (SMMP, Nevada)
 DOE/RW-0180 Environmental Monitoring and Mitigation Plan (EMMP, Texas)
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 DOE/RW-0182 Environmental Field Activity Plan (EFAP, Texas)
 DOE/RW-0183 Socioeconomic Monitoring and Mitigation Plan (SMMP, Texas)
 DOE/RW-0184 Characteristics of Spent Fuel, High-Level Waste, and Other Radioactive Wastes Which May Require Long-Term Isolation
 DOE/RW-0185 Quality Assurance Plan for Transportation Cask Systems Development Program
 DOE/RW-0186 Implementation Plan for Deployment of Federal Interim Storage Facilities for Commercial Spent Nuclear Fuel
 DOE/RW-0187 Draft 1988 Mission Plan Amendment
 DOE/RW-0188 Quarterly Report on Program Cost and Schedule (First Quarter Ending December 1987)
 DOE/RW-0188-1 Quarterly Report on Program Cost and Schedule (Second Quarter Ending March 1988)
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 DOE/RW-0189 OCRWM Annual Report to Congress FY 1987
 DOE/RW-0190 Nuclear Waste Fund Cash Management Procedures
 DOE/RW-0191 Annual Capacity Report
 DOE/RW-0192 OECD/NEA - OCRWM International Brochure
 DOE/RW-0193 OCRWM Transporation Program Reference
 DOE/RW-0194 OCRWM Records Management Policies and Requirements
 DOE/RW-0195 Managing the Nation's Nuclear Waste
 DOE/RW-0196 Dry Cask Storage Study
 DOE/RW-0197 Quality Assurance Administration Procedures (Loose-Leaf Cover and Spine Only)
 DOE/RW-0198 Site Characterization Plan Overview
 DOE/RW-0199 Site Characterization Plan (Nine-Volume Set)
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OCRWM Bulletin

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Office of Civilian Radioactive Waste Management

Acting Director, C. E. Kay Mr/Ap:7; O/N:1

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Deputy Director, F. Peters, O/N:1

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Associate Director, T. Isaacs, Mr/Ap:7

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OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

March 1989

Excerpts from Recent Testimony by Samuel Rousso, Acting Director, OCRWM

On Mar. 13, 1989, Acting Director Samuel Rousso made a presentation concerning the OCRWM fiscal year (FY) 1990 Budget to the Committee on Appropriations, Subcommittee on Energy and Water Development, of the U.S. House of Representatives. Excerpts from his presentation follow:

Budget Overview

"The FY 1990 budget request for the Civilian Radioactive Waste Management program to be derived from the Nuclear

Waste Fund established under the Nuclear Waste Policy Act of 1982 (NWPA), as amended, is \$500 million as compared to \$443 million available in FY 1989 (see table on page 2) (i.e. \$364 million appropriated in FY 1989 plus \$79 million held back in FY 1987 appropriation and released in December 1988). The increase for FY 1990 over FY 1989 ...is primarily due to the intensified site characterization program at the candidate repository site at Yucca Mountain, Nevada, including start of construction of the exploratory shaft facility.

(continued on page 2)

Nuclear Regulatory Commission Comments on "Final Version Dry Cask Storage Study"

As one of the last steps in compliance with Section 5064 of the Nuclear Waste Policy Act, as amended, DOE submitted the Final Version Dry Cask Storage Study to the Nuclear Regulatory Commission (NRC) on Jan. 23, 1989, for their final review (see *OCRWM Bulletin*, January/February 1989).

Excerpts of the NRC response from Chairman Lando W. Zech, Jr. follow:

"...We have reviewed the final text and find that our Nov. 18, 1988, comments on the draft version of the study have been accommodated. Moreover, we believe that the final version of the study remains a well-balanced presentation of the spent fuel storage requirements, the in-pool consolidated fuel storage and dry storage technologies available to address those requirements in at-reactor storage and the impacts and costs of such storage." ☆

Secretary of Energy Watkins Extends Comment Period for Site Characterization Plan

In response to a recommendation from the Governor of Nevada Bob Miller, Secretary of Energy James D. Watkins has extended the comment period for the Site Characterization Plan for the Yucca Mountain, NV, site from Apr. 14, 1989, to June 1, 1989. The full text of Secretary Watkins' response to all of Governor Miller's recommendations is attached to this Bulletin.

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For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

Department of Energy Fiscal Year 1990 Congressional Budget Request
 (continued from page 1)

Nuclear Waste Fund
 (Dollars in Thousands)

Nuclear Waste Fund	FY 1988	FY 1989	FY 1990 Request
First Repository			
Operating Expenses	\$204,900	\$212,161	\$326,096
Capital Purchase	15,100	11,539	12,494
Subtotal	256,000	223,700	338,590
Second Repository			
Operating Expenses	3,500	0	0
Monitored Retrievable Storage			
Operating Expenses	4,000	15,000	10,000
Transportation and Systems Integration			
Operating Expenses	37,000	40,600	47,100
Capital Purchases	0	400	300
Subtotal	37,000	41,000	47,400
Program Management and Technical Support			
Operating Expenses	56,800	65,732	63,310
Capital Purchases	2,700	3,400	13,600
Subtotal	59,500	69,132	76,910
Total Program	360,000	348,832	472,900
Nuclear Regulatory Commission Fees	0	15,000	27,100
Total Nuclear Waste Fund	\$360,000	\$363,832*	\$500,000

* The FY 1989 appropriation (Public Law 100-371) for the Nuclear Waste Fund is \$369,832,000. In FY 1989, \$3,000,000 Budget Authority for the Nuclear Waste Technical Review Board and \$3,000,000 Budget Authority for the Office of the Negotiator will be derived from the Nuclear Waste Fund appropriation.

Excerpts from Recent Testimony
by Samuel Rousso, Acting Director, OCRWM
(continued from page 2)

Nuclear Waste Fund Program

"The three major components of the integrated waste management system being developed by DOE under the Nuclear Waste Fund are a geologic repository, a monitored retrievable storage facility and a transportation system. A preliminary integrated schedule is contained in the accompanying figure and the following is a discussion of these components....

First Repository

"Under the NWPA, as amended, DOE is directed to characterize only the Yucca Mountain site in Nevada to determine its suitability for the first repository....

"The FY 1990 budget request for activities associated with the first repository is \$339 million, as compared to \$224 million in FY 1989 (including capital equipment)....The increase in FY 1990 over FY 1989 is needed to fund an intensified site characterization program at Yucca Mountain, including the start of construction of the exploratory shaft facility and to provide for expanded quality assurance, regulatory, institutional and environmental programs....

"In carrying out repository studies in FY 1990, a number of important activities are planned. We will begin construction of the exploratory shaft facility, subject to Nuclear Regulatory Commission (NRC) acceptance of the DOE quality assurance program and receipt of the necessary permits from the State. We will be drilling geologic and hydrologic boreholes and conducting tests in them. We will be trenching, carrying out geophysical studies and volcanic age-dating studies and performing other critical data collection activities in FY 1990 as described in the Site Characterization Plan. Engineering

activities will include continuing review and updating of the technical data base; updating systems requirements and systems description documents for advanced conceptual design of a repository; continuing waste package, seals and components testing; and the beginning of repository facility and waste package advanced conceptual design. Laboratory tests will continue on rock, thermal and mechanical properties and data bases will be updated....

"During FY 1990, we will continue financial assistance to the State of Nevada and local governments for oversight consistent with Congressional direction provided in the FY 1989 Energy and Water Development Appropriations Act, and will make impact assistance payments, as appropriate....

Second Repository

"In accordance with the NWPA, as amended, the program to site a second repository was terminated in FY 1988....

Monitored Retrievable Storage (MRS)

"The NWPA, as amended, authorizes an MRS facility as an integral part of the overall waste management system and places certain conditions on its siting, construction and operation....The FY 1990 request for an MRS facility is \$10 million, compared to \$15 million in FY 1989. The decrease from FY 1989 to FY 1990 is primarily due to the delayed submission of the MRS Review Commission Report, thereby delaying initiation by DOE of the survey and evaluation of suitable sites, and the fact that no funds are requested for Benefits Payments.

"In determining the optimal configuration for the waste management system, DOE currently is conducting a series of systems studies that are examining a wide range of scenarios for

MRS development and operation... The results of the systems studies will be presented to the MRS Review Commission and will be used by DOE in determining the roles and functions to be assigned to the MRS facility and to the repository....

Transportation and Systems Integration

"The FY 1990 request for activities related to transportation and systems integration is \$47.4 million (including capital equipment) compared to \$41 million in FY 1989.... The increase over FY 1989 is due primarily to final design activities and associated tests on transport casks, the commencement of preliminary design and testing on other prototype transportation casks, acceleration of technical development, data systems and test support and an increased level of effort associated with systems integration studies, analyses and requirements....

Program Management and Technical Support

"For program management and technical support, the FY 1990 request is \$76.9 million (including capital equipment), compared to \$69.1 million in FY 1989.... The increase over FY 1989 is due primarily to equipment purchases for the Licensing Support System (an automated information storage and retrieval system that will assist DOE and the NRC in the licensing of a repository for the disposal of spent nuclear fuel and high-level radioactive waste)....

Nuclear Regulatory Commission Fees

"OCRWM has established a Memorandum of Understanding with the NRC to provide from the Nuclear Waste Fund payment to NRC for licensing-

(continued on page 5)

DOE Completes Design Acceptability Analysis for Exploratory Shaft Facility (ESF) Title I and Evaluation of Alternative ESF Locations

As a result of a series of meetings held in October and November 1988, DOE undertook a Technical Assessment Review to improve the confidence of Nuclear Regulatory Commission staff regarding the acceptability of the Exploratory Shaft Facility (ESF) Title I design for use in the review of the Site Characterization Plan (SCP). In addition, DOE also agreed to provide comparative evaluations of alternate exploratory shaft locations with respect to differences in waste isolation potential.

The ESF Title I Design was assessed by the Technical Assessment Review team with respect to design criteria related to three major concerns: (1) maintaining the long-term waste isolation capability of the site, (2) not compromising the ability to characterize the site and (3) obtaining data that are representative of site behavior. These concerns are referred to here as Nuclear Regulatory Commission concerns 1, 2 and 3.

Three subcommittees were formed to accomplish different parts of the TAR. Subcommittee 1 developed design criteria and used the criteria to assess the adequacy of ESF Title I Design. Subcommittee 2 assessed the appropriateness of data used in Title I Design and how uncertainties were considered. Subcommittee 3 conducted a comparative evaluation of exploratory shaft locations.

ESF Title I Design Acceptability Analysis

Subcommittee 1 developed approximately 300 design acceptability analysis criteria to address related requirements of 10 Code of Federal Regulations Part 60. They then compared these criteria to the performance criteria, constraints and assumptions in the ESF Title I Design and

found that the majority of the design criteria were explicitly or partially addressed. They concluded that those criteria that were not treated adequately can be addressed by Title II Design activities or in the associated preparatory activities.

Subcommittee 2 reviewed the use of data and parameter values in reports that document the design and performance analyses that address Nuclear Regulatory Commission concerns 1, 2 or 3. More than 50 reviews were made of reports which were used in a prominent manner in Site Characterization Plan Section 8.4 (Planned Site Preparation Activities), in support of Title I Design. Several revisions to the SCP were recommended, with an indication that they can be appropriately addressed in semiannual progress reports. A number of recommendations were also made for additional analyses during, or in association with, Title II Design.

In general, and on the basis of the assessments and evaluations of Subcommittees 1 and 2 as documented in the Review Record Memorandum issued on Feb. 3, 1989, DOE concluded that the ESF Title I Design is acceptable with respect to addressing the applicable requirements of 10 Code of Federal Regulations Part 60, given that the design is preliminary and that relevant Title II design packages will be completed before the start of ESF related construction. As a result, DOE further concluded that there is adequate confidence that the design is suitable for its intended purpose and that the design acceptability analysis recommendations are unlikely to result in significant changes to the ESF design schedule, configuration or technical approach for site characterization activities as described in the SCP.

Evaluation of Exploratory Shaft Locations

The comparative evaluation of alternative exploratory shaft locations involved three tasks. In the first task, the five alternative exploratory shaft locations that were originally considered by DOE were compared with respect to waste isolation potential. Based on their analyses, Subcommittee 3 concluded that, for currently expected conditions, differences in waste isolation potential between the alternative shaft locations are not significant because the conditions at all locations would allow the postclosure performance requirements to be met by a wide margin.

In the second task, the Subcommittee concluded that the presence of a shaft at any of the locations considered would not be expected to significantly affect the waste isolation capability of an associated repository. The third task was to compare the waste isolation potential of the five alternative shaft locations to that of the overall site. An assessment suggests that the current shaft location may have a lower potential for isolating waste than other possible shaft locations and may, therefore, be the most suited for acquisition of data that will allow for a conservative representation of overall site properties.

In view of the above evaluations, Subcommittee 3 concluded that consideration of waste isolation potential in the shaft locations selection process would not have changed the choice of the current location and may have strengthened the scientific basis for choosing the current location. ☆

Excerpts from Recent Testimony
by Samuel Rousso, Acting Director, OCRWM
(continued from page 3)

related activities conducted in accordance with the NWPA, as amended. The FY 1990 DOE Nuclear Waste Fund budget request is for \$27.1 million. This request is for payment to NRC for activities carried out in FY 1989 and prior years. Beginning in FY 1990, requests for funds for NRC activities will be included in NRC's budget request, but the funds will still be derived from the Nuclear Waste Fund.

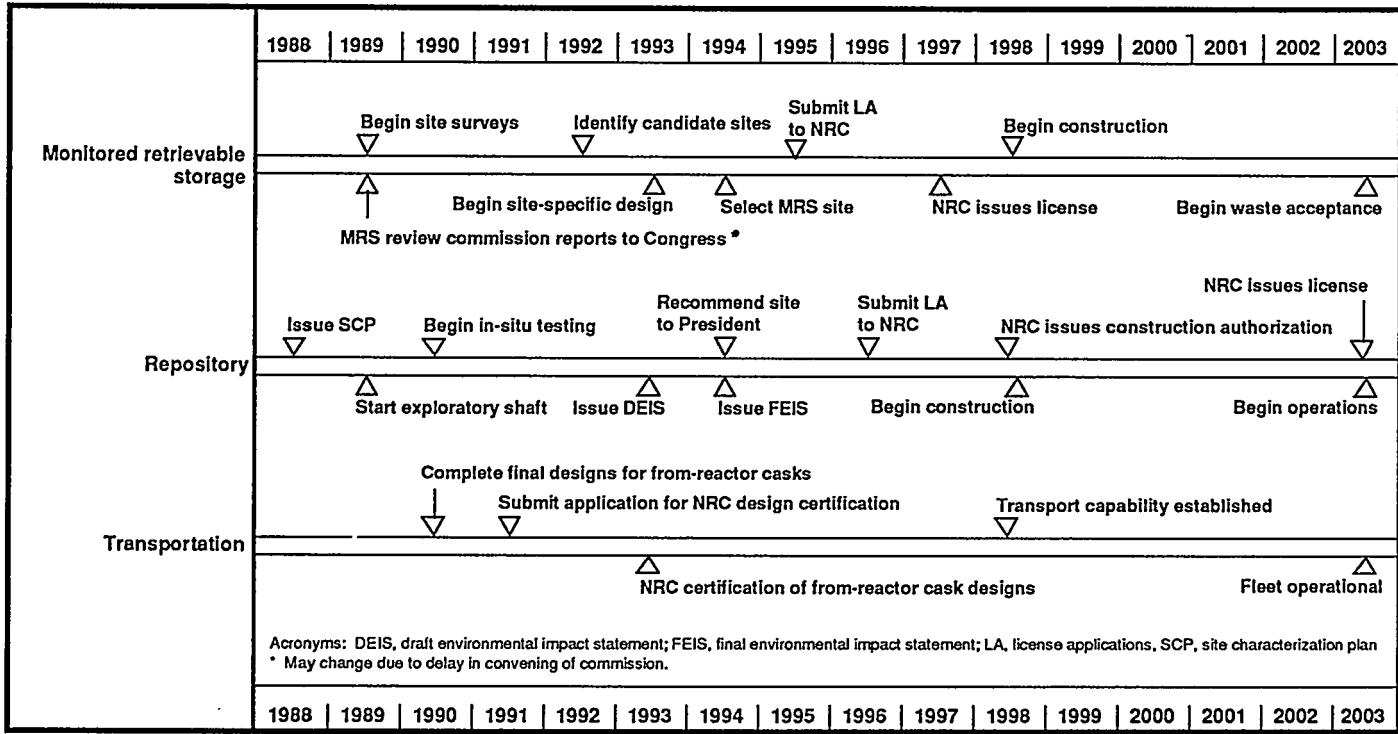
Nuclear Waste Fund

"The Nuclear Waste Fund, established by the NWPA to collect fees from generators and owners of spent nuclear fuel and high-level radioactive waste, is reviewed each year to assess the adequacy of the 1 mill per kilowatt hour fee established by the law. DOE has been conducting its total systems life-cycle costs analysis and assessing the adequacy of the current fee to reflect changes mandated in the 1987 amendments. We expect to complete the reports and issue our findings shortly. However, we can say now that preliminary conclusions indicate that no adjustment to the fee is necessary at this time...."

Civilian Radioactive Waste R&D

"The goal of the Civilian Radioactive Waste R&D program is to encourage and expedite the development and demonstration of technologies for the addition of new on-site storage capacity for spent nuclear fuel to permit the orderly continuation of electricity generation operations by the utilities. The FY 1990 request is \$1 million compared to \$2.5 million in FY 1989. This decrease is due to reduced funding of most generic R&D studies and the nearly completed cooperative agreements with utilities..." ★

Preliminary schedule for the development of the waste-management system.



Notice of Determination of Floodplain/Wetlands Involvement For Site Characterization at Yucca Mountain

DOE published a notice in the *Federal Register* on Feb. 3, 1989, regarding floodplain/wetlands involvement and opportunity for comment on the construction of facilities to support site characterization activities at Yucca Mountain, NV.

Before a decision is made concerning the suitability of the candidate site for a geologic repository at Yucca Mountain, the geology and hydrology of the site must be characterized to ensure that site is capable of isolating the waste and meeting applicable regulatory requirements. Characterization of the Yucca Mountain site will involve the construction of an Exploratory Shaft Facility (ESF), which requires excavation of two large shafts (out of the floodplain), and the construction of several surface support facilities within the floodplain. DOE expects to begin some of the proposed actions in the floodplain in May 1989.

DOE is considering several measures, including re-routing portions of several wash segments to avoid adverse effects related to the location of surface facilities in the floodplain. In floodplain areas remote from ESF activity, trenches and drill and core holes will be necessary to

support site characterization activities such as ground water recharge investigations and subsurface formation studies. The specific locations of the proposed actions can be found in the Site Characterization Plan (SCP) for the Yucca Mountain Site in Section 6.2.4 on page 6-121ff. The SCP was issued for public review and comment on Dec. 28, 1988 (see *OCRWM Bulletin*, December 1988).

Comments on the proposed floodplain action may be addressed to Deborah Valentine, Department of Energy, Office of Civilian Radioactive Waste Management, Mail Stop 7F-070, RW-333, 1000 Independence Avenue, S.W., Washington, DC 20585, (202) 586-5559. Comments received will be considered before making a decision on the proposed action.

For further information contact:

- Ms. Deborah Valentine at the above address.
- Mr. Robert Kaiser, Yucca Mountain Project Office, Department of Energy, 101 Convention Center Drive, Las Vegas, Nevada 89109, (702) 794-7954. ★

Selected Events Calendar

March 21 Site Characterization Plan Public Hearing, 2:00-5:00 p.m. and 7:00-10:00 p.m., Aladdin Hotel, Las Vegas, NV.*

March 23 Site Characterization Plan Public Hearing, 2:00-5:00 p.m. and 7:00-10:00 p.m., Reno Hilton Hotel, Reno, NV.*

April 3-5 American Society for Quality Control, Tropicana Hotel, Las Vegas, NV. Contact Dale Hedges at (702) 735-7136 or (703) 875-8630.

* For further information, contact Yucca Mountain Information Office, U.S. Department of Energy, (702) 553-2130 or Office of External Affairs, Nevada Operations Office, Las Vegas, NV, (702) 295-3521.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436. ★

"Engineered for Safety" Videotape Available

"Engineered for Safety," a new 25-minute videotape produced for DOE by Sandia National Laboratories, is available through Battelle's Office of Transportation Systems and Planning. The video explains the process for designing, obtaining design certification from the Nuclear Regulatory Commission and producing and testing casks for the safe transport of spent nuclear fuel.

Background information is presented on spent fuel, how it is generated and why it must be moved from storage pools at nuclear powerplants for disposal. While originally intended as an update for people familiar with the OCRWM program, the video is sufficiently comprehensive to make it understandable to any group interested in learning about cask design and transportation of spent nuclear fuel.

All major aspects of cask development are discussed in the video, including the process for establishing cask standards, use of computer analysis and computer-aided design and scale model and full-size cask testing. Footage of drop tests, fire tests and crash tests gives the viewer a good idea of the severity of testing and the consideration of safety in cask design. Computer simulated testing is explained as an alternative to destructive testing of casks.

Copies of "Engineered for Safety" can be obtained for short-term use or library acquisition by contacting: Battelle, Office of Transportation Systems and Planning, 505 King Avenue, Columbus, OH 43201, (614) 424-3277. ★

Nuclear Waste Technical Review Board Appointed

The Nuclear Waste Policy Act, as amended, created a Nuclear Waste Technical Review Board that shall be an independent establishment within the executive branch. This Board is to consist of 11 members, each of whom is eminent in a field of science or engineering and selected solely on the basis of established records of distinguished service. The membership of the Board is to be representative of the broad range of scientific and engineering disciplines related to nuclear waste activities.

On Jan. 18, 1989, President Reagan appointed the following eight individuals to be members of the Board.

For a term of four years expiring Apr. 19, 1992:

DON U. DEERE of Florida. Upon appointment he will be designated Chairman. Dr. Deere is currently an international consultant and an Adjunct Professor of Civil Engineering and Geology at the University of Florida in Gainesville, FL.

CLARENCE R. ALLEN of California. Since 1964, Dr. Allen has been a

Professor of Geology and Geophysics for the Seismological Laboratory at the California Institute of Technology in Pasadena, CA.

JOHN E. CANTLON of Michigan. Since 1975, Dr. Cantlon has been Vice President for Research and Graduate Studies and Dean of the Graduate School at Michigan State University in East Lansing, MI.

MELVIN W. CARTER of Georgia. Dr. Carter is Professor Emeritus at the Georgia Institute of Technology in Atlanta, GA.

DONALD LANGMUIR of Colorado. Since 1978, Dr. Langmuir has been a Professor of Geochemistry in the Department of Chemistry and Geochemistry at the Colorado School of Mines in Golden, CO.

For a term of two years expiring Apr. 19, 1990:

D. WARNER NORTH of California. Since 1977, Dr. North has been a consultant with Decision Focus, Inc., in Los Altos, CA.

DENNIS L. PRICE of Virginia. Since 1983, Dr. Price has been a Professor in the Department of Industrial Engineering and Operations Research and Director of the Safety Projects Office for Virginia Polytechnic Institute and State University in Blacksburg, VA.

ELLIS D. VERINK of Florida. Since 1986, Dr. Verink has been a Professor of Metallurgy in the Materials Science and Engineering Department of the University of Florida in Gainesville, FL.

The functions of the Board are to evaluate the technical and scientific validity of activities undertaken by DOE, including site characterization activities and activities relating to the packaging or transportation of high-level radioactive waste or spent nuclear fuel. The Board shall report not less than 2 times per year to Congress and the Secretary of Energy its findings, conclusions and recommendations. The Board shall cease to exist not later than 1 year after the date on which DOE begins disposal of high-level radioactive waste or spent nuclear fuel in a repository. ★

New Publications and Documents

Final Version Dry Cask Storage Study, DOE/RW-0220, February 1989.

This report was prepared in response to section 5064 of the Nuclear Waste Policy Amendments Act of 1987, which directs the Secretary of Energy to conduct a study of the use of dry cask storage technology for storing spent fuel at the sites of civilian nuclear reactors until a geologic repository is available. The initial version of this study was distributed for review and comment by the Nuclear Regulatory Commission, State and local governments, utilities, other interested parties and the public. It was then revised as appropriate in response to the comments received.

Copies of this publication are available upon request from the U.S. Department of Energy, Office of Civilian Radioactive Waste Management, RW-40, 1000 Independence Avenue, SW, Washington, DC 20585.

Status of Study on Fuel Burnup Credit

Requirements for shipping commercially generated spent light water reactor fuel to receiving facilities at the turn of the century will differ considerably from those existing in the United States at the present time. The number of future shipments to a repository represents a significant increase over shipments currently being made. For example, a transport rate of 3,000 metric tons of uranium per year is projected as compared to a total movement of 6,000 metric tons of uranium during the last 25 years in the United States.

Current practice in the United States in design of spent fuel casks does not account for the reduced reactivity of spent fuel that occurs due to changes in the fuel during power production in a nuclear reactor. Reactivity refers to the ability to sustain a nuclear chain reaction, thereby, producing power to the nuclear reactor. The changes in the fuel which results in reduced spent fuel reactivity is a phenomenon called burnup. Spent fuel casks presently certified by the Nuclear Regulatory Commission (NRC) are designed for relatively short cooling times (about 150 days). These casks can carry fuel with high gamma radiation emissions and high internal heat generation. OCRWM casks, on the other

hand, will be designed for long cooling times (about 10 years). This longer cooled spent fuel exhibits significantly lower gamma radiation emissions and lower heat generation.

Casks designed for 10 years cooled fuel require less heavy metal for gamma shielding, allowing a higher payload to be carried. Lower internal heat generation reduces the heat transfer limitations, allowing more fuel to be loaded into each cask. In the past, cask capacities were constrained by shielding and heat transfer limitations. With longer cooled fuel, burnup or reactivity has become an important constraining factor. This raises burnup credit, i.e. accounting for the reduced reactivity of spent fuel, as a design option being pursued by OCRWM to further increase cask capacities by designing to actual conditions of reactivity.

Consideration of burnup credit requires no changes in applicable regulations or performance requirements related to cask safety design. The impact of burnup credit on safety functions is summarized below.

Increased cask capacity has a significant effect on total life cycle cost for casks

used in the OCRWM transportation program (estimated between \$300 million and \$900 million over the system lifetime). The savings result from fewer shipments. In addition to cost savings, there are also health and safety benefits derived from fewer shipments. Fewer shipments result in decreased worker exposure in package preparation and decreased public exposure. Using standard fuel management techniques, it has been estimated that full utilization of burnup credit casks can reduce the number of shipments by as much as 50 percent for both rail and truck transportation.

DOE is continuing studies to develop methods of implementing fuel burnup credit for design and use of spent fuel casks. DOE continues to meet with the utilities, the NRC, cask contractors and others to discuss regulatory considerations and the technical merits and safety issues of fuel burnup credit. For further information about fuel burnup credit, contact William H. Lake, RW-323, Department of Energy, Office of Civilian Radioactive Waste Management, 1000 Independence Avenue, SW, Washington, DC 20585. ☆

Safety Function	Changes Required In Current Design Guides Or Procedures	Changes In Design Considerations*
Containment	None	Higher payload
Shielding	None	Greater radiation source, but self-shielding would tend to mitigate effects
Criticality Control	Spent (not fresh) fuel assumptions	Different physics calculations and design approach
Heat Transfer	None	Higher density packing

* Design will conform to NRC regulations which would not change for casks designed for burnup credit.

Awards Made in Radioactive Waste Management Fellowship Program

The OCRWM Radioactive Waste Management Fellowship Program was created to help meet staffing needs for trained scientists and engineers to implement the Nuclear Waste Policy Act of 1982. The program supports highly capable students interested in pursuing graduate study in one or more of the following academic areas related to the management of spent nuclear fuel and high-level radioactive waste: earth sciences, engineering, materials science, transportation, chemistry and radiation sciences. It also encourages universities to support and improve research activities and academic programs related to the management of spent nuclear fuel and high-level radioactive waste. Eighteen universities are currently participating in the program, and 11 have received at least one fellowship appointment.

Applications and Awards

On Jan. 15, 1989, OCRWM announced that five new applicants received fellowship awards, bringing the total number of fellows to 20 (* indicates a 1989 recipient):

Name	Institution	Discipline
Andis Berzins	Kent State University	Geology
Theresa Brown	University of Texas	Geology/Nuclear Engineering
Shawn Burns*	University of Texas	Geology/Nuclear Engineering
Mary Ann Dell*	University of Pittsburgh	Health Physics
William Holloway	Massachusetts Institute of Technology	Nuclear Engineering
Vivian Leung	Massachusetts Institute of Technology	Nuclear Engineering
Frank Marcinowski	University of Michigan	Health Physics
Carla Matherne	University of Texas	Geology/Nuclear Engineering
Robert Mulvihill*	University of Pittsburgh	Health Physics
Dennis Norton*	University of Arizona	Hydrology/Nuclear Engineering
James Ogles	University of Florida	Environmental Science Engineering
Richard Orndorff	Kent State University	Geology
Karla Riggle	University of Missouri	Health Physics/ Nuclear Engineering
Barry Roberts	Kent State University	Geology
John Stamm	Kent State University	Geology
Virlynda Statler*	University of Florida	Environmental Science Engineering
Alison Stolle	University of Michigan	Nuclear Engineering
Doug Williamson	University of Florida	Environmental Science Engineering
William Wise	University of Texas	Geology/Nuclear Engineering
Kathryn Yuracko	Massachusetts Institute of Technology	Nuclear Engineering

* Fellowship awarded in 1989.

The lowest number of applications (15) was received during the first review in January 1985, and the highest number (25) was received twice in September 1985 and September 1987. The number of awards has varied slightly from one award cycle to the next.

The program requires that the fellows perform research in areas directly related to the OCRWM mission. Examples of research topics include:

- "An Integrated Geologic Simulation Model for the Proposed Nevada High-Level Nuclear Waste Repository," Andis Berzins, Kent State University.
- "Determination of the Effect of Microbial Activity on the Transport of Carbon-14 Carbon Dioxide in the Unsaturated Tuff," Frank Marcinowski, University of Michigan.
- "A Preliminary Assessment of Selected Atmospheric Dispersion, Food Chain Transport and Dose to Man, Computer Codes for use by the Office of Civilian Radioactive Waste Management," Karla Riggle, University of Missouri.

(continued on page 10)

Awards Made in Radioactive Waste Management Fellowship Program

(continued from page 9)

Program Administration

The program is advertised in leading science and engineering journals, and fliers and announcements are mailed to most of the nation's undergraduate science and engineering programs.

The program is managed by OCRWM's Office of Program Administration and Resources . Management and administered by Oak Ridge Associated Universities (ORAU). An academic advisory committee, composed of university faculty members who are multidisciplinary experts in radioactive waste management, provides

recommendations to ORAU concerning the qualifications of universities and individual students for participation in the program. The criteria used by the review panel in the evaluation of fellowship applications include the applicant's grade point average (GPA), faculty member references, a statement on academic and career objectives, the academic accomplishments of the applicant and scores achieved on the Graduate Record Examination. At present, the cumulative average undergraduate GPA for the OCRWM fellows is 3.63.

Fellowships can only be held at universities designated by OCRWM for

program participation. Five of the 18 universities have designed programs of study that are interdisciplinary and directly related to the program efforts of OCRWM.

The fellowship program is accomplishing one of its major objectives in that eight program graduates are presently employed in occupations related to radioactive waste management at OCRWM Headquarters, national laboratories, contractor facilities and universities. ☆

Currently Scheduled OCRWM Short-Term Program Milestones

March 1989	Submit Dry Cask Storage Study Report to Congress with NRC Comments.
April 1989	Issue Draft Comprehensive Transportation Plan
April 1989	Submit Annual Report to Congress.

NOTE TO READERS

INFOLINK, an electronic bulletin board for persons and groups interested in the OCRWM program, is being updated and improved for ease of access and increased program information. When INFOLINK is ready to come on-line again, an announcement will appear in the *OCRWM Bulletin*.

The Secretary of Energy
Washington, DC 20585

March 10, 1989

The Honorable Bob Miller
Acting Governor of Nevada
Carson City, Nevada 89710

Dear Mr. Miller:

Thank you for your letter of February 22, 1989. I want to emphasize my personal commitment to maximize to the extent practicable public and State involvement in Civilian Radioactive Waste Management activities. I strongly endorse your view that the citizens of Nevada should have ample time to review the Site Characterization Plan (SCP), and I support your interest in expanding the opportunities for public participation.

With this in mind, let me address the four recommendations specified on page two of your letter:

Recommendation a)

that the public review and comment period be extended beyond 90 days to permit adequate time for the interested public to review the thousands of pages of plans and references associated with DOE's site characterization program;

I share your concern for the need to provide adequate opportunity for public involvement, and I encourage the opportunity for all concerned citizens of Nevada to provide their comments on the SCP during the period of review and hearings. After considering your views, I am extending the comment period from April 15 to June 1. I want to assure you that the Department of Energy (DOE) is committed to considering all comments received throughout the site characterization process.

Also, I want to assure you that the Department's Yucca Mountain Project office in Las Vegas will continue to conduct project update meetings which are open to the

public. These meetings, which are held approximately every 6 months, will provide an ongoing forum for dialog with the public. To determine the agenda for these meetings, the Yucca Mountain Project Office contacts a number of individuals to identify the topics of most interest to Nevadans. This agenda is discussed with the State Agency for Nuclear Projects, and the State is invited to participate in the meetings with the DOE. The meeting times and locations are advertised extensively, receive broad media coverage, and are well attended. We appreciate this participation by the Nevada Agency for Nuclear Projects in these meetings.

Recommendation b)

that the Public Hearings be extended to include the amount of time necessary to receive oral comment from all those in attendance who indicate their desire to present comment for the record;

The DOE has made arrangements to accommodate all persons wishing to comment by adding a second day to each of the hearings in Las Vegas and Reno to receive additional oral comments from the public, if needed. The additional days are Wednesday, March 22, 1989, in Las Vegas and Friday, March 24, 1989, in Reno.

Recommendation c)

that the scope of the Public Hearings and the Hearing Record be announced to be inclusive of all the DOE activities (geotechnical, engineering, environmental, and socioeconomic) planned during the site characterization period;

The scope of the public hearings is focused on the technical requirements of the geotechnical and engineering issues addressed in the SCP. However, if interested parties present comments on environmental, socioeconomic or other aspects of the program, they will be recorded and considered as well.

Recommendation d)

that a formal process for public review and comment, including Public Hearings, be established in association with the DOE's statutorily required periodic issuance of site characterization reports throughout the duration of site characterization at Yucca Mountain.

The DOE will continue its project update meetings at various locations in the State of Nevada throughout the period of site characterization. We expect that as a result of these meetings, interested parties will continue to provide comments throughout the course of site characterization. A process is being developed to assure that all comments received are recorded and evaluated to determine whether changes in site characterization plans are warranted. The disposition of all comments, including those which result in change in the site characterization plans, will be made available to the public and referenced through the semiannual progress reports.

In responding to your letter, I am particularly interested in conveying the message that the DOE is committed to taking the concerns of the State into serious consideration in moving forward with this Program. In this spirit, I would like to suggest that we work together to take full advantage of the opportunities we have before us to make sure that concerns that either of us may have are shared and addressed in a manner that promotes mutual confidence and understanding.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

cc: Nick C. Aquilina, Manager
Nevada Operations Office

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

April 1989

**Excerpts from an Address Before the American Society for
Quality Control by Franklin G. Peters, Deputy Director, OCRWM
April 3, 1989, Las Vegas, Nevada**

"...the questions before us this morning are very pragmatic: what difference does quality assurance (QA) actually make to executing an organization's mission, and how does the manager actually make quality happen — on a daily, continuing basis?..."

"QA is fundamental to our task for several reasons:

- If the Yucca Mountain site proves capable of meeting DOE science and engineering requirements, we must demonstrate its suitability to the Nuclear Regulatory Commission (NRC) in a licensing proceeding in order to obtain NRC authorization to construct a repository. NRC regulations require that our site characterization be conducted in accordance with a regulatory quality assurance program. Without such a program, the data we collect from Yucca Mountain will be literally valueless for licensing purposes.
- In addition to meeting the requirements of the NRC, we must comply with DOE's own Departmental Orders and Directives, which establish policy, set forth principles, and designate responsibilities for QA.
- We need to build public confidence in our work...our QA program signals to

the public and all oversight bodies that our work has been carried out in a prescribed, documented manner, by trained and qualified personnel, subject to surveillance and audit.

- Another reason for the importance we place on QA is that, as a management tool, it can help us ensure an efficient and cost effective program. We view very seriously our responsibility to exercise prudent stewardship of the Nuclear Waste Fund. This means controlling costs at no sacrifice in technical excellence. Good QA is good program management.
- This brings me back to the most fundamental reason for QA. Even if NRC regulations and DOE Orders did not require QA, even if our activities were not subject to oversight, we would still need a rigorous QA program. An organization that is committed to quality would reinvent the concept of QA, because QA has its origins in common-sense management. We are working to make QA an integral part of our planning—a tool that can help us specify procedures and practices that have been demonstrated to produce quality work, and that can help us make sure that we did what we intended to do, the way we intended to do it — and can demonstrate it.

"...responsibilities assigned to the Office of the (OCRWM) Director range from broad areas—such as ensuring the quality work conducted by contractors and providing adequate resources to support QA—to specific tasks such as approving all controlled, program-level QA documents and all program-level baseline documents. We also report semi-annually to the NRC Commissioners on the status of our program, including QA implementation.

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Published by the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM)

For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

Five Study Plans for Site Characterization Submitted to the Nuclear Regulatory Commission

On Feb. 9, 1989, DOE submitted five study plans to the Nuclear Regulatory Commission (NRC) containing detailed descriptions of investigations to be undertaken during construction of the Exploratory Shaft Facility at the Yucca Mountain site in Nevada in support of the site characterization program.

One of these study plans, "Water Movement Tests" (Study Plan 8.3.1.2.2.2), describes planned water movement tracer tests. These tests are designed to produce information derived from isotopic measurements of soil and tuff samples pertinent to assessing the performance of a nuclear waste repository. Determining the rate of water movement through the unsaturated zone at Yucca Mountain is one of the most important tasks for assessing the future performance of a nuclear waste repository. Measurements of chlorine isotopic distributions will help determine the rate of water movement downward through the unsaturated zone beneath Yucca Mountain. When chloride ions at the surface are washed underground by precipitation, the radioactive decay of the isotope chlorine-36 in the chloride can be used to date the age of the water, thereby providing input for developing hydrologic models of ground water flow at this site as part of the repository performance assessment.

The next study plan, "Characterization of Site Ambient Stress Conditions" (Study Plan 8.3.1.15.2.1), discusses the plan to obtain a set of spatially distributed stress measurements to characterize the ambient state of in situ stress representative of undisturbed conditions in the repository host rock. Data on ambient stress conditions are needed to specify initial and boundary conditions for repository design calculations. Specifically, information from the study is needed to evaluate the response of the rock to thermal loading and to the excavation of emplacement boreholes and drifts.

Another study plan, "Characterization of Structural Features in the Site Area" (Study Plan 8.3.1.4.2.2), is designed to determine the frequency, distribution, characteristics and relative chronology of structural features within the Yucca Mountain site area. Surface and subsurface structural studies will be performed to identify and characterize fracture-fault systems within the site area. Characteristics and lateral variability of fracture networks on the surface will be studied by detailed mapping. Subsurface distribution will be studied by analysis of core samples, borehole evaluations, exploratory shaft studies and application of geophysical techniques. The results of these activities will be integrated with the results of hydrologic studies to provide information for the development of three-dimensional geologic studies of the site. These models will support modeling of hydrologic potential pathways, particularly in the unsaturated zones, and are also expected to aid in the development of tectonic models and determination of the mechanical response of fractured rock to excavation and thermal loading.

Three experiments constitute "Excavation Investigations" (Study Plan 8.3.1.15.1.5). These experiments have been designed to provide a data set to assess and eventually validate the rock mass models that will be used to predict deformational behavior in the excavated openings of the exploratory shaft facility. An experiment on shaft convergence will provide displacement data to compare with the predicted rock mass response to excavation. A demonstration breakout room experiment will establish whether repository size drifts can be constructed in welded tuffs at two locations having different geomechanical, fracture and rock features. A sequential drift mining experiment is designed to enhance the data base available for validating the rock mass models that will be used to predict deformations and stresses around the

underground openings and assess the stability of the underground facility in support of the license application.

The last of the study plans, "Characterization of Yucca Mountain Unsaturated Zone Percolation, Exploratory Shaft Facility Study" (Study Plan 8.3.1.2.2.4), describes activities that will contribute to an understanding of the in situ hydrologic characteristics of the unsaturated zone, provide an understanding of the impacts of shaft construction on the in situ characteristics and provide hydrologic parameter input for the resolution of design and performance issues. The activities include:

- Radial borehole tests,
- Excavation effects tests,
- Perched water tests,
- Hydrochemistry tests and
- Multipurpose borehole tests.

The plans for in situ hydrologic testing in the main test level of the exploratory shaft facility include:

- Intact fracture tests,
- Percolation tests,
- Bulk permeability tests and
- Hydrologic properties of major faults.

Information from these tests will provide data on the parameters needed to assess the performance of pre-waste emplacement, ground water travel time and the predictions of radionuclide releases to the accessible environment. Study results will also provide information for the resolution of issues concerned with the near field hydrologic environment of the waste package emplacement holes and releases from the repository engineered barrier system.

About a dozen study plans are in the review process and will be issued upon completion during the next several months. ☆

Carolina Power & Light Loads First Module With Spent Fuel in Concrete Dry Storage Facility

In order to increase the capacity of spent fuel storage at reactor sites, several research and demonstration projects to develop dry storage technologies have been undertaken under cooperative agreements between DOE, utilities and the Electric Power Research Institute.

In one of these agreements, the Carolina Power & Light Company (CP&L) is demonstrating the use of a horizontal, concrete modular storage system (NUHOMS), manufactured by NUTECH, where the spent fuel is kept inside a sealed, stainless steel canister that is filled with helium or nitrogen, with the

canister protected and shielded by a concrete module.

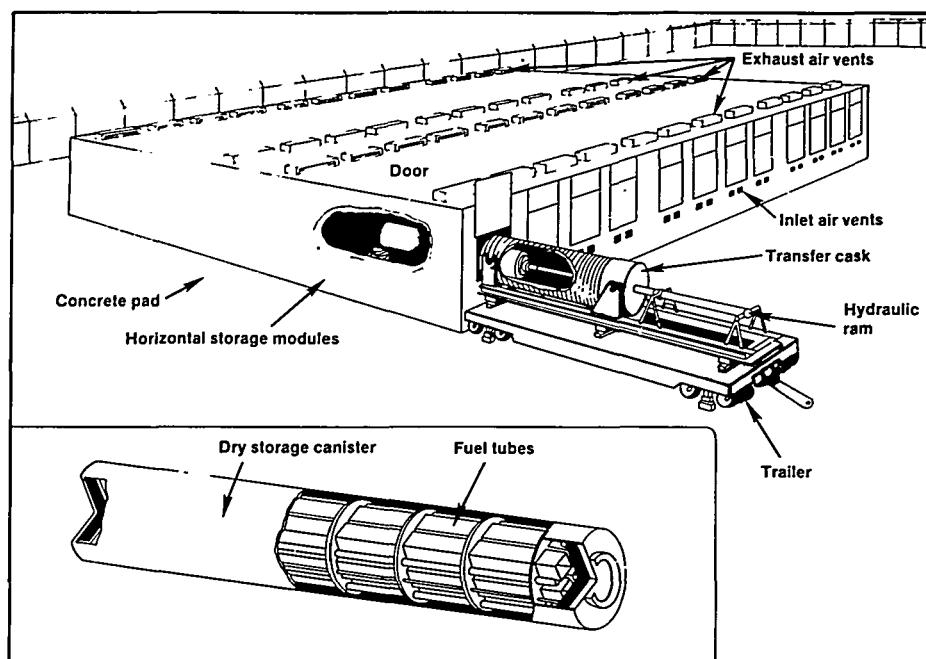
As shown in the accompanying figure, the major components of the generic NUHOMS system are a stainless steel canister, a concrete horizontal storage module, a transfer cask and a special purpose trailer.

The canister includes an internal basket for maintaining the assemblies in a safe configuration. The transfer cask provides shielding from radiation and protects the canister as it is moved from the storage pool to the dry storage facility. The special purpose trailer is used to carry the

loaded transfer cask to the dry storage facility and provides the precise alignment required to mate the transfer cask with the concrete storage module. The trailer contains a hydraulic ram for loading the canister into the concrete module. The module provides radiation shielding and protects the canister in storage.

The objective of the CP&L project is to license, construct and verify the performance of a dry storage facility. The construction of the first three modules was completed in July 1987 at the H.B. Robinson nuclear powerplant. As part of the demonstration program, a data acquisition system was provided and a pattern of thermocouples installed in two of the modules and two of the canisters. Before loading spent fuel, electric heaters were used to perform a series of tests to verify the performance of the system under both normal and accident conditions. On Mar. 21, 1989, the first loaded canister was placed in its concrete module, with additional loadings to follow in mid-1989. Performance will be monitored for a predetermined period.

CP&L submitted its license application for the dry storage facility at the H.B. Robinson site in February 1985. The NRC issued an environmental assessment and a finding of no significant impact in March 1986, and the license went into effect on Aug. 13, 1986. The complete installation at the site is licensed for eight modules. Construction of the remaining five modules is scheduled to start in 1989. ☆



The generic horizontal modular storage system (NUHOMS).

Currently Scheduled OCRWM Short-Term Program Milestones

May 1989	• Submit OCRWM Annual Report to Congress.
June 1989	• Issue Addendum to Environmental Monitoring and Mitigation Plan (Revision 2). • Issue Socioeconomic Program Plan. • Issue Draft Comprehensive Transportation Plan.
July 1989	• Issue Fiscal Year 1989 Annual Capacity Report.

Excerpts from an Address Before the American Society for Quality Control by Franklin G. Peters, Deputy Director, OCRWM
April 3, 1989, Las Vegas, Nevada

(continued from page 1)

"Obviously, to meet these responsibilities, it is necessary both to delegate and actively manage that delegation; and for delegation to be effective, information must flow freely. The Director of Quality Assurance now reports directly to the (OCRWM) Office Director. This ensures QA's organizational independence — a crucial precondition for effective QA. It also ensures a steady flow of information between these two Offices.

"The past year has seen a major, program-wide effort to develop the qualified QA program we are committed to have in place before the start of new site characterization activities at the Yucca Mountain site.

"But even while we have been moving toward a fully qualified program, QA has been working for us. As evidence, we have issued orders to ensure that certain work may not proceed until a satisfactory quality assurance program is in place and implemented.

"...The program manager must view QA in a large, dynamic context. In this context, the most important word is an old fashioned one: 'leadership'. Implementing a QA program has to happen from the top down. Managers have to be personally committed to QA and they have to communicate that commitment throughout the line organization. But their commitment cannot be merely rhetorical.

"First to communicate commitment, the manager must speak from a sound knowledge base. And the manager must understand what it means on a daily basis to apply QA to the diverse array of activities under real world conditions. And the manager must make the crucial judgment call: how much QA is enough?

"Second, nothing communicates commitment more drastically than the willingness to act. While our willingness to issue stop-work orders and 'do not start work' orders is the most dramatic proof of our commitment, we manifest it in daily ways by our attention to QA matters...

"For the Office of the Director, exercising informed leadership in QA means a full understanding of where the program needs to be strengthened and where it is working smoothly. It means keeping informed of other QA developments. It means attending meetings like this one, to share information and learn from your efforts and experience. It means closely monitoring our interactions with NRC on QA issues...

"Exercising informed leadership also means addressing another dimension of the program that doesn't fall within the standard QA vocabulary: workplace culture. Ultimate responsibility for QA is located in line management; but QA stands or falls on the individual's daily performance — the individual who is making key decisions, who is designing the waste package, who is drilling boreholes, who is developing computer codes, who is conducting laboratory tests.

"Managers right down the line must instill and foster organizational values that must reward individuals for making quality assurance a reality...

"Another dimension of the quality challenge involves staffing. The operating lifetime of this program before the repository is shut in will extend over several generations of managers. While QA procedures can be handed down from generation to generation, the organizational culture must be stable enough to facilitate the transfer of knowledge. Our important mission requires and deserves talented staff and the stability that continuity affords. We work hard to attract and hold talented personnel...

"Lastly, let me mention another responsibility that I view as very important in the larger QA context. Beyond the oversight bodies is the larger public to whom we have a direct responsibility as well. We must work to help the public understand how our QA program operates, so that they can better assess our performance and draw their own informed conclusions. QA takes its place as one of the substantive program areas our long-term public information efforts must address..." ★

Other Program Items

DOE Actions Concerning the American Indian Religious Freedom Act (AIRFA)

In accordance with the National Historic Preservation Act and the American Indian Religious Freedom Act, DOE and the Advisory Council on Historic Preservation recently completed a programmatic agreement which includes provisions for the identification and avoidance of significant resources of traditional cultural and religious value to Indian people. Based on the provisions of the agreement, DOE will continue discussions with tribes that may have current or historic ties to the Yucca Mountain area to determine ways to mitigate project effects on traditional cultural or religious resources. ★

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Other Program Items

(continued from page 4)

Call for Papers Issued for International High-Level Waste Management Conference

The First Annual International High-Level Radioactive Waste Management Conference has approved a call for papers for the conference to be held on Apr. 8-12, 1990, at Caesar's Palace Hotel, Las Vegas, NV.

The conference will be an international forum for presentation and discussion of scientific and technical information on management and disposal of high-level radioactive wastes. The program will include technical sessions and substantive plenary sessions which will discuss professional discipline applications and issues in natural, engineered, social and integrated systems.

The conference will stimulate awareness of the relevance of scientific and technical information to achievement of public health and safety objectives. It will also address interaction and integration of high-level waste program activities. Generic program topics for the conference include geologic sciences and engineering; hydrologic sciences and engineering; chemical sciences and engineering; material sciences and engineering; radiological sciences and engineering; environmental sciences and technology; social sciences and economics; transportation systems and technology; component, facility and equipment design; climatology and meteorology; systems engineering; performance assessment; quality assurance and regulations and compliance.

Abstracts of all papers will be peer reviewed. Four copies of extended abstracts (1,500-2,000 words) must be submitted in English by Sept. 1, 1989, to: Publications Department, American Nuclear Society (ANS), 555 North Kensington Avenue, La Grange Park, IL

60525. Abstracts should be typed double-spaced.

Authors of accepted papers will receive notification of acceptance and guidelines for preparation of full papers on camera-ready mats by Oct. 25, 1989. Full papers are due to the ANS by Jan. 5, 1990. Proceedings will be available at the conference. Contact the ANS at the above address or by calling (312) 352-6611 for further information. ★

Federal Register Notice Issued Regarding Extension of Comment Period for Site Characterization Plan at the Yucca Mountain Site, State of Nevada

OCRWM published the following notice in the *Federal Register* on Mar. 20, 1989:

"In the *Federal Register* dated December 30, 1988 (53 FR 53057), the Department of Energy announced that it had published and made available to the State of Nevada, the Nuclear Regulatory Commission and the public the Site

Characterization Plan (SCP) for the Yucca Mountain site for a 90-day comment period to end on April 15, 1989. Public hearings on the SCP during the comment period were also announced in that Notice.

"Upon consideration of a request from the Honorable Bob Miller, Acting Governor, State of Nevada, the Department of Energy has extended the close of the comment period on the SCP from April 15 to June 1, 1989. The Department has also made arrangements to ensure that all persons wishing to provide comments at the scheduled hearings will have an opportunity to do so.

"Please refer to the above *Federal Register* notice dated December 30, 1988, for public hearing dates, locations, times and comment procedures.

"For further information contact:

Carl P. Gertz, Project Manager, Yucca Mountain Project Office, U.S. Department of Energy, P.O. Box 98518, Las Vegas, NV 89193-8518." ★

Selected Events Calendar

May 16-17	Nuclear Waste Technical Review Board, Panel on Risk and Performance Assessment, Washington, DC. Contact William W. Coons (904) 392-9531.
June 4-8	American Nuclear Society Annual Meeting, Atlanta, GA. Contact Teri Jarvie (312) 352-6611.
June 11-16	PATRAM '89: 9th International Symposium on the Packaging and Transportation of Radioactive Materials, Washington, DC. Contact Judith Holm (312) 972-2410.
June 26	Nuclear Waste Technical Review Board, Public Hearing, Las Vegas, NV. Contact William W. Coons (904) 392-9531.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436. ★

New Publications and Documents

Information Services Directory, DOE/RW-0219, March 1989

This reference document updates the May 1987 *Information Services Directory*. The directory describes current program information sources and provides an index of DOE, State and Federal agency contacts, as well as a directory of DOE technical information. It lists Congressional committees and subcommittees that have jurisdiction over various components of the OCRWM program. It also lists DOE Public Reading Rooms and Information Offices, Nuclear Regulatory Commission Local Public Document Rooms and public libraries in the State of Nevada that are on one or more of OCRWM's mailing lists. An index of systems and listings of selected publications is also provided.

Quarterly Report on Program Cost and Schedule, First Quarter FY 1989, DOE/RW-0225, April 1989

This report provides a summary of the cost and schedule performance in the OCRWM program. Performance data are presented for each of the major program elements. Also included in the report is the status of the Nuclear Waste Fund revenues and disbursements. This report includes performance data through December 1988.

Reprints from Public Laws (no DOE/RW identifying number assigned)

The text of the Nuclear Waste Policy Act of 1982 (Public Law 97-425); the Nuclear Waste Policy Amendments Act of 1987 (Public Law 100-202) and an Act to amend the Nuclear Waste Policy Act of 1982, with respect to the Office of the Nuclear Waste Negotiator and the Monitored Retrievable Storage Commission (Public Law 100-507), are reprinted in a single document. ☆

Cooperative Agreements Signed with Midwestern Office of Council of State Governments and with Conference of Radiation Control Program Directors

Midwestern Office of Council of State Governments

OCRWM signed a five-year cooperative agreement with the Midwestern Office of the Council of State Governments (MOCSG) to support the identification and study of regional issues and participation in planning activities of the OCRWM transportation program. Under the agreement, effective Feb. 17, 1989, MOCSG will create a Midwestern High-Level Radioactive Waste Committee consisting of legislative and executive officers from the region. The group will assess previously identified transportation issues as well as emerging concerns in the Midwest. They will also publish a primer on the high-level radioactive waste transportation activities affecting the Midwest and prepare several reports on such issues as emergency preparedness and highway routing.

The Midwest group agreement is the third regional cooperative agreement undertaken by OCRWM's transportation program. OCRWM presently works closely with the Southern States' Energy Board and the Western Interstate Energy Board under similar agreements. Plans are underway to identify a Northeastern group in 1989 to support the study of transportation issues of particular interest to that region.

The project coordinator is Michael H. McCabe, located at the Yorktown Office Center, 6413 East Butterfield Road, Suite 401, Lombard, IL 60148, (312) 810-0210.

Conference of Radiation Control Program Directors

The Conference of Radiation Control Program Directors (CRCPD) entered into a cooperative agreement with OCRWM on Nov. 1, 1988, to provide assistance with radiological health matters that relate to the transportation of spent fuel and high-level radioactive waste. The CRCPD is an organization composed of radiation control program directors in all States, the City of New York, the Counties of Los Angeles, Orange and San Diego in California, the District of Columbia and Puerto Rico.

In States which have more than one agency responsible for radiation safety, each agency is represented on the CRCPD. Membership in the conference is also open to radiological health professionals. The total membership exceeds 400 persons. Seven Federal agencies, including DOE, the Nuclear Regulatory Commission and the Environmental Protection Agency, have liaison with the Executive Board of the CRCPD on issues of interest to them.

During the three-year period covered by the agreement, activities will focus on two primary tasks. The first task will involve the preparation of a directory of State agencies concerned with the transportation of radioactive waste. The compilation, which will be updated in each fiscal year, will include:

- Names and titles of responsible staff,
- Statutory authority,
- Regulations of the agency,
- Agreements with other agencies and
- Funding levels and source.

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Cooperative Agreements Signed with Midwestern Office of Council of State Governments and with Conference of Radiation Control Program Directors

(continued from page 6)

Under the second task, the CRCPD will provide assistance to the Commercial Vehicle Safety Alliance (CVSA) in the development and pilot testing of procedures for the safety inspection of commercial highway vehicles transporting spent fuel and high-level radioactive waste. The CRCPD will develop inspection procedures for measuring and evaluating radiological conditions. The CRCPD will make recommendations concerning actions to be taken if a radiological health problem

is identified. Procedures developed by the CRCPD will include routine inspection, enforcement actions and emergency response.

The process to develop procedures for conducting radiological inspections began at a meeting held in Montgomery, AL, on Feb. 14-16, 1989. Preliminary draft inspection procedures were developed which will eventually be incorporated into the CVSA overall inspection procedures for ensuring safe

highway transportation of spent fuel and high-level radioactive waste. The directory of State agencies and responsible staff involved in radioactive materials transportation and the associated listing of legal authorities should be completed by May 1989.

For more information about the CRCPD work activities, contact Charles Hardin at 71 Fountain Place, Frankfort, KY 40601, (502) 227-4543. ★

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

May/June 1989

DOE Position on the MRS Facility Presented to MRS Review Commission

At their May 25, 1989, hearing the MRS Review Commission was briefed on the Department of Energy's (DOE) position on the MRS facility. The position as stated below was presented by Thomas H. Isaacs, Associate Director for External Relations and Policy of the Office of Civilian Radioactive Waste Management.

"The position of the Department of Energy on the MRS facility can be summarized as follows:

- The DOE supports an MRS facility as an integral part of the waste-management system because it would help meet the strategic objectives of timely disposal, timely and adequate waste acceptance, schedule confidence, and system flexibility. This facility would receive, store, and stage shipments of intact spent fuel to the repository and could be later expanded to perform additional functions that may be found to be beneficial or necessary as the system design matures.
- Recognizing the difficulty of DOE-directed siting, the DOE believes that an MRS facility should be sited through the efforts of the Nuclear Waste Negotiator, if possible, especially if the negotiations lead to statutory conditions that allow the MRS advantages to be more fully realized.

However, the DOE supports the MRS facility even if the conditions are not modified.

"The DOE's position on the MRS facility is drawn from analyses and evaluations performed in the last several years, including the recent systems studies. These analyses and evaluations have encompassed almost all of the issues raised in the hearings held by the MRS Review Commission and in other forums. In addition, the DOE has performed qualitative evaluations to examine how a system with an MRS facility would help achieve waste isolation in a repository. The results show that the preferred integral MRS facility would provide significant advantages to the Federal waste-management system, though it would increase the costs.

PREFERRED MRS CONCEPT

"The concept preferred by the DOE is an integral MRS facility designed to allow development in stages. "Integral" means a facility that is part of the waste-management system in which all elements are optimized as part of a single system focused on achieving the strategic objectives of the program.

"In the first stage, the MRS facility would have a receiving building. It would receive and inspect spent fuel, store it, and ship it to the repository at a rate and

schedule consistent with repository operations. The fuel would be received in casks shipped by truck and rail, unloaded from the cask, inspected, and loaded into storage modules. All shipments from the MRS facility would be made by rail in dedicated trains, which would minimize the number of shipments to the repository. When the receipt rate is equal to the shipping rate, the MRS facility would serve a staging function: spent fuel received in truck and rail casks would be

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Published by the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM)

For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

DOE Begins Testing Prototype Dry Drilling and Coring Equipment

DOE has begun testing prototype drilling and coring equipment that will be used in scientific investigations to determine if Yucca Mountain, Nevada, is a suitable site for a high-level nuclear waste repository. The equipment has been modified to suit DOE's unique requirement for dry geologic samples. In order to preserve the site's natural state, the drilling process cannot use water for cooling and rock cutting removal. Artificially introduced water could affect scientific experiments to determine hydrologic conditions at Yucca Mountain. Although dry drilling is not uncommon, conventional methods deliver only rock cuttings to the surface. Lang Exploratory Drilling of Salt Lake City is developing three prototype coring systems that are beyond the state-of-the-art as now used by the drilling industry to produce the required intact core samples for DOE.

Specific objectives of the prototype drilling are development and evaluation of drilling and coring equipment,

methods and procedures, and provision of a technical basis for refining the planned site characterization drilling program. The prototype program will not be used to obtain site characterization data since it will not be done on the candidate repository block.

The prototype dry drilling and dry coring equipment testing program will be conducted in two phases, the first of which started May 15, 1989, at a site near Tooele, Utah, about 70 miles southwest of Salt Lake City. Phase I was conducted in silicified limestone to perform initial equipment tests and system evaluation near the facility of the equipment manufacturer in case modifications were required.

Phase II will be conducted at the Nevada Test Site about five miles south-southeast of the proposed Yucca Mountain site. This testing is expected to start in July, pending approval of an amended air quality operating permit from the State of Nevada, and will last about 60 days. The

equipment will be tested in the same rock types (tuff) that exist at Yucca Mountain. Testing will provide an opportunity to complete development of quality assurance procedures for drilling and handling of geologic samples; allow personnel training and provide an opportunity for the State of Nevada, as well as the Nuclear Regulatory Commission, to observe the testing, training and procedural development activity.

For Phase II, two holes (8 inches and 12 inches in diameter) will be drilled/cored to a depth of about 1,100 feet. A comparison of the two hole sizes will be made with respect to hole quality and geophysical log response. The drilling/coring systems are somewhat different for the two sizes, and these two methods will be evaluated and compared. Drilling methods will be correlated to sample and borehole quality to optimize achievement of technical objectives. ☆

Selected Events Calendar

- June 26-28 Nuclear Waste Technical Review Board Meeting on Yucca Mountain, Las Vegas, NV. Contact William Coons, 1111 18th Street, N.W., Suite 801, Washington DC, (202) 254-4792.
- June 28-30 Advisory Committee on Nuclear Waste, Phillips Building, 7920 Norfolk Avenue, Bethesda, MD. Contact Barbara Jo White, (301) 492-7288.
- July 10-11 30th Annual Meeting of the Institute of Nuclear Materials Management, Orlando FL. Contact Barbara Scott, (312) 480-9573.
- July 11 DOE/Nuclear Regulatory Bi-Monthly Quality Assurance Review Meeting, Rockville, MD. Contact Sharon Skuchko, (202) 586-8869.
- July 25-26 Transportation Coordination Group, Westin Hotel, Chicago, IL. Contact Christopher Kouts, (202) 586-9761.
- July 26-27 Advisory Committee on Nuclear Waste, Phillips Building, 7920 Norfolk Avenue, Bethesda MD. Contact Barbara Jo White, (301) 492-7288.
- Aug. 21-23 Nuclear Waste Technical Review Board, Containers and Transportation Panel Meeting, Albuquerque, NM. Contact Christopher Kouts of DOE, (202) 586-9761, or William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington, DC, (202) 254-4792.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436. ☆

Highway Study for Yucca Mountain Project Issued

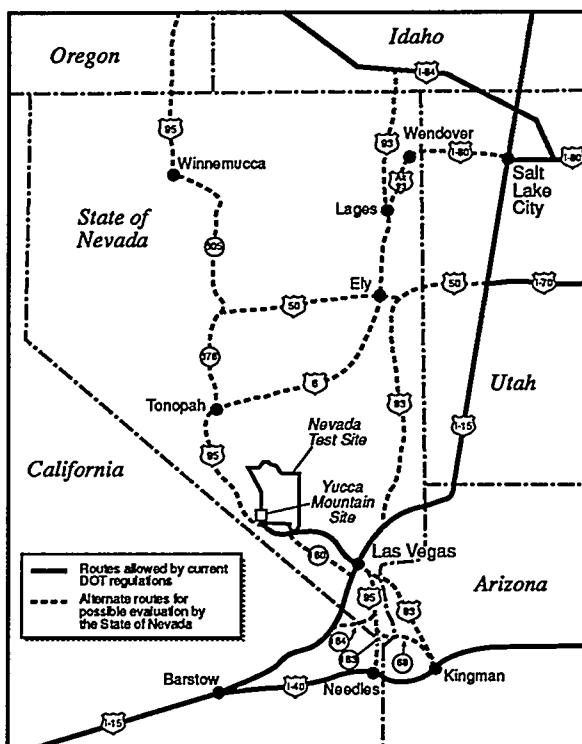
DOE has issued its first transportation report, *Nevada Highway Routing Study*, for the Yucca Mountain Project. This study identifies possible points of entry into Nevada, intra-state access routes and shipping rates for highway shipments of high-level nuclear waste associated with the possible selection of the high-level repository site at Yucca Mountain, Nevada. This study was completed as part of DOE activities to evaluate options for addressing, as appropriate, the effects of waste transportation.

Potential routes for highway transport would be north and south on Interstate 15 into Las Vegas and north on U.S. Highway 95 to Yucca Mountain. U.S. 95 is a potential route from I-15 to the potential access road to the Yucca Mountain site. The number of shipments to the site are expected to range from 96 to 1,380 trucks per year during the operating period of the repository. Under the present schedule, if Yucca Mountain is found suitable for a repository, shipments of radioactive materials would not start before 2003.

The identified routes are based on current U.S. Department of Transportation (DOT) regulations. The State of Nevada may take actions to designate alternates. Additional routes are identified that may be beneficial to the Yucca Mountain Project if designated for use under DOT regulations by the State of Nevada. Rail transport routes will be considered in a separate report that is planned to be issued later this year.

Routes described in this report do not represent DOE's selection of routes. DOT would regulate the shipments, and DOT requires that actual routes be identified closer to the time that shipments would start so that decisions would be based on current conditions. DOE recognizes that transportation issues, including routing, will need a full and open treatment under requirements of the National Environmental Policy Act.

Copies of the *Nevada Highway Routing Study* are available from the Office of External Affairs, U.S. Department of Energy, P.O. Box 98518, Las Vegas, NV 89193-8518. ★



New Publications and Documents

Information Services Directory, DOE/RW-0219, March 1989

This reference document updates the May 1987 *Information Services Directory* and contains a full listing of technical and public information services and resources that are available.

Nevada Highway Routing Study, DOE/NV-10576-7, April 1989

See article on this page for a description of this report. Copies are available from the Office of External Affairs, U.S. Department of Energy, P.O. Box 98518, Las Vegas, NV 89193-8518.

The DOE Position on the MRS Facility, May 1989

This document contains the full DOE position on the MRS facility from which the summary provided in this *Bulletin* is drawn. DOE's position is drawn from many analyses and evaluations performed in the last several years. An MRS system study summary report that integrates a series of scoping studies is being prepared for printing and distribution. ★

Other Program Items

NRC Issues Final Rule Establishing Basic Procedures for the Licensing Proceeding Including the Use of the Licensing Support System

On Aug. 5, 1987, the Nuclear Regulatory Commission (NRC) announced the formation of the High-Level Waste Licensing Support System Advisory Committee (negotiating committee) to develop recommendations for revising the NRC's Rules of Practice in 10 Code of Federal Regulations Part 2 for the

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Other Program Items

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adjudicatory proceeding on the application for a license to receive and possess high-level radioactive waste (HLW) at a geologic repository operations area. The negotiating committee was composed of organizations representing the major interests likely to be affected by the rulemaking.

The negotiating committee sought consensus on the procedures that would govern the HLW licensing proceeding, focusing primarily on the use of an electronic information system known as the Licensing Support System (LSS), in the HLW licensing proceeding. The use of the LSS in the HLW licensing proceeding is to provide for the timely review of the DOE license application within the three year time period required by section 114(d) of the Nuclear Waste Policy Act of 1982, as amended, by:

- Eliminating the most burdensome and time consuming aspect of the current system of document discovery, i.e. the physical production of documents after the license application has been filed, because the LSS will provide for the identification and submission of discoverable documents before the license application is submitted;
- Eliminating the equally burdensome and numerous Freedom of Information Act requests for the same information that both DOE and the NRC will surely receive before and after the application is filed if the LSS does not become a reality;
- Enabling the comprehensive and early technical review of the millions of pages of relevant licensing material by the DOE and NRC staff through the provision of electronic full search capability which will allow the quick identification of relevant documents and issues;

- Enabling the comprehensive and early review of the millions of pages of relevant licensing material by the potential parties to the proceeding to permit the earlier submission of better focused contentions resulting in a substantial saving of time during the proceeding and
- Providing for the electronic transmission of all filings during the hearing, thereby eliminating a significant amount of delay.

The negotiating committee completed its deliberations in July 1988. Based on the committee's deliberations, the NRC approved a proposed rule that would revise 10 Code of Federal Regulations Part 2 to establish the procedures for the HLW proceeding. The proposed rule was published on Nov. 3, 1988. The comment period was closed on Dec. 5, 1988. After consideration of the public comments, the NRC published this final rule in the *Federal Register*, Vol. 54, No. 71, on Apr. 14, 1989. ☆

NRC Establishes Second Public Document Room for the High-Level Waste Geologic Repository

The Nuclear Regulatory Commission has established a local public document room (LPDR) at the University of Nevada-Reno Library for DOE's proposed high-level radioactive waste geologic repository site near Yucca Mountain, Nevada. This is the second LPDR established by the NRC for the Yucca Mountain site. In January 1988, the first Yucca Mountain LPDR was established in the Special Collections Department at the University of Nevada-Las Vegas Library.

Members of the public may now inspect and copy documents related to the licensing of the DOE high-level waste

geologic repository at the University of Nevada-Reno Library, Government Publications Department, Reno, Nevada 89557. The Government Publications Department is open on the following schedule: Monday-Thursday, 8 a.m. to midnight; Friday 8 a.m. to 5 p.m; Saturday and Sunday, 10 a.m. to midnight.

For further information, interested members of the public in the Reno area may contact the LPDR directly through Mr. Duncan Aldrich at (702) 784-6579. Members of the public outside of the service area of the LPDR may address their requests for records to the NRC's Public Document Room, 2120 L Street NW, Washington, DC 20555, (202) 634-3273.

Nuclear Waste Technical Review Board Holds Performance Assessment Briefing

The Nuclear Waste Technical Review Board (see *OCRWM Bulletin*, March 1989), at its first organizational meeting in early March 1989, established the following panels to review DOE's high-level radioactive waste disposal program:

Panel	Chairman
Containers and Transportation	Dr. D. Price
Risk and Performance Analysis	Dr. W. North
Structural Geology and Geoengineering	Dr. C. Allen
Hydrogeology and Geochemistry	Dr. D. Langmuir
Environmental and Public Health	Dr. M. Carter

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Other Program Items

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The Panel on Structural Geology and Geoengineering met during April in Las Vegas, NV. The Risk and Performance Analysis Panel met on May 16-17, 1989, in Washington, DC, for a DOE briefing. The OCRWM presentation to the Risk and Performance Panel was led by Ralph Stein, Associate Director for Systems Integration and Regulation, and Dr. Donald H. Alexander, Chief, Regulatory Compliance Branch.

Performance assessment is the method that will be used to evaluate the system and sub-system performance of the repository to demonstrate whether the site is suitable and whether it complies with the technical criteria of 10 Code of Federal Regulations 60. It will also be used as a method for evaluating the environmental impacts at the site, and will be used extensively in the environmental impact statement.

The topics presented at the briefing by various DOE and DOE contractor personnel include:

Overview of Performance Assessment Program

Subject	Presenter
Overview of Performance Assessment	D. Alexander
Flowdown of Regulatory Requirements to Performance Assessment Program	L. Richertsen
Technical Integration of Performance Assessment Program	P. Gnirk
Performance of Natural Barriers	D. Hoxie
Engineered Barrier System Performance	A. Van Luik
Post-Closure Total System Performance Assessment	F. Bingham
Pre-Closure Safety Assessment	D. Michlewicz
Model Validation Strategy	C. Voss
Linkage from Performance Assessment to the Site Program	M. Blanchard
Performance Assessment in Support of the Site Characterization Plan	J. Younker
Performance Assessment of Yucca Mountain in Support of the Comparative Site Analysis	P. Gnirk
Potential Impacts of Exploratory Shaft Facility on Waste Isolation	F. Bingham
Models of Waste Package Behavior in a Repository Environment	T. Pigford
Calculational Model for Waste Package	M. Apted

At the conclusion of the meeting Dr. D. Warner North, Chairman of the Board's Risk and Performance Analysis Panel, expressed appreciation to the presenters by saying, "I think your performance has overall been most impressive in terms of the quality of the material you've given us...and I think (you) did an outstanding job of giving us the kind of presentation we wanted to hear."

Effective May 1, 1989, the Nuclear Waste Technical Review Board is located at 1111 18th Street, N.W., Suite 801, Washington, DC 20036, (202) 254-4792. Mr. William W. Coons is the Executive Director.



DOE Position on the MRS Facility Presented to MRS Review Commission

(continued from page 1)

transferred to large-capacity rail casks for shipment to the repository by dedicated train. If the MRS facility is in the eastern United States, spent fuel from western reactors would probably be shipped directly to the repository.

"A major packaging capability is optional and could be added at a later date. It would consist of any facilities needed for additional functions, such as consolidation or packaging into disposal containers, that may be determined to be beneficial or required as the system design matures. This optional phase would provide flexibility to further optimize the waste-management system.

"It should be noted that, while the results and insights of the system studies were used in developing the preferred MRS concept, the preferred concept does not directly correspond to any single scenario evaluated in the systems studies.

REFERENCE WASTE FORM

"The DOE's studies indicate that intact spent nuclear fuel should be the reference waste form at present. The selection by the Congress of the Yucca Mountain site as the sole site to be characterized has allowed the DOE's studies to focus on the economics of various waste-package concepts for that site, and these studies have not identified sufficient advantages for consolidation to warrant its use at present. The DOE will, however, evaluate the desirability of consolidation during the advanced conceptual design of the repository and the waste package. The DOE has concluded that spent-fuel preparation for disposal should be performed in the Federal waste-management system rather than at reactor sites. The DOE will accept any fuel consolidated by the utilities.

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DOE Position on the MRS Facility Presented to MRS Review Commission

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CONDITIONS

"The Amendments Act imposes a set of conditions on MRS construction and operation, including the condition that the DOE may begin a survey and evaluation of sites only after the MRS Review Commission submits its report to the Congress, and the preferred MRS site may be selected only after a repository site has been recommended. And there is a licensing condition that the construction of the MRS facility cannot begin until the NRC has issued a license for the construction of the repository.

"Linkages to key repository milestones and MRS capacity limits were recommended by the DOE in the original MRS proposal to allay concerns that an MRS facility would diminish the resolve to develop a repository. The DOE had proposed that waste acceptance at the MRS be linked to the construction authorization for the repository. This allowed greater flexibility in system development than do the conditions of the Amendments Act.

"Although the statutory conditions limit MRS benefits, the DOE believes that the preferred MRS facility can enhance the overall system even with the conditions. For example, there will be significant uncertainties in the rate of waste emplacement in the repository because of the unprecedented nature of the repository, potential variability in underground conditions, and licensing uncertainties that may favor low emplacement rates in the early years. The addition of Federal storage capacity of the kind provided by the MRS facility would help achieve confidence in the development of the system and timely and adequate waste acceptance; it would also provide utilities with a firmer basis for planning and a greater rate of waste acceptance than would be possible with only a repository. These advantages

would be even more significant if the MRS facility started operations earlier, with somewhat higher limits on the quantities of waste that can be stored.

"It is useful to explore the implications of the existing conditions and of possible alternatives that would allow the MRS advantages to be more fully realized. The alternatives might include different linkages to the repository and an increase in the MRS storage capacity. The DOE would support such revisions if included in an agreement submitted by the Nuclear Waste Negotiator to the Congress for approval. The DOE encourages the MRS Review Commission to examine alternative provisions that will not bring into question the commitment to geologic disposal while at the same time maximizing the value of the MRS facility to the waste-management system.

ASSESSMENT OF THE PREFERRED MRS FACILITY

"The advantages and disadvantages of a system with the preferred MRS concept have been evaluated and compared with an "optimum" no-MRS case.

"The optimum no-MRS case on which the comparison is based includes the use of reasonably achievable improvements in transportation, such as the use of higher-capacity truck and rail shipment casks, and increased coordination between DOE and the utilities with respect to at-reactor storage. In this context, the DOE would encourage the use of at-reactor options that would be beneficial to the overall waste-management system. The optimum no-MRS case involves no promotion of, or requirement for, spent fuel preparation at reactor sites.

Advantages

"In assessing the preferred MRS facility, it is useful to start by examining the MRS

advantages in meeting the strategic objectives of the DOE's program — namely, timely disposal, timely and adequate waste acceptance, schedule confidence, and system flexibility.

"In regard to *timely disposal*, the MRS facility would facilitate the development of the repository through the institutional and regulatory experience obtained in siting and licensing a large scale waste-management facility earlier than the repository — as might be possible with a negotiated site.

"In terms of *timely acceptance*, the MRS facility, by relying on proven technology, provides confidence in spent fuel acceptance at the earliest possible time — up to 3 years earlier than the repository under the statutory linkages for the repository or up to 5 years earlier under the linkages proposed by the DOE in 1987, which tied MRS operation to the construction of the repository.

"For example, a Federal waste-management system with an MRS facility accepts 14,000 MTHM more in the early years than a system without an MRS. This advantage exists even with the conditions of the Amendments Act. The advantages of the MRS increase further in the event the repository is delayed and different conditions on the MRS are established.

"In regard to *schedule confidence*, a commitment to an MRS facility would enhance confidence that the Federal government is using all available means to ensure timely assumption of the responsibility to accept spent fuel for disposal. Furthermore, once in operation, the MRS facility would enhance confidence in the DOE's program by providing the earliest possible demonstration of the ability of the Federal Government to accept, transport, and handle spent fuel at high annual rates.

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DOE Position on the MRS Facility Presented to MRS Review Commission

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"Finally, in terms of *system flexibility*, the MRS facility would enhance, to the extent allowed by the statutory conditions, the program's capability to adapt to the uncertain future; enhance the flexibility of repository development by allowing adjustments without at-reactor impacts; and provide flexibility with respect to later decisions about waste aging and the preferred location of waste-packaging functions.

"In general, the preferred MRS facility has the potential for helping the DOE achieve all four of its strategic objectives by promoting the development of the integrated waste-management system. The MRS facility would help system development because it would allow the DOE to plan, design, and deploy major components of the system in advance of the repository.

"Some of these benefits depend on selecting the MRS site well ahead of the repository site. The Amendments Act prohibits the selection of an MRS site through a DOE-directed siting process until the repository site is formally selected. Therefore, it would be difficult for an MRS facility sited in that manner to provide the benefits of a two-step system development process. A negotiated site, however, could have such benefits, since it would be possible to proceed with MRS design and licensing independent of the repository. Once a license is received for an MRS facility at a given site, there is a high level of certainty that the MRS facility can be built and operated as planned — higher than for a repository, because of the more complex criteria the latter must meet. Thus an MRS facility, once sited, would offer a more certain focal point for early system development than the repository site.

Disadvantages

"There are, however, some disadvantages as well — namely, the need for an

additional site, the requirement for a second licensing proceeding, possible negative impacts on the repository program, and increases in direct costs.

"Locating a site for an MRS facility is not a trivial task. Under the best of circumstances it will require a substantial effort, whose magnitude will depend on the process that must be used. The Amendments Act established two alternative MRS siting processes: a DOE-directed siting process that may not start until the MRS Review Commission makes its report and a siting process in which the Nuclear Waste Negotiator seeks a State or Indian Tribe willing to host such a facility. The costs and impacts of MRS siting will depend heavily on which path must be followed to find a site.

"It is likely that a DOE-directed site screening process would require substantially greater financial, manpower, and institutional resources than the Negotiator's efforts to find a willing host. In view of this consideration, and the potential for earlier siting, greater flexibility of operation, and other institutional benefits available with a negotiated site, the DOE will strongly encourage the efforts of the Nuclear Waste Negotiator to identify a potential negotiated site as quickly as possible.

"Incidentally, it is not at all clear that using existing reactor sites for storage will be a path of substantially less resistance. A 1986 General Accounting Office survey of utility executives indicated that a significant number of them expected local opposition to spent fuel storage if the repository schedule slipped beyond 1998.

"The MRS facility will be licensed separately from the repository, under 10 CFR Part 72, which will require additional resources on the part of both DOE and the NRC. The effect on the program will depend on whether the MRS

license can precede the repository's or must be conducted in parallel. In the former case, achievable with an early negotiated site having different linkages, MRS licensing can be beneficial to the program by providing licensing experience. In the latter case, with parallel licensing efforts, the opportunity for learning is limited, and the MRS effort is more likely to divert resources from the repository.

"The third disadvantage — the potential for negative impacts on the repository program — may be the strongest objection to any Federal storage facility. There is concern that an MRS facility would derail the repository program, by reducing the national impetus for developing the repository or by diverting resources from the repository effort. Both the positive and negative impacts on the repository program of each alternative, including no-MRS options, need to be considered explicitly. The DOE believes that on balance the MRS facility can provide a net positive benefit for the repository, although the value of that benefit would be greatest with an early negotiated site.

"Another disadvantage that is mentioned is cost. The systems studies estimated that the total life-cycle cost of the Federal system with a basic MRS facility starting in 2000 and a repository starting in 2003 is about \$31.2 billion, assuming two repositories. This is some \$2.1 billion higher than the cost of the Federal system without an MRS facility. However, while the costs of the Federal system are higher with an MRS facility, the costs of at-reactor storage are lower: the MRS facility offsets some 5300 MTHM of at-reactor dry storage estimated to cost about \$400 million. This reduces the net MRS increment to the total cost of waste management — both by the Federal Government and the utilities — to about \$1.7 billion.

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DOE Position on the MRS Facility Presented to MRS Review Commission

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"The net cost to the ratepayers of a system with an MRS facility may be reduced further if extended spent fuel storage at reactor sites can be avoided after reactors are shut down. The maintenance of any spent fuel at a reactor site can cost \$2 to \$3 million per year regardless of the quantity of fuel involved. Under current plans and contract provisions, some spent fuel will stay at reactor sites for at least 5 years after shutdown, since the contract specifies that the standard fuel accepted by the DOE will be at least 5 years old. Depending on the acceptance schedule, however, spent fuel may remain at some reactor sites considerably longer, adding substantially to the cost of at-reactor storage. An MRS facility opening in 2000 and with conditions different than in the Amendments Act could ensure that no spent fuel stays at reactor sites more than 5 years after reactor shutdown and could avoid significant additional at-reactor storage costs if the repository were delayed. Such an approach results in the consideration of alternative waste acceptance strategies and schedules.

"By avoiding some at-reactor storage, an MRS facility also avoids the hidden costs that would be associated with providing that storage at reactors, including those attributable to reactor downtime caused by fuel handling demands, the diversion of management attention from reactor operation and many difficulties encountered in obtaining approval for storage expansions. Although very difficult to estimate rigorously, such costs will be borne by the ratepayers of those utilities just as will the costs of the MRS facility and should be taken into account in assessing the total cost to ratepayers of both the MRS and the no-MRS options.

"A note of caution about cost is in order. The cost estimates for all parts of the waste-management system, including the avoided costs of at-reactor storage, are subject to considerable uncertainty. Because the estimated incremental cost of

an MRS facility is the difference between two very large and uncertain numbers, it is subject to even greater uncertainty. Thus the significance of all estimates of incremental MRS costs must be kept in perspective.

Nondiscriminating factors

"In its qualitative evaluations, the DOE examined several other factors, such as health, safety, and environmental impacts, and socioeconomic effects. Although these proved to be nondiscriminating between systems with and without an MRS facility, a brief review may be of interest.

"Protecting the health and safety of both the public and workers is a primary goal of the waste program. Comparisons of MRS and no-MRS systems in terms of health and safety show that for both options the absolute levels of risk from system wide waste-management operations are so low that they do not significantly discriminate between the options.

"By design, the radiation exposures received by the public from an MRS facility will be below the regulatory limits set by the NRC in 10 CFR Part 72. The population doses are estimated to be less than 1 percent of the radiation dose received by the same population group from naturally occurring background radiation. In comparison with no-MRS systems, the occupational risk is slightly higher and the public risk is somewhat lower with an MRS facility.

"In general, the greatest health and safety risks will come from transportation, and they will be dominated by nonradiological fatalities experienced by the public from transportation accidents. The transportation risks are very small in absolute terms and do not discriminate between MRS and no-MRS options.

"Environmental risks and costs do not differ significantly for systems with or without an MRS facility.

"Some socioeconomic impacts are expected from an MRS facility, such as additional jobs and demands on public services. Recognizing that the preparation for, and accommodation of, a major radioactive waste-management facility imposes a variety of burdens on the host community and State, the NWPA as amended makes extensive provisions for impact compensation and mitigation. While all of these provisions increase the calculated cost of the MRS option relative to the no-MRS option, it is not at all clear that the net societal costs of the MRS option are in fact higher. If access to a site can be negotiated and an agreement approved, that would be *prima facie* evidence that the net socioeconomic impacts of the facility are seen as positive by the local community and the State or Indian Tribe.

CONCLUSION

"The DOE continues to believe that an integrated MRS facility can enhance the Federal waste-management system. Without the MRS facility, the nation's ability to provide for the timely transfer of spent fuel from reactors to the Federal system would depend on achieving a success oriented schedule for the repository.

"The DOE also believes that an MRS facility can contribute to the development of the system. Analyses that simply compare the operational characteristics of MRS and no-MRS systems tend to overlook the importance of an MRS facility as a strategic step toward a repository. Whether or not there is an MRS facility in the waste-management system, much in the way of resources and a large amount of human ingenuity will be dedicated during the next two decades to

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DOE Position on the MRS Facility Presented to MRS Review Commission

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managing spent fuel before it is emplaced in a repository. If those efforts are made by utilities in providing at-reactor storage at approximately 70 separate reactor sites, they will provide little experience that would help the DOE in meeting the technical, regulatory, and institutional challenges of developing and operating a system capable of accepting, transporting, and handling large quantities of high-level waste and spent fuel at high annual rates. If the efforts were exerted by the DOE in developing and operating an MRS facility, much of that experience would directly increase the likelihood of timely and reliable operation of the Federal waste-management system.

"Overall, the integrated MRS facility can provide a valuable, flexible coupling between waste-management activities at reactors and the repository program that allows each to be developed at the appropriate pace without impinging on

the other. During system development, the MRS facility allows the interface between the Federal system and reactors to be defined independent of the uncertainties about the waste package to be used at the repository. During operation, the MRS facility can allow an orderly transfer of spent fuel from reactor sites to the Federal system that is independent, to the extent allowed by statutory conditions, of the ability to emplace fuel in the repository. While the waste-management system can be developed and operated without an integral MRS facility, the DOE believes that the flexibility added by the MRS facility would substantially increase its ability to achieve the program objectives.

"In conclusion, the DOE supports an MRS facility because it would allow the DOE to better meet the objectives of timely disposal, timely and adequate waste acceptance, schedule confidence, and system flexibility. This facility

would receive, store, and stage shipments of intact spent fuel to the repository and could be later expanded to perform additional functions.

"Furthermore, the DOE believes that an MRS facility should be sited through the efforts of the Nuclear Waste Negotiator, especially if the negotiations lead to statutory conditions that allow the MRS advantages to be more fully realized. The DOE prefers that the current schedule linkages between the MRS facility and the repository and the statutory limit on MRS storage capacity be revised to enhance confidence that the development of the system is progressing and to allow other MRS advantages to be more fully realized. The DOE would support such revised conditions on the MRS facility if contained in a proposed agreement submitted by the Nuclear Waste Negotiator to the Congress for approval." ★

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

July 1989

DOE Issues Monitored Retrievable Storage System Study Summary Report

The passage of the Nuclear Waste Policy Act (NWPA), as amended, prompted DOE to reexamine the role of the Monitored Retrievable Storage (MRS) facility in the waste management system, and to this end a series of systems studies was conducted. The results of these studies were used in developing DOE's current position on the MRS facility.*

The MRS systems studies consisted of a series of tasks, listed below, that drew on existing information where available:

1. Scenario development and system logistics
2. Facility design (repository and MRS facility)
3. MRS storage concepts
4. Location of high-level waste packaging
5. Waste package design
6. Transportation analyses
7. System storage, at-reactor impact and integration analyses
8. Licensing
9. System reliability analysis
10. Summary report

Eight of the 10 tasks (2-9) examined various technical areas, and determined how they were affected by 9

* For the complete statement see "The DOE Position on the MRS Facility," DOE/RW-0239, June 1989, or the OCRWM Bulletin, May/June 1989.

combinations of waste handling and waste packaging functions at the MRS facility or the repository. The *MRS System Study Summary Report* (DOE/RW-0235, June 1989) builds on the results of the systems studies listed above, and, with some supplemental analysis, discusses the implications of various waste management system configurations, with and without an MRS facility.

Three scenarios were used in the Summary Report to analyze various configurations for the waste management system. The first scenario addresses a waste management system that disposes of intact spent fuel in a repository that starts operating in 2003. The second scenario examines various configurations of a system that disposes of consolidated fuel in a repository that starts operating in 2003. The third scenario analyzes the effects of delaying the start of repository operations by 5-10 years. This scenario also examines the effects of the conditions in the NWPA, as amended, that link the development and operation of an MRS facility to the repository and limit the storage capacity of the MRS facility.

Various system configurations are analyzed under each scenario to determine their impact on (1) system design; (2) waste acceptance capability; (3) requirements for additional at-reactor

storage (i.e., storage beyond the capacity of reactor storage pools); (4) selected operating parameters (e.g., cask-miles, shipment-miles, number of disposal containers); (5) total costs, including the costs of at-reactor storage; and (6) licensing.

The results of the MRS systems studies support the general conclusion that an MRS facility provides tangible benefits to

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For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

DOE to Undertake Procurement for Major Element of Licensing Support System

As reported previously in the *OCRWM Bulletin* (December/January 1988, May/June 1988 and May/June 1989), DOE is developing an electronic information management system known as the Licensing Support System (LSS) that is capable of storing, searching and retrieving, in full text, the records needed for geologic repository licensing.

The anticipated LSS system will consist of four elements which will be acquired through four distinct procurement activities in the following sequence:

- Capture System,
- Data Base Management System Software,
- Search System, Image System and Workstations and
- Long Distance Telecommunications.

The initial procurement, which is in process, is for a document Capture System that consists of a computer system and attached (local) terminals for control of

the document capture process, creation of bibliographic record cataloging and correction. Software is used to interface and control the required peripheral devices.

The procurement for the first module, Capture Systems, will be a full and open competition. Availability of a draft statement of work/requirements will be published in the *Commerce Business Daily*. Comments on the draft will be incorporated into specifications for the procurement. DOE anticipates holding a bidders' conference based on the revised specifications presented in the request for proposals.

The current timeline for Capture Systems procurements includes a request for comments available to vendors in July 1989, a request for proposals available in September 1989 and contract award in Spring 1990.

Capture Systems equipment is planned to be located at four different locations: the University of Nevada/Las Vegas, NV; the Nuclear Regulatory Commission, White Flint, MD; and the Department of Energy, Washington, DC and Las Vegas, NV. ☆

DOE Issues MRS System Study Summary Report (continued from page 1)

the waste management system. Of all the system configurations analyzed, a basic MRS facility in the eastern United States provides the greatest benefits to the waste management system in terms of early and adequate acceptance, schedule confidence and increased system flexibility. The benefits of this configuration would be magnified if the conditions and linkages in the NWPA, as amended, were removed or modified.

The addition of an MRS facility increases total costs. The basic MRS facility increases costs by about \$1.3 to \$1.7 billion, depending on the scenario examined. The addition of packaging functions to the MRS facility increases costs further, by approximately \$0.9 to \$1.5 billion in the intact fuel scenario. If the repository encapsulates spent fuel into disposal containers, consolidation adds about \$0.5 billion to the total costs.

All of the system configurations are licensable. For the systems with an MRS facility, licensing is expected to be easiest and quickest for the basic MRS facility.

The MRS systems studies lead to the conclusion that a basic MRS facility is preferable at present. No significant benefit was identified for either consolidating spent fuel or encapsulating it into disposal containers at an MRS facility. However, because of the current uncertainties about the waste package, there would be a benefit in retaining the flexibility to add these more complex functions to the MRS facility at a later time if such functions are found to be beneficial or necessary as the system design matures. ☆

Selected Events Calendar

July 26-27	Advisory Committee on Nuclear Waste, Phillips Building, 7920 Norfolk Avenue, Bethesda, MD. Contact Barbara Jo White, (301) 492-7288.
August 21-23	Nuclear Waste Technical Review Board: Containers and Transportation Panel Meeting, Albuquerque, NM. Contact Christopher Kouts of DOE, (202) 586-9761, or William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington, DC 20036, (202) 254-4792.
September 12-13	Nuclear Waste Technical Review Board, Washington, DC. Contact William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington, DC 20036, (202) 254-4792.
September 14	Nuclear Waste Technical Review Board: Environment and Public Health Panel Meeting, Washington, DC. Contact William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington DC 20036, (202) 254-4792.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

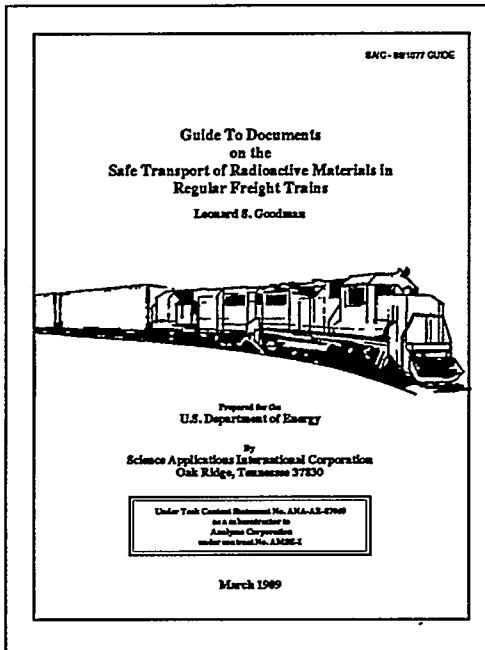
A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436. ☆

July 1989

DOE Announces Availability of Guide on Rail Service Options for Transporting Radioactive Materials

One of the transportation issues potentially impacting the OCRWM program is the type of rail service that will be used to ship spent fuel and high-level waste to a repository. A recently released *Guide to Documents on the Safe Transport of Radioactive Materials in Regular Freight Trains*, (SAIC-88/1077 GUIDE), March 1989, has particular value to a knowledgeable consideration of the rail service issue by discussing and referencing material that provides the regulatory and administrative history of transporting radioactive material by rail in regular trains.

OCRWM is currently evaluating two rail service options (regular train service and



dedicated train service) for transporting spent fuel and high-level waste. Regular train service uses trains that typically carry a mixture of commodities for many customers and from several origins to several destinations. Dedicated train service involves the shipment of a single commodity from one point of origin to one destination.

Limited distribution of the *Guide* is being made, and inquiries may be directed to Science Applications International Corporation, 800 Oak Ridge Turnpike, P.O. Box 2501, Oak Ridge, TN 37831, ATTN: Teresa Yearwood, (615) 482-9031 ext. 403. ☆

Nuclear Waste Technical Review Board Holds Press Conference in Las Vegas

The Nuclear Waste Technical Review Board (TRB), an independent agency established by Congress with members appointed by the President, met in Las Vegas, NV, and at Yucca Mountain from June 26-28, 1989. The purpose of the meeting was to secure the views of the State of Nevada and DOE concerning the scientific and technical issues pertaining to the viability of locating the Nation's permanent repository for high-level radioactive waste and spent nuclear fuel at the Yucca Mountain site in Nevada.

The first day of the meeting was devoted to presentations by the State of Nevada. After an introduction by R.R. Loux and an overview of technical concerns by C.A. Johnson of the Nevada Agency for Nuclear Projects, technical presentations were made on tectonics, faulting, unsaturated and saturated zone

hydrology, hydrologic modeling, performance assessment, geochemistry, volcanism, climate change and mineral resources.

On the following day, June 27, DOE provided a geologic description of the Yucca Mountain site. Other topics discussed included volcanism, seismicity and hydrologic conditions at the site, plans for site characterization and an overview of the field trip to take place on June 28.

As planned, a press conference was held on June 29. Dr. Don U. Deere, Chairman of the TRB, described the statutory basis of the TRB, its functions and membership. After acknowledging the concerns of the State of Nevada, Dr. Deere commented with appreciation on the extensive amount of information that had been made

available to the TRB and that time would be needed to digest and analyze the data. The extent of the data, as Dr. Deere indicated, was such that the TRB has "not seen any concern that has been raised by the State of Nevada that is not being given attention by DOE." Because of the importance of securing additional information that is not available from surface studies or bore holes, and in response to a question regarding the Exploratory Shaft Facility (ESF), Dr. Deere stated that the ESF is "a very necessary part of the site characterization work...and the Board endorses the need for the exploratory shaft and the drifts."

In addition to the observations on the information provided to the TRB, Dr. Deere stated that "I have been favorably impressed with the work they have done

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Report on Transportation Coordination Group Meeting

The Transportation Coordination Group met at the Fairmont Hotel in Chicago, IL, on July 25-26, 1989. The meeting opened with a half-day transportation program overview including a review of OCRWM program developments, a summary of transportation program activities, a summary of Yucca Mountain Project Office transportation activities and a review of OCRWM's Monitored Retrievable Storage System Study. This was followed by a report on transportation activities by the Nevada Nuclear Waste Project Office, by affected local governments in Nevada and by an update from the Transportation Working Group of the utilities.

The balance of the meeting was devoted to an emergency preparedness seminar that addressed the following topics:

- Review of State assumptions on conditions encountered in transportation accidents involving radioactive waste and typical response procedures,
- Review of Federal roles for emergency preparedness and assistance,
- Review of existing DOE roles in emergency response,
- Summary of emergency response planning for other hazardous materials under Superfund Amendments Act,
- General planning and response activities of States, Indian Tribes and local governments,
- Overview of training programs, Federal courses,
- State, Tribal and local training programs, exercises and sources of funding,
- Discussion of mutual aid agreements for emergency response,
- Review of Waste Isolation Pilot Project training program and
- Review and discussion of options for implementing Section 180(c) of the Nuclear Waste Policy Act, as amended.

For further information on this meeting contact Christopher Kouts at (202) 586-9761. ☆

NRC Announces Availability of Draft Technical Position on Tectonic Models in the Assessment of Performance of High-Level Radioactive Waste Repositories

The Nuclear Regulatory Commission (NRC) has announced the availability of the "Draft Technical Position on Tectonic Models in the Assessment of Performance of High-Level Radioactive Waste Repositories" in the *Federal Register*, Vol. 54, No. 116, June 19, 1989. The comment period expires Aug. 18, 1989.

This Technical Position is undertaken to document the Division of High-Level Waste Management (DHLWM) staff's position on the requirement for the support and implementation of tectonic model(s) in performance allocation and performance assessment.

The objectives of this Technical Position are to outline the regulatory requirements for support of tectonic models, to discuss the implementation of the requirements and to suggest the process for integrating tectonic models into data collection activities of the site characterization program. Adherence to this Technical Position will result in use of tectonic models that are acceptable to DHLWM staff and will help to assure the adequacy of the information provided in support of the license application.

For further information, contact Kenneth Kalman, Project Manager, Repository Licensing and Quality Assurance Project Directorate, Division of High-Level Waste Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555, (301) 492-0428. ☆

New Publications and Documents

MRS System Study Summary Report, DOE/RW-0235, June 1989.

See page 1 in this Bulletin for a description of this report.

The Role of the Monitored Retrievable Storage Facility in an Integrated Waste Management System, DOE/RW-0238, June 1989.

This factsheet provides a brief statement and description of the MRS facility and the DOE conclusion that an MRS facility, as an integral part of the waste management system, offers significant benefits to the developers, operators and users of the system.

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Nuclear Waste Technical Review Board Holds Press Conference in Las Vegas

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and the quality of the scientists that are working on the program; and that includes DOE, it includes the U.S. Geological Survey, it includes the National Laboratories, and it includes the people that are doing studies for the State of Nevada. I think they are a fine group of scientists and engineers that are really looking very carefully at these points. We certainly are impressed with the efforts

that are coming forward on this, and we will continue to monitor the activities and to make suggestions, but the program is very definitely a high-level scientific inquiry."

At the present time, the Containers and Transportation Panel of the TRB is scheduled to meet in Albuquerque, NM, on Aug. 21-23, and the full Board will

meet in Washington, DC, on Sept. 12-13. Following the meeting of the full TRB, the Environment and Public Health Panel will convene on Sept. 14. Information on these and later meetings of the TRB can be obtained from William Coons, Executive Director of the Nuclear Waste Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington, DC 20036, (202) 254-4792. ★

New Publications and Documents

(continued from page 4)

The DOE Position on the MRS Facility, DOE/RW-0239, June 1989.

This document contains the statement of DOE's position on the MRS facility as presented to the Monitored Retrievable Storage Review Commission on May 25, 1989.

Guide to Documents on the Safe Transport of Radioactive Materials in Regular Freight Trains, SAIC-88/1077 GUIDE, March 1989.

See page 3 in this Bulletin for a description of this report. Limited distribution of the Guide is being made, and inquiries may be directed to Science Applications International Corporation, 800 Oak Ridge Turnpike, P.O. Box 2501, Oak Ridge, TN 37831, Attn: Teresa Yearwood, (615) 482-9031, ext. 403.

Draft Technical Position on Tectonic Models in the Assessment of Performance of High-Level Radioactive Waste Repositories.

See page 4 in this Bulletin for a description of this document. Copies are available free of charge upon written request to Marlene Creviston, Repository Licensing and Quality Assurance Project Directorate, Division of High-Level Waste Management, U.S. Nuclear Regulatory Commission, Mail Stop 4-H-3, Washington, DC 20555, (800) 368-5642, Ext. 20440.

Nuclear Waste: DOE Has Terminated Research Evaluating Crystalline Rock for a Repository, GAO/RCED-89-148, May 1989.

Section 161(c) of the Nuclear Waste Policy Amendments Act of 1987 requires DOE to phase out funding for all existing research programs designed to evaluate the suitability of crystalline rock as a potential host medium for a nuclear waste repository. DOE terminated funding for such research projects. DOE has continued other research efforts involving crystalline rock because they will provide information it considers useful for evaluating the suitability of Yucca Mountain, NV, for a potential repository. Such research activities are permitted by the NWPA, as amended. Copies of this report, issued by the General Accounting Office, may be secured by writing to the U.S. General Accounting Office, P.O. Box 6015, Gaithersburg, MD 20877, or calling (202) 275-6241. ★

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

August 1989

Semiannual Information Meetings Scheduled in Nevada

In order to fulfill commitments made to the State of Nevada and to keep Nevadans informed about the waste management program, semiannual information meetings have been scheduled in three locations in Nevada in late September. The schedule is:

Monday, Sept. 25, 1989	Pahrump Community Center, Pahrump, NV
Tuesday, Sept. 26, 1989	Henderson Convention Center, Henderson, NV
Thursday, Sept. 28, 1989	Carson City High School Gym, Carson City, NV

It is anticipated that the agenda for the meetings would be similar to those held previously; that is, from 7:00 p.m. to approximately 10 p.m. each evening, a Project overview and topical presentations would be given, with a maximum amount of time available for questions and answers. In addition, informational exhibits will be displayed, with technical staff present to answer questions from individuals. The meetings will be widely advertised, and the news media and parties on the public mailing lists will be notified. The subjects of the topical presentations will be based on informal discussions with a number of Nevadans, as well as the current Project status. ☆

DOE Responds to NRC Comments on Site Characterization Plan for Nuclear Waste Studies in Nevada

The Nuclear Regulatory Commission (NRC) has provided DOE with a written Site Characterization Analysis (SCA) that contains the NRC staff's regulatory analysis of the Site Characterization Plan (SCP) issued by DOE in December 1988. The 6,000-page SCP describes what DOE knows about the Yucca Mountain site in Nevada and what studies DOE plans to

carry out to determine the scientific and technical suitability of the site.

In acknowledging receipt of the SCA and expressing appreciation for the effort that the NRC staff dedicated to the review, Sam Rousso, Acting Director, of OCRWM, stated in his letter of Aug. 9, 1989, that:

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DOE to Review Options for OCRWM Management and Operating Contractor

The U.S. Department of Energy (DOE) announced Thursday, Aug. 24, 1989, it will review its options for providing overall systems engineering, development and management services to the Office of Civilian Radioactive Waste Management (OCRWM).

The Department's action comes in response to a ruling issued today by the

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**DOE Responds to NRC Comments on Site Characterization Plan
for Nuclear Waste Studies in Nevada**
(continued from page 1)

"While we understand that NRC has specific concerns that need to be addressed, we are encouraged by NRC's overall conclusion regarding the improvement of the final document over the consultation draft. In addition, we concur in the NRC's determination that site characterization activities should proceed, recognizing that the objections expressed on quality assurance need to be resolved as we proceed with individual activities, and that the exploratory shaft facility (ESF) design activities should involve the NRC staff as agreed in our July 7, 1989, meeting. As we have indicated to the NRC staff, the Advisory Committee on Nuclear Waste and the Commissioners in recent interactions, it is essential for DOE to proceed with site characterization activities to gather the data needed to determine site suitability. DOE plans to proceed with such activities.

"In accordance with the Nuclear Waste Policy Act, as amended, and 10 CFR Part 60, over the next several months the DOE will be carefully considering each of the

SCA concerns and will continue to interact with the NRC staff. We are committed to assuring full compliance with all applicable regulatory requirements contained in 10 CFR Part 60 and look forward to our interactions involving critical regulatory interpretations. As you are aware, at our July 26, 1989, meeting we agreed to approximately 16 technical interactions between our staffs for the remainder of 1989. These interactions will address technical topics and regulatory interpretations that we mutually agree are of the highest priority. Additional technical interactions during calendar year 1990 will be discussed at the meeting scheduled for October 31, 1989. Also, as we discussed at the July 6 and 7, 1989, meetings, DOE will continue to interact with the NRC staff to ensure that our quality assurance programs are acceptable and involve the NRC staff in our ESF Title II design process.

"DOE intends to report to the NRC and to the State of Nevada, via the semiannual site characterization progress reports, any

major changes to the DOE's site characterization program as information about the site is collected and evaluated, as more detailed designs of the repository and waste package are developed and as the results from performance assessments are obtained. These progress reports will also report major changes to the site characterization program made in response to external concerns, including those identified in the SCA. It should be noted that the progress reports only report changes to the program which have been approved by DOE management and will not discuss potential changes being considered. Actual changes to the site characterization effort will be managed through other program-controlled documents.

"As you may be aware, the repository program schedule is currently under review by the Department to ensure that the schedule is both realistic and achievable. When this effort has been completed, we will apprise you of its results..."

★

**DOE to Review Options for OCRWM Management
and Operating Contractor**
(continued from page 1)

U.S. Claims Court which permanently enjoins DOE from awarding the OCRWM management and operating (M&O) contract to Bechtel Systems Management Inc. (BSMI) under a 1987 solicitation. BSMI was selected in December 1988 following competition.

TRW Engineering Safety Systems Inc., one of the two unsuccessful bidders for the M&O contract, challenged the procurement action through a lawsuit

filed in the U.S. Claims Court in December 1988.

Department officials are disappointed about the Claims Court ruling, but will now review the Department's options to determine how best to proceed with acquiring M&O contractor services.

Over the last few months, Secretary of Energy James D. Watkins has been reviewing the entire program and

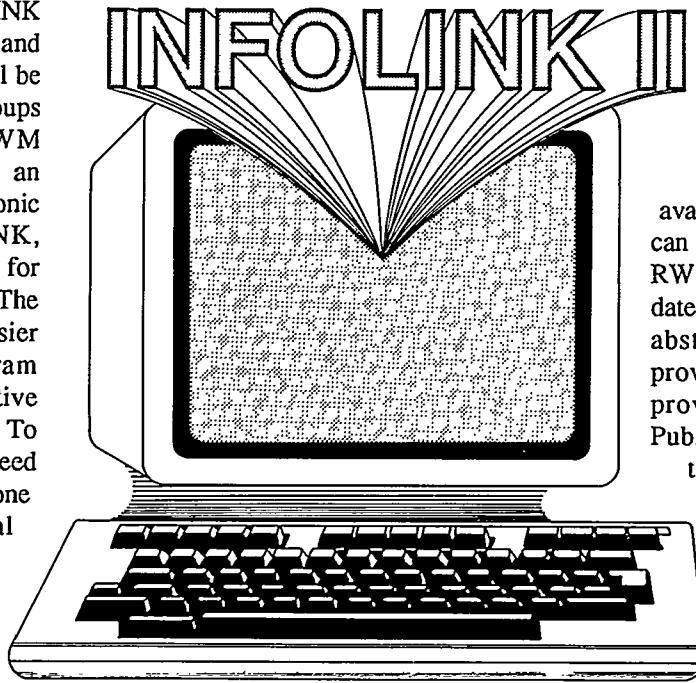
activities required by the Nuclear Waste Policy Act of 1982, as amended. He has made it clear that the current primary focus will be to develop an effective and scientifically sound site characterization review to assess suitability of a candidate site at Yucca Mountain, Nevada, as required by law. DOE does not believe that today's ruling will significantly affect its ability to proceed with near-term characterization studies.

★

INFOLINK II Available October 1

Starting Oct. 1, 1989, INFOLINK II, a computerized data base and communications network, will be available for persons or groups interested in the OCRWM program. INFOLINK II is an enhanced version of the electronic bulletin board, INFOLINK, previously available to users for information on the program. The new data base provides easier access, increased program information and an interactive system capable of searches. To access the system, a user will need a personal computer with a phone modem and an individual account with a username and password assigned.

INFOLINK II will continue to maintain a bulletin board that provides the most current OCRWM program information. An Alert/Newsflash feature will identify current information on DOE positions on waste management developments. Full text of OCRWM press releases, selected speeches and technical papers, Congressional testimony and the current OCRWM



Bulletin are available on-line to inform users of program developments. Through INFOLINK II, the current OCRWM Bulletin will be available on-line the same day it is approved and submitted for printing. Users will be able to print copies of any text that is in the bulletin board.

With INFOLINK II, users will be able to review a directory of selected OCRWM printed products, exhibits and audiovisual materials. Any of the 300 titles available for distribution by OCRWM can be accessed and ordered by DOE/RW number, subject area, publication date or type of product. Descriptions and abstracts for all the products are provided. INFOLINK II will also provide access to the OCRWM Publications Catalog citing selected technical and public information documents from OCRWM and other sources on high-level radioactive waste. A compilation and index for previous OCRWM Bulletins will be available for easy reference searches.

Previous users of the INFOLINK system will be able to transfer their accounts to the new system. To transfer an account or open a new account on the system, interested persons are encouraged to contact Robin Beard, Information Services Division, Office of External Relations and Policy, (202) 586-5722. ☆

**NRC Publishes Final Rule on National Environmental Policy Act
Review Procedures for Geologic Repositories
for High-Level Waste**

The Nuclear Regulatory Commission (NRC) is adopting procedures for implementation of the National Environmental Policy Act with respect to geologic repositories for high-level radioactive waste (see *Federal Register*, Vol.54, No. 126). In accordance with the Nuclear Waste Policy Act of 1982, as

amended, the NRC will adopt, to the extent practical, the final environmental impact statement prepared by DOE that accompanies a recommendation to the President for repository development.

The rule recognizes that the primary responsibility for evaluating environ-

mental impacts lies with DOE; and, consistent with this view, it sets out the standards and procedures that would be used in determining whether adoption of DOE's final environmental impact statement is practical. The effective date of the final rule is Aug. 2, 1989.

☆

Radioactive Materials Symposium Report

The 9th International Symposium on the Packaging and Transportation of Radioactive Materials (PATRAM '89), held from June 11-16 in Washington, DC, provided a forum for the exchange of information and experience among international experts in radioactive materials transportation. PATRAM '89 was organized in cooperation with the

International Atomic Energy Agency and hosted by DOE. Technical sessions at PATRAM '89 focused on technology, operations and risk assessment and operation analysis.

Nearly 650 participants registered at PATRAM '89, making it the largest in this symposium series that started in

Germantown, MD, in 1962. Six previous PATRAM meetings were held in the United States and two overseas. Participants registered at PATRAM '89 from Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Finland, Israel, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, United Kingdom, United States and the Soviet Union.

Selected Events Calendar

Sept. 12-13	Nuclear Waste Technical Review Board, Washington, DC. Contact William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington, DC, (202) 254-4792.
Sept. 14	Nuclear Waste Technical Review Board: Environment and Public Health Panel Meeting, Washington, DC. Contact William Coons of the Technical Review Board, 1111 18th Street, N.W., Suite 801, Washington DC, (202) 254-4792.
Nov. 26-29	Nuclear Energy Forum '89, San Francisco. Contact U.S. Council for Energy Awareness conference office, (202) 293-0770.

DOE/Nuclear Regulatory Commission Technical Exchanges*

Sept. 21	Calico Hills Plan; Anticipated Processes and Events/Unanticipated Processes and Events
Sept. 26	Tectonics
Oct. 3	Title 10 Code of Federal Regulations Part 60 Flowdown for Subsystems Design Requirements Document and Interfaces
Oct. 11	Geophysical Anomaly
Oct. 25	Tectonics, Container Materials
Nov. 1	Data Management
Nov. 15	Performance Assessment Integration
Nov. 28	Tectonics
Dec. 7	Exploratory Shaft Facility Test Interference
Dec. 13	Scenario Development

* Most DOE/NRC Technical Exchange Meetings will be held at NRC Headquarters, White Flint, MD. For further information concerning these meetings contact Gordon Appel, U.S. Department of Energy, OCRWM, Office of Systems Integration and Regulations, RW-331, 1000 Independence Avenue, S.W., Washington, DC 20585, (202) 586-1462.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 1479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436. ★

In his opening remarks, PATRAM '89 Chairman Lawrence Harmon, DOE, pointed out that the proven track record of safe shipments is the result of careful planning and exacting execution by specialists in transporting radioactive materials who stress the importance of stringent regulatory systems, training and compliance assurance.

Troy E. Wade II, DOE Acting Assistant Secretary for Defense Programs, delivered the keynote address. Mr. Wade encouraged attendees to continue the good work that has produced an outstanding safety record, but he cautioned that public and political acceptance must be continually earned through vigilant efforts. He spoke of DOE's willingness to welcome and endorse outside oversight, as well as the need for significant attitude change by DOE toward communication with the public.

Following Mr. Wade's remarks, three plenary speakers presented papers: John F. Ahearn, Vice President and Senior Fellow at Resources for the Future, on "Public Risk Communication;" Lewellyn King, publisher of *The Energy Daily*, on "Courting Disaster by Fearing Risk;" and Robert W. Bishop, General Council and Secretary for the Nuclear Management and Resources Council, on "The Challenges of Radioactive Waste Transportation."

(continued on page 5)

Radioactive Materials Symposium Report (continued from page 4)

More than 250 papers were presented at PATRAM '89. For the first time in PATRAM history, two university students presented papers at a program session. In addition to the papers presented at technical sessions, several poster sessions were conducted; exhibitors featured displays, models and printed materials; and video

presentations were shown during special lunch sessions. PATRAM '89 Proceedings are planned for fall publication.

A proposal from Japan to host PATRAM '92 was unanimously accepted by the PATRAM Steering Committee, composed of representatives from the

United States, United Kingdom, Federal Republic of Germany, France, Japan, International Atomic Energy Agency and Sandia National Laboratories. Chairman Satoshi Fukuda stated that the exact date and location for PATRAM '92 will be announced in the near future.

★

New Publications and Documents

OCRWM Backgrounder, *Studies of Alternative Methods of Nuclear Waste Disposal*, DOE/RW-0240.

This Backgrounder provides an overview of alternative methods of nuclear waste disposal, including subseabed disposal, emplacement in very deep holes, disposal in melted rock, interment in island-based geologic repositories or in ice sheets, injection into deep wells, disposal in space and indefinite surface storage as well as the transmutation waste form treatment.

OCRWM Backgrounder, *Federal Agencies Involved in the Implementation of the Nuclear Waste Policy Act of 1982*, DOE/RW-0241.

This Backgrounder describes the regulatory responsibilities of the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency in siting and developing the Nation's geologic repository. It also outlines the responsibilities of the Department of Transportation and the NRC in establishing a system for transporting spent nuclear fuel and high-level radioactive waste. In addition, it describes the NRC's role in licensing a monitored retrievable storage facility. Other agencies having responsibilities under the Nuclear Waste Policy Act are identified as well as relevant major Federal regulations.

OCRWM Backgrounder, *Geographical Distribution of High-Level Nuclear Waste*, DOE/RW-0242.

This Backgrounder provides data on existing and projected inventories of spent nuclear fuel by state as well as the national inventory of existing and projected high-level radioactive waste.

Emergency Preparedness for Transportation Incidents Involving Radioactive Materials, SAIC-89/1354.

The purpose of this document is to summarize DOE's comprehensive capabilities for responding to radiological transportation emergencies. The report provides an overview of the Federal emergency response program, and describes participating Federal agency responsibilities. More specifically, it identifies the resources, including equipment, personnel and procedures currently in use or proposed for use that comprise DOE's transportation emergency preparedness program. For copies contact Teresa Yearwood, Science Applications International Corporation, P.O. Box 2501, Oak Ridge, TN 37831, (615) 481-2810.

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

September/October 1989

DOE Releases Comprehensive Analysis of Total Cost of the Civilian Radioactive Waste Management System

Each year a comprehensive analysis of the total cost of the radioactive waste management system over its complete life cycle is performed as a reference planning document that aids in the financial planning for the DOE's Civilian Radioactive Waste Management Program. The analysis is contained in an annual report, titled *Analysis of the Total-System Life-Cycle Cost for the Radioactive Waste Management Program* (DOE/RW-0236, May 1989).

This cost analysis reflects the provisions of the Nuclear Waste Policy Amendments Act of 1987. Under this legislation, Congress directed DOE to characterize only the Yucca Mountain site in Nevada to assess its suitability for development as a repository; to discontinue site-specific studies for a second repository; to report to the President and Congress between the years 2007 and 2010 on the need for a second repository; and to site, construct

(continued on page 2)

Nuclear Waste Technical Review Board Reviews Preliminary Information on Yucca Mountain, Nevada, Site and Votes to Accept Board Panel Reports

Members of the Presidentially appointed Nuclear Waste Technical Review Board (NWTRB) met on Sept. 12-13, 1989, to adopt Board operating procedures; to review information gathered to date by the Board on DOE's scientific and technical work at the proposed Yucca Mountain site in Nevada; and voted to accept reports from several Board Panels. The Panels were created to identify issues and make recommendations to the Board in specific scientific and technical areas. Copies of the Panel reports may be obtained by contacting William Coons of the NWTRB at 1111 18th Street, N.W., Suite 801, Washington, DC 20036.

In addition to the full NWTRB meeting, the first meeting of the NWTRB Environment and Public Health Panel took

place on Sept. 14, 1989. At this meeting the Panel was briefed by DOE, the Nuclear Regulatory Commission, and the Environmental Protection Agency (EPA) about health, safety, and environmental regulatory activities pertaining to exploratory work underway at the Yucca Mountain site.

After opening remarks by Dr. Melvin W. Carter, Chairman of the Panel, a general overview was provided by DOE. This was followed by briefings on water and water resources, air quality and meteorology, biological resources, cultural resources, and the EPA's High-Level and Transuranic Waste Standards as promulgated in 40 Code of Federal Regulations Part 191. ☆

Impact of the Desert Tortoise Endangered Species Status on Site Characterization at Yucca Mountain, Nevada

On Aug. 4, 1989, the U.S. Fish and Wildlife Service (FWS) of the Department of the Interior used its emergency authority to place the desert tortoise on the endangered species list. DOE, knowing that the desert tortoise is a sensitive species, has been for the past several years studying the desert tortoise at the Yucca Mountain site and has been performing field activities to minimize

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Published by the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM)

For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

DOE Releases Comprehensive Analysis of Total Cost of the Civilian Radioactive Waste Management System

(continued from page 1)

and operate one Monitored Retrievable Storage (MRS) facility subject to certain conditions.

The primary use of the total-system life-cycle cost (TSLCC) is to help determine if the fees levied on electricity from commercial nuclear power plants are sufficient to cover the costs of the program. This report summarizes the TSLCC analysis performed for the sixth annual evaluation of the adequacy of the fees collected for the Nuclear Waste Fund. The TSLCC analysis encompasses five major cost components of the waste management system that are financed by disbursements from the Nuclear Waste Fund; namely, development and evaluation, transportation, repository(ies), monitored retrievable storage, and benefits payments.

Presented in this report are the rationale for the various cases studied, analytical interpretations of the DOE's waste management strategy, brief descriptions of the cost estimation methods by cost component, summaries of the cost

estimates, and comparisons of the estimates with the results of previous TSLCC analyses.

The TSLCC analysis examines costs for cases that are distinguished by such features as the quantity of waste to be disposed of, the number of repositories (one or two), the functions of a monitored retrievable storage facility, and the inclusion of spent fuel rod consolidation in the system. However, it is not intended to be a system analysis of alternative engineering designs and assumptions.

The total-system cost for the system with a repository at Yucca Mountain, Nevada, an MRS facility, and a transportation system is estimated at \$24 billion (expressed in constant 1988 dollars). The report includes the following cost estimates for a single repository system, depending on the form of spent fuel (intact or consolidated into canisters at an MRS facility) that would be placed in the repository: development and evaluation - \$9.7 billion; repository construction and operation - \$9.1 billion (intact) or \$8.7

billion (consolidated); transportation - \$2.6 billion; MRS facility - \$1.8 billion (intact) or \$3.1 billion (consolidated); and benefits to State and local affected governments - \$0.7 billion.

In the event that a second repository is required and authorized by Congress, the total-system cost is estimated at \$31 to \$33 billion, depending on the quantity of spent fuel to be disposed.

The report indicates that the single repository case would save about \$7 billion over the case with two repositories. These savings are the net result of \$10 billion in savings resulting from the elimination of the second repository and the development costs associated with the second repository. These decreases, however, are offset by an increase of \$3 billion in additional costs associated with placing additional wastes in the first repository, processing the additional wastes through the MRS, and increased costs in transporting all wastes to the repository.

The cost estimates are based on the repository beginning its operations in the year 2003. (The schedule used in the cost analyses presented in this report is the one contained in the "Draft 1988 Mission Plan Amendment" of June 1988. That schedule is currently under review by DOE and may be changed.)

The methodology proposed by DOE in the *Federal Register* in August 1987 was used to estimate the share of the total-system costs that should be allocated to the disposal of defense high-level waste in the civilian repositories. Estimates of the defense waste share of the total-system costs are about \$4 billion (or 15 percent of the total) for the single repository system cases, and about \$6 billion (or 19 percent of the total) for the two repository cases. The costs of disposing of the defense high-level radioactive waste will be paid by DOE. *

Selected Events Calendar

Nov. 26-29	Nuclear Energy Forum '89, San Francisco. Contact U.S. Council for Energy Awareness conference office at (202) 293-0770.
DOE/Nuclear Regulatory Commission Technical Exchanges*	
Oct. 25	Tectonics, Container Materials
Nov. 1	Data Management
Nov. 15	Performance Assessment Integration
Nov. 28	Tectonics
Dec. 7	Exploratory Shaft Facility Test Interference
Dec. 13	Scenario Development

* Most DOE/NRC Technical Exchange Meetings will be held at NRC Headquarters, White Flint, MD. For further information concerning these meetings contact Gordon Appel, U.S. Department of Energy, OCRWM, Office of Systems Integration and Regulations, RW-331, 1000 Independence Avenue, S.W., Washington DC 20585, (202) 586-1462.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, Ext. 20436. Washington, DC, area residents should call 492-0436.

For information on meetings and events occurring between issues of the *OCRWM Bulletin* use OCRWM INFOLINK, an electronic bulletin board that can be accessed through a standard computer communications capability on (202) 586-9359. The *OCRWM Bulletin* is available through INFOLINK. *

Impact of the Desert Tortoise Endangered Species Status on Site Characterization at Yucca Mountain, Nevada

(continued from page 1)

any adverse impacts on the species. This endangered species listing will protect the tortoise for 240 days, during which time FWS will publish a proposed rule to formally list the desert tortoise as endangered, and provide for public comment, and hearings (if requested). Pending this review, Yucca Mountain site characterization activities have been restricted to vehicle traffic on main and secondary roads only. Only casual access (i.e., foot traffic) that will not disturb the tortoise or its habitat is allowed. In addition, environmental worker education training materials are being revised to address the tortoise issue.

Because desert tortoises are present on the Yucca Mountain site, a biological assessment is being prepared by the Yucca Mountain Project Office that analyzes project impacts to the tortoise and its habitat. The biological assessment also includes recommendations to be taken to protect the desert tortoise and minimize adverse impacts. After DOE completes the biological assessment, formal consultations may then be required between the FWS and DOE, if the proposed site characterization activities could potentially affect the desert tortoise habitat and/or result in the incidental take of desert tortoises.

The FWS will ultimately render its biological opinion as to whether or not site characterization activities will result in a "jeopardy" or "no jeopardy" situation for the tortoise. If it is a "no jeopardy" biological opinion, formal consultation will end and DOE will proceed to implement the mitigation measures that are included in the biological assessment. If the FWS issues a "jeopardy" biological opinion, DOE and FWS will examine all feasible alternatives. The FWS has 90 days (which may be extended to 150 days) after it determines the information submitted by DOE is complete to render its biological opinion. ☆

Draft Reclamation Program Plan Issued by DOE

In conjunction with its site characterization program for the Yucca Mountain site in Nevada, DOE has developed an overall environmental program for this site. This program is described in the Environmental Program Overview (see *OCRWM Bulletin*, December 1988) and includes plans for reclamation of areas disturbed during the site characterization process.

Reclamation activities are those activities employed to return disturbed land to a stable ecological state with a form and productivity similar to the pre-productive state. Decommissioning will be required at many locations, and includes the removal of all aboveground, manmade structures and wastes from each facility (e.g. drill pads, road surfacing materials, equipment, buildings, utilities) and the closing and sealing of boreholes.

The Draft Reclamation Program Plan (RPP) (DOE/RW-0244, August 1989) describes the reclamation policy of DOE for the Yucca Mountain site and presents an overview of the reclamation program. The RPP also provides an overview of the reclamation needs relative to site

characterization; a review of legislation and requirements relevant to reclamation; and a review of previous commitments made by DOE to certain types of reclamation activities. Policy issues discussed in the RPP include (1) reclamation objectives, (2) consistency of reclamation practices across the Yucca Mountain site, and (3) timing of reclamation. As a result of recommendation feasibility studies and completion of specific field activities, the draft RPP may be revised.

Each disturbed area will be reclaimed as soon as practicable following determination that the area is no longer

needed for the site characterization program. The reclamation activities planned for site characterization will be described in detail in the Reclamation Implementation Plan now being developed. A Reclamation Feasibility Plan has been developed to determine effective approaches to reclamation in the arid environment of Yucca Mountain.

Areas where reclamation activities have occurred will be monitored for several years to determine the success of reclamation at each area. Additional reclamation activities will be employed, if necessary, to meet established reclamation criteria. ☆

OCRWM Establishes Speakers Bureau

During the course of the year, OCRWM and the Yucca Mountain Project Office (YMPQ) in Las Vegas, NV, receive many invitations to attend and/or speak at regional and national conferences. In order to coordinate OCRWM and YMPQ representation at these events, a Speakers Bureau has been established to serve as a point of contact for organizations desiring OCRWM participation.

Questions regarding the Speakers Bureau and the availability of OCRWM personnel for conference participation can be addressed to Robin Beard, U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, S.W., Washington, DC 20585, (202) 586-5722. ☆

Transportation Plan Issuance Delayed

In the *Transportation Institutional Plan* published in August 1986, OCRWM stated its intent to integrate transportation planning documents through the development of an overall Transportation Plan. A major step toward plan integration was expected to be accomplished in the summer of 1989 with the release of the first iteration (in draft form) of a document to review the following activities:

- the organization of the transportation program and management responsibilities;
- cask design and development;

- operational planning;
- transportation system studies;
- institutional interactions; and
- the application of quality assurance requirements and procedures in OCRWM's transportation program.

Consistent with the recommendation of interested parties, OCRWM made the commitment to include in the plan the estimated schedules for conducting transportation activities, and discussion of the integration of transportation activities with the schedules for the overall

waste management program. Because OCRWM is now conducting a detailed review of schedules for all program activities, the release of the draft Transportation Plan has been postponed. Following completion of the waste management schedule review, the plan will be revised as necessary and released for public review and comment.

Notice will be provided in the *OCRWM Bulletin* when a new date for issuance of the draft plan has been established. For additional information contact Christopher Kouts, (202) 586-9761. ☆

New Publications and Documents

"Analysis of the Total System Life-Cycle Cost for the Civilian Radioactive Waste Management Program," DOE/RW-0236, May 1989.
See page 1 of this *OCRWM Bulletin* for the report description.

"Draft Reclamation Program Plan," DOE/RW-0244, August 1989.
See page 3 of this *OCRWM Bulletin* for the report description.

Factsheet Package - A package of factsheets on topics pertaining to the nuclear waste management program in a specially designed folder is now available. The topics covered include "Overview - Nuclear Waste Policy Act," "What is nuclear waste?," "What is spent fuel?," "How are radiation and nuclear waste related?," "How much high-level nuclear waste is there?," "What will a nuclear waste repository look like?," "What measures ensure safe transportation of high-level nuclear waste?," "The illustrated mechanics of nuclear waste disposal."

"NRC Staff Site Characterization Analysis of the Department of Energy's Site Characterization Plan, Yucca Mountain Site, Nevada," NUREG-1347, August 1989.*

This Site Characterization Analysis documents the Nuclear Regulatory Commission staff's concerns resulting from its review of DOE's Site Characterization Plan for the Yucca Mountain site in Nevada. The DOE response to this analysis appeared in the August 1989 issue of the *OCRWM Bulletin*.

"Analysis of Human Factors Effects on the Safety of Transporting Radioactive Waste Materials," BMI/OTSP-04, M.D. Abkowitz, S.B. Abkowitz, and M. Lepofsky, Battelle Office of Transportation Systems and Planning, April 1989.*

This report is a scoping study to generally assess the relationship of truck accidents and human factors, as well as ascertain what areas related to human factors might require further study by DOE. This preliminary evaluation considered human factors in driving and loading/transfer operations, emphasizing the relationship of human error and safety as related to driver performance. This report considers truck, rail, and barge modes, with focus on truck operations because of the widespread availability of truck accident data and related literature.

"Study of Minimum-Weight Highway Transporters for Spent Nuclear Fuel Casks," BMI/OSTP-06, J.A. Hoess and V.J. Drago, Battelle Office of Transportation Systems and Planning, May 1989.*

This study identifies minimum-weight tractors and trailers capable of safely and reliably transporting a 56,000-lb cask without exceeding a gross combination weight (GCW) of 80,000 lb, including all fluids, driver(s), payload, and accessories; and an 80,000-lb cask without exceeding a GCW of 110,000 lb. The technical data gathered indicate that development of such tractor-trailer combinations may be possible by using existing technology and commercially available components.

* Copies of these publications are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

November/December 1989

DOE Submits Report to Congress on Reassessment of The Civilian Radioactive Waste Management Program

The House Committee on Appropriations Report accompanying the Energy and Water Development Appropriation Act for 1990, directed DOE to submit a report within 60 days of enactment describing in detail how DOE plans to respond to the Committee's concerns regarding schedules, program management, and contractor integration with respect to implementation of the Nuclear Waste Policy Act of 1982, as amended.

In response to this Congressional request, a report was submitted on Nov. 29, 1989, that contains a three-point action plan. This plan centers on the restructuring of the Office of Civilian Radioactive Waste Management (OCRWM), initiatives to gain access to the Yucca Mountain site to continue the scientific investigations needed to determine the site's suitability or unsuitability for repository development, and an initiative for establishing integrated monitored retrievable storage for spent fuel with a target for waste acceptance in 1998.

The major elements of this plan follow:

Management Structure

1. Appointment of New Director: The Secretary has proposed a candidate for a new Director of OCRWM to the White House for appointment by the President.

2. Direct-Line Reporting: Direct-line reporting by the Manager of the Yucca Mountain Project Office to OCRWM at Headquarters has been established for all programmatic and policy direction. This allows for a direct line of authority and accountability between Headquarters and field elements of the Program for the first time.
3. Independent Management Review: The Secretary has directed an independent review be performed to assess the effectiveness of the Program organizational structure and processes.
4. Management Controls: Formal, more rigorous program and project management controls are being implemented to enhance those previously in place. This includes the development or revision of technical, schedule, and cost baselines subject to formal change control procedures.
5. Contractor Support: OCRWM's overall approach has been to adjust contractor support to a level consistent with the schedule and available funding. OCRWM has reviewed its contract support to identify those activities that could be deferred, cancelled, or consolidated, and is now studying the results of that review to decide what specific actions to take. Consolidation of

contract activity to permit a more integrated effort and improved management oversight is already underway.

6. Program Schedule: DOE has recently completed a reevaluation of the overall Program schedule. This review has shown a significant delay of the start of repository operations from 2003 to 2010. The results of the schedule reevaluation are shown in the accompanying figure.

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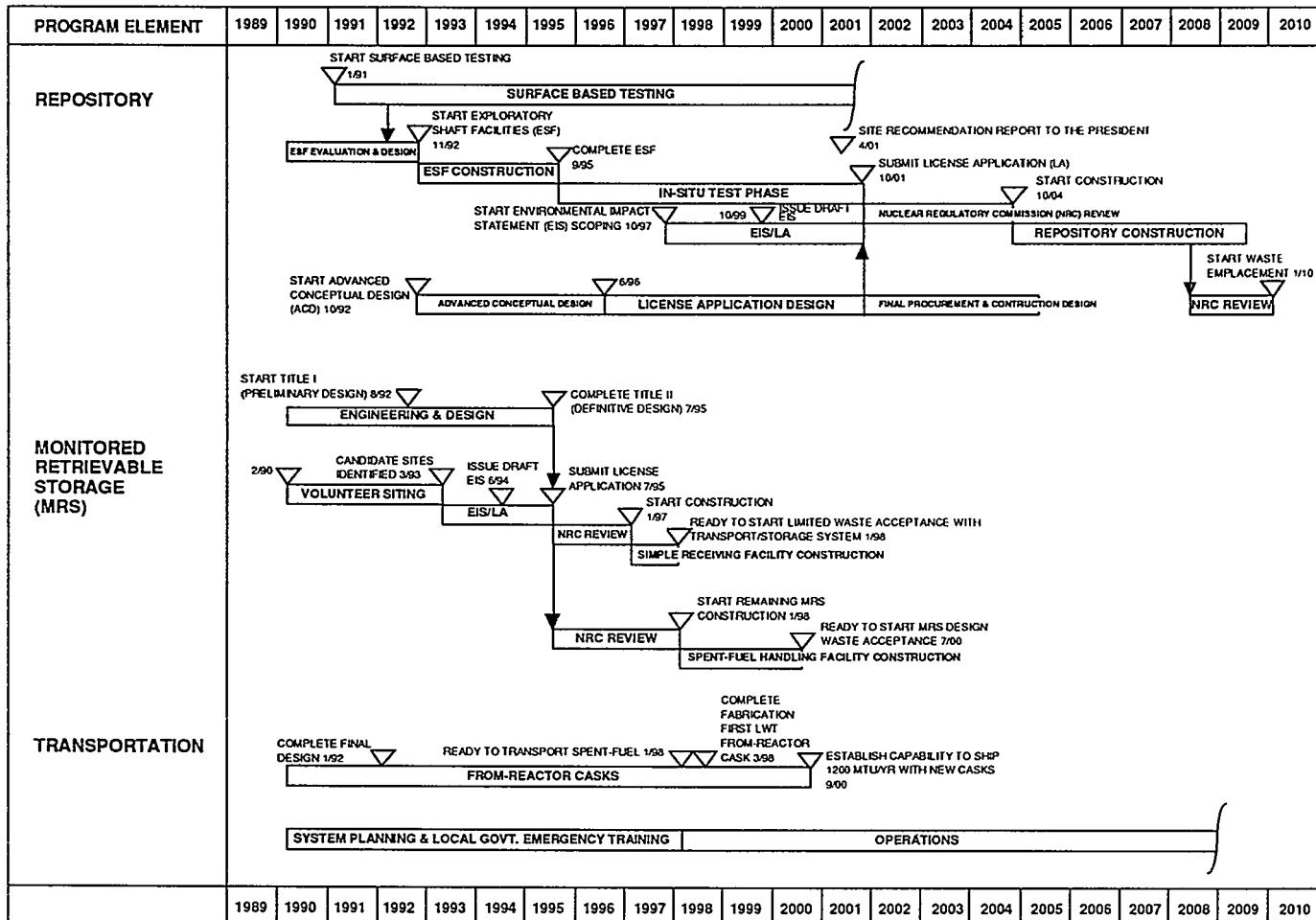
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For further information about the national program or for copies of new publications and documents listed in the *OCRWM Bulletin* contact the U.S. Department of Energy, OCRWM, Office of External Relations and Policy, Mail Stop RW-40, 1000 Independence Avenue, SW, Washington, DC 20585, (202) 586-5722. The *OCRWM Information Services Directory* is available to provide sources of program information for the States, Indian Tribes, involved parties, and the public.

**DOE Submits Report to Congress on Reassessment of
The Civilian Radioactive Waste Management Program**
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REFERENCE SCHEDULE FOR RESTRUCTURED PROGRAM
(SCHEDULE ASSUMES MRS SITED BY NUCLEAR WASTE NEGOTIATOR AND MODIFICATIONS TO AMENDMENTS ACT LINKAGES BETWEEN MRS AND REPOSITORY.)

7. Nuclear Waste Negotiator: The Secretary is working in close cooperation with the White House to facilitate the appointment of the Nuclear Waste Negotiator as provided for in the Nuclear Waste Policy Amendments Act.

Yucca Mountain

1. Site Access: An important prerequisite to new scientific investigations at Yucca Mountain is issuance of the required environmental permits by the State of Nevada. The Department has attempted to work constructively and positively with the State over the past years, but the State government has been adamantly opposed to the Program and has failed to provide environmental permits. DOE has requested the Department of Justice to initiate litigation to obtain the necessary permits.
2. Site Suitability: The priority of the Program's Yucca Mountain site characterization activities will be on iterative scientific investigations of the site to examine its suitability. The Department plans to take advantage of some early surface-based tests in advance of the ability to construct the exploratory shaft facility. The Department continues to believe that an iterative scientific approach using both surface-based and underground tests, combined with continuing evaluation of the data as it relates to site suitability, is the efficient, cost-effective, and timely way to conduct the scientific investigations. It should be noted that, if the site is found unsuitable at any time during characterization, the Department will notify the State of Nevada and the Congress and will discontinue further scientific evaluation at Yucca Mountain.

(continued on page 3)

DOE Conducts Prototype Testing For LSS

As part of the process of designing the Licensing Support System (LSS), DOE has developed a prototype system to study user interfaces and information science issues related to LSS configuration, and to collect technical information needed to develop specifications for the LSS hardware and software procurements. This prototype system, a representative data base with associated text and image retrieval capabilities, was completed during the past summer.

A user test of the prototype system, consisting of two separate sessions, was conducted from Oct. 2-13, 1989, at McLean, VA. The purpose of the test was to provide the technical data needed to maximize the match between system capabilities and genuine user requirements, while at the same time minimizing cost and schedule risk in the LSS system development. Forty-six representatives from DOE, the Nuclear Regulatory Commission, State and local governments, industry, and DOE contractors participated in the test.

The prototype test user group made valuable comments about the fundamental features which will make the LSS more responsive to user needs. This included comments on desirable features, preferences, and expectations of potential users—factors that are often as critical to user acceptance as a system's basic design.

During the year ahead, DOE will be going through an intensive period of detailed design development for each of the major modules of the LSS. The design documents covering the data base search system and the document imaging systems will consider all the experiences, comments, and critiques gained during the prototype user test effort. In the interim, the results of the prototype user test effort will be analyzed and a report prepared for delivery early next year to DOE, each test participant, and to members of the LSS Advisory Committee. ☆

Preparations for International High-Level Waste Management Conference

The First Annual International High-Level Radioactive Waste Management Conference will be held on Apr. 8-12, 1990, at Caesar's Palace Hotel, Las Vegas, NV. The Conference will be an international forum for presentation and discussion of scientific and technical information on management and disposal of high-level radioactive wastes.

Abstracts of all papers submitted for consideration have been peer reviewed. Authors of accepted abstracts have been notified of acceptance and given guidelines for preparations of full papers that are due to the American Nuclear

Society by Jan. 5, 1990. It is planned to distribute the papers at the Conference.

In addition to the scientific and technical meetings to be held at the Conference, a broad range of exhibits will be shown that are mainly sponsored by leading contractors and businesses providing services and products dealing with the safety and security of high-level radioactive waste. For information on exhibit opportunities, contact Maureen Rafferty, American Society of Civil Engineers, 345 East 47th Street, New York, NY 10017, (212) 705-7543. For more information on the conference see the enclosure in this *Bulletin*. ☆

DOE Submits Report to Congress on Reassessment of The Civilian Radioactive Waste Management Program

(continued from page 2)

3. Deferral of Major Site-Specific Design Activities: Major activities related to the design of a repository at the Yucca Mountain site will be deferred until more information is available concerning the suitability of the site. This will conserve resources and allow concentration of efforts on the scientific investigations.

Monitored Retrievable Storage

1. Monitored Retrievable Storage/Repository Linkages: The primary objective of the Program is to develop a licensed geologic repository for the permanent disposal of spent fuel and high-level waste. Based on the detailed examination of the schedule for development of the repository and allowing the time necessary for sound scientific investigation and design, the Department cannot meet the anticipated schedule set forth in the Act for disposal of waste in a repository by 1998. Furthermore, the current linkages between the repository and Monitored Retrievable Storage (MRS) programs make it impossible for the Department to accept waste at an MRS on a schedule that is independent from that of the repository. Therefore, the Department plans to work with Congress to obtain a modification of the current linkages between the repository and MRS programs and to embark on an aggressive program to develop an integrated MRS capacity for spent fuel. The Department believes that if the linkages are modified, it is likely that waste acceptance at an MRS facility could begin by 1998 or soon thereafter.
2. Monitored Retrievable Storage Alternatives: The Department is also continuing to study a variety of options to the MRS facility to offer the utilities a predictable and reliable plan for waste acceptance. The recommendations of the Monitored Retrievable Storage Review Commission are being considered fully in the development of these options. ☆

MRS Review Commission Releases Report to Congress

On Nov. 1, 1989, the Monitored Retrievable Storage (MRS) Commission released its Report to Congress entitled "Nuclear Waste: Is There A Need for Federal Interim Storage?" This report represents the results of almost 18 months of study and deliberation in response to a mandate from Congress to study and report to Congress on whether an MRS facility should be a part of the Nation's nuclear waste disposal system. Five main conclusions and three recommendations are made in the report as highlighted below:

"Conclusion No. 1. From a technical perspective, both the No-MRS and MRS options are safe.

"Conclusion No. 2. The net cost of a waste management system that includes an MRS would be lower than previously estimated because of delays...in the expected date of repository operation.

"Conclusion No. 3. There are no single discriminating factors that would cause the MRS alternative to be chosen in preference to the No-MRS alternative.

"Conclusion No. 4. An MRS linked as provided in current law would not be justified, especially in light of uncertainties in the completion time for the repository. Consequently, the Commission does not recommend a linked MRS as required by current law and as proposed by DOE.

"Conclusion No. 5. Some interim storage facilities, substantially more limited in capacity and built under different conditions than the DOE-proposed MRS, are in the national interest to provide for emergencies and other contingencies.

"Recommendation No. 1. Congress should authorize construction of a Federal Emergency Storage facility with

a capacity limit of 2,000 metric tons of uranium (MTU).

"Recommendation No. 2. Congress should authorize construction of a User-Funded Interim Storage facility with a capacity limit of 5,000 MTU. Such a facility would provide storage only, and would be used in addition to the Federal Emergency Storage facility proposed in Recommendation No. 1.

"Recommendation No. 3. Congress should reconsider the subject of interim storage by the year 2000 to: (a) take into account uncertainties that exist today and which might be resolved or clarified within 10 years, (b) consider developments which cannot be anticipated today, and (c) evaluate the experience with the two facilities recommended above."

At the time of issuance of the MRS Report, the MRS Review Commissioners also briefed DOE Deputy Secretary W. Henson Moore on their key conclusions and recommendations. After the briefing, Mr. Moore stated that:

"Essentially, their conclusions verify that there is a need for MRS—that is, central storage—capability prior to permanent, geologic disposal. The Commission and DOE agree that there should not be the linkages between monitored retrievable storage and development of the permanent repository, as currently specified in the law (Nuclear Waste Policy Act of 1982, as amended), although we differ on the size of the storage capability recommended and the funding source. DOE's MRS concept would be modular and provide for phased growth, as needed. However, DOE agrees with their recommendation that Congress should relook at the MRS requirements by the year 2000 to take into account uncertainties that exist today and

which might be resolved or clarified within 10 years and evaluate the experience of MRS at that time.

"I have complimented the Commissioners on their diligence and have committed to the Commissioners that DOE will thoroughly review and analyze the report to take full advantage of the insights represented in the report as part of DOE's current reassessment underway regarding the structure and schedule of the Civilian Waste Program required by the Nuclear Waste Policy Act of 1982, as amended.

"In the meantime, DOE continues to believe that MRS offers significant benefits to the overall waste disposal system while many technical concerns need to be addressed in the design, licensing, startup and operating of a first-of-a-kind deep, permanent geologic repository. And it is important that we proceed with the scientific characterization studies. In this regard, an MRS facility could have a beneficial effect on any future program by providing experience in regulatory and institutional areas. For example, licensing an MRS facility significantly earlier than a future geologic repository could provide valuable experience in waste-facility licensing. In addition, by providing a Federal capability to begin receiving spent nuclear fuel prior to critical storage space problems at utilities, the Nation would be assured that repository decisions are not driven by utility storage problems.

"As DOE proceeds with the review of the Commission's report and the reassessment of the entire Civilian Waste Program, DOE will focus on the legislative requirements regarding linkages between the MRS and the Yucca Mountain geologic site characterization program.

☆

Notice of Availability of Draft Floodplain/Wetlands Assessment of Yucca Mountain, NV

Before a decision is made concerning the suitability or unsuitability of Yucca Mountain, NV, as the site for the first radioactive waste repository, the geology and hydrology must be scientifically investigated to ensure that the site can safely accommodate the waste. As planned, scientific investigation of the Yucca Mountain site will involve the construction of an Exploratory Shaft Facility (ESF), which requires excavation of two large shafts (out of the floodplain), and the construction of several surface support facilities within the floodplain. DOE is considering several measures including rerouting segments of several dry washes around critical facilities, and straightening banks along several wash segments to avoid adverse effects related to the location of surface facilities in the floodplain. In floodplain areas remote from the ESF activity, trenches and drill boreholes will be necessary to support groundwater recharge investigations and subsurface formation studies.

Pursuant to 10 Code of Federal Regulations (CFR) Part 1022 (Compliance with Floodplains/Wetlands Environmental Review Requirements), and Executive Order 11988 (Floodplain Management), DOE has determined that its proposed actions will be within the 100-year flood boundary of several dry washes. A Public Notice of floodplain/wetlands involvement was published in the *Federal Register* on Feb. 9, 1989, (54 FR 6318). A draft floodplain/wetlands assessment has been prepared which contains the following information:

- A description of the nature and purpose of the proposed action including a map showing its location with respect to the affected floodplain.
- Positive and negative, direct and indirect, and long- and short-term effects of the proposed action on the floodplain, and the effects of the

proposed floodplain action on lives and property, and on natural and beneficial floodplain values.

- Alternatives to the proposed action including alternative sites, actions, and no action. Mitigation measures are also being addressed.

Although not required by 10 CFR 1022, DOE is making this draft floodplain/wetlands assessment available for comment. Written comments on this document are invited from interested persons, organizations, and agencies, and should be postmarked by Feb. 15, 1990, to ensure consideration in preparation of the final floodplain/wetlands assessment.

Requests for copies of the draft floodplain/wetlands assessment should be directed to Robert Kaiser, Yucca Mountain Project Office, Department of Energy, 101 Convention Center Drive, Las Vegas, NV 89109, (702) 794-7954.

Written comments and requests for further information concerning the floodplain action should be directed to Gerald J. Parker, Chief, Environmental Compliance Branch, Office of Civilian Radioactive Waste Management, Department of Energy, Mail Stop 7F-070, RW-333, 1000 Independence Avenue SW, Washington, DC 20585, (202) 586-5679.

A statement of findings explaining the basis for DOE's final decision will be published in the *Federal Register*. Copies of the statement of findings will be sent to Federal, State, and local agencies and others who submitted comments on the Public Notice or draft floodplain/wetlands assessment. DOE will allow at least 15 days of public review after the statement of findings is published before any proposed floodplain actions are implemented. ☆

NCAI Sponsors Tribal Seminar on Nuclear Waste

A Tribal Seminar on Nuclear Waste, sponsored by the National Congress of American Indians (NCAI), was held Sept. 11-13, 1989, in Phoenix, AZ. The purpose of the meeting was to provide for information exchange between DOE and Tribal representatives on high-level waste planning and field activities near Tribal lands. A secondary goal was to promote cross-cultural education and communication between Tribal and program participants. Meeting attendees included DOE staff and contractors; staff from the Department of Transportation, the Nuclear Regulatory Commission, and the Environmental Protection Agency; Tribal representatives; and others representing State and local governments and regional and national groups. About 60 people participated in the three-day meeting.

The agenda included a cultural tour, presentations on Tribal issues, Tribal heritage and culture, Tribal regulation of transportation, interactions between States and Tribes, and briefings on Federal activities being conducted to implement the high-level waste program. Presentations included discussions of the Yucca Mountain Project, the OCRWM transportation program, and the Waste Isolation Pilot Plant. A panel discussion considered opportunities for Tribal involvement in the OCRWM program. This seminar is a key element of a five-year cooperative agreement to encourage dialogue between Tribal representatives and Federal and State agency staff. ☆

OCRWM 1989 Fellowship Conference Held

On Aug. 14-17, 1989, OCRWM held a conference for 21 Fellows supported by the Radioactive Waste Management Fellowship Program. All 21 of the Fellows appointed to the Program attended the conference. The objectives of the conference were to provide the Fellows with an opportunity to become familiar with work being done at the Yucca Mountain Project Office (YMPO), establish professional relationships with project participants, other Fellows, and with OCRWM and YMPO staff members, and to present results of their research.

On the first full day of the conference, program overviews were presented, including a report on the status of Yucca Mountain site characterization activities by Carl Gertz, Manager of YMPO. In addition to presentations by YMPO technical project officers, the following Fellows gave presentations:

Karla Riggle, University of Missouri-Columbia, Validation Studies of Radionuclide Generation and Depletion Computer Codes.

Theresa Brown, University of Texas at Austin, Modeling of the Possible Effects of Aerosol Dispersal of Contaminants Associated with the Geologic Disposal of High-Level Waste on Groundwater Systems.

John Stamm, Kent State University, Modeling Local Paleoclimates and Validation in the Southwest United States.

William Hollaway, Massachusetts Institute of Technology, An Assessment of High-Level Radioactive Waste Disposal for Advanced Reactor Fuel Cycles.

The second day of the conference was devoted to an all-day tour of the repository candidate site at Yucca Mountain and a visit to the Climax Mine and G-Tunnel.

On the final day of the conference, Nick Aquilina, Manager of the DOE Nevada Operations Office, spoke on the Nevada Operations perspective on radioactive waste management programs. Before the conference adjourned, additional presentations by OCRWM Fellows were made as follows:

Katherine Yuracko, Massachusetts Institute of Technology, Methodology for the Review of Alternative Shipping Cask Designs and Transportation Modes for the Office of Civilian Radioactive Waste Management.

Allison Stolle, University of Michigan, Stochastic Imaging in Identifying Waste Canister Failure.

Andis Berzins, Kent State University, Unsaturated Zone Infiltration/Recharge Computer Model and its Relation to the Characterization of the Proposed High-Level Nuclear Waste Site.

Douglas Williamson, University of Florida, Expert System Management of Consolidated Spent Fuel and its Hardware.

After the conference, each of the Fellows was asked to provide an evaluation of the various conference activities. The results of this survey will be used in considering the location, agenda, and frequency of future conferences. ★

NRC Reviews Two DOE Study Plans

The Nuclear Regulatory Commission (NRC) recently completed two out of the three reviews of two OCRWM Study Plans that had been transmitted to NRC last June for review and comment. This marks the first time that OCRWM has received feedback from NRC on its study plans and is significant because it shows NRC's general acceptance of the DOE approach. The study plans contain detailed descriptions of investigations to be undertaken at Yucca Mountain, NV, in support of the site characterization program.

In their review of Nov. 24, 1989, the NRC determined that both study plans were acceptable for further review, and that neither study plan involved studies, tests, or analyses that, if started, could cause significant and irreparable adverse effects on the site, the site characterization program, or the eventual usability of the data for licensing. Therefore, once DOE satisfies

appropriate prerequisites, these site characterization activities can begin. Because of the potential importance of the study plans relative to NRC licensing concerns, the NRC has decided to proceed with detailed technical reviews of each plan, and will provide DOE with staff comments as soon as the reviews are completed.

The first of these studies, "Characterization of the Yucca Mountain Quaternary Regional Geology," is intended to describe hydrologic conditions in the Yucca Mountain area for the Quaternary geologic time period, and more especially for the past 20,000 years. Data resulting from the study will permit the development and testing of various models describing paleo-hydrologic and possible future hydrologic conditions. The study is also expected to result in a characterization of the Quaternary regional hydrology at Yucca Mountain

(continued on page 8)

Selected Events Calendar

1990

Jan. 18-19 Nuclear Waste Technical Review Board: Containers and Transportation Panel, Lawrence Livermore Laboratory, Livermore, CA. Contact William Coons of the Technical Review Board, 1111 18th Street, NW, Suite 801, Washington, DC 20036, (202) 254-4792.

Apr. 8-12 International Conference for High-Level Radioactive Waste Management, Las Vegas, NV. Contact Maureen Rafferty, American Society of Civil Engineers, 345 East 47th Street, New York, NY 10017, (212) 705-7543 or Robert Philpott at (202) 586-5396.

June 10-14 American Nuclear Society Annual Meeting, Nashville, TN. Contact Donald B. Trauger, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6254, (615) 576-6730.

DOE/Nuclear Regulatory Commission Technical Exchanges*

1989

Dec. 19-20 Seismicity

1990

Jan. 9 Data Management

Feb. 6-7 Calcite/Silica Deposits

Mar. 6-7 Technical Assessment Report on Geophysical Anomaly

Mar. 20 Technical Meeting on Interactions

Apr. 17-18 Performance Assessment Integration

May Scenario Development (date to be determined)

June Unsaturated Zone Testing (date to be determined)

July Saturated Zone Testing (date to be determined)

Aug. Natural Resources (date to be determined)

* Most DOE/NRC Technical Exchange Meetings will be held at NRC Headquarters, White Flint, MD. For further information concerning these meetings, contact Gordon Appel, U.S. Department of Energy, OCRWM, Office of Systems Integration and Regulations, RW-331, 1000 Independence Avenue, SW, Washington DC 20585, (202) 586-1462.

For details on DOE/NRC meetings call (1/800) 368-2235 for a recorded message. In the Washington, DC, area call 479-0487.

A telephone recording service has been established for the announcement of upcoming meetings related to the waste management program of the NRC. The number is (1/800) 368-5642, ext. 20436. Washington, DC, area residents should call 492-0436.

For information on meetings and events occurring between issues of the *OCRWM Bulletin* use OCRWM INFOLINK II, an electronic bulletin board that can be accessed through a standard computer communications capability on (615) 482-6982. The *OCRWM Bulletin* is available through INFOLINK II. ★

New Publications and Documents

Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program, DOE/RW-0247, November 1989.

See page 1 of this *OCRWM Bulletin* for highlights of this report.

Nuclear Waste Management - France, OCRWM PI-040, November 1989.

This six-page brochure outlines the status of nuclear energy in France, the French waste management concept and waste treatment methods. Since constructing its first nuclear reactor for electricity generation in the early 1960s, today there are 55 units in operation in France providing 74 percent of the national output of electricity. This brochure is one in a series of 11 being produced by member countries of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development to provide information in the field of international radioactive waste management.

OCRWM Backgrounders:

Executive Summary: Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program, DOE/RW-0248, December 1989.

An extensive review of the OCRWM program has been completed recently, and a report has been sent to Congress (see page 1 of this *OCRWM Bulletin*). This *Backgrounder* provides a summary of the major elements of the report.

Changes in the Geologic Repository Schedule, DOE/RW-0249, December 1989.

The schedule for development of a deep, geologic repository for the permanent disposal of spent fuel and high-level radioactive waste has been extended. This *Backgrounder* reviews several reasons for the extension and describes new schedule provisions.

The Role of the Monitored Retrievable Storage Facility in an Integrated Waste Management System, DOE/RW-0250, December 1989.

This *Backgrounder* provides the statutory background for a Monitored Retrievable Storage (MRS) facility, the recommendations of the MRS Review Commission, DOE recommendations relating to the MRS, and the functions and benefits of an MRS facility.

Integrating Contractor Efforts in the Civilian Radioactive Waste Management Program, DOE/RW-0251, December 1989.

New initiatives by the Secretary of Energy to improve the performance of OCRWM include measures to better integrate the contractor support effort with the management structure and schedule of the waste management program. This *Backgrounder* describes the measures to integrate contractor efforts and the main elements of the management action plan.

Restructuring the Office of the Civilian Radioactive Waste Management, DOE/RW-0252, December 1989.

Four key management initiatives that are being undertaken to improve the management of OCRWM and to strengthen its ability to carry out its mission are described in this *Backgrounder*.

These documents can be ordered through INFOLINK II or by following instructions at the bottom of page 1 of this *OCRWM Bulletin*.

NRC Reviews Two DOE Study Plans (continued from page 6)

and environs, and to provide data on responses of the hydrologic system to possible climatic changes.

The second study, "Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities," will

acquire surface and near-surface geologic data from Midway Valley, which is located directly east of Yucca Mountain and has been identified as a potential location for the surface facilities of a high-level nuclear waste repository. In this study, involving surface geologic

mapping and trenching, particular emphasis will be placed on evaluating the existence and recency of late Quaternary (less than 100,000 years) faults. If faults are found, the rate and direction of displacement along each observed fault or fault zone will be determined. ★

OCRWM Bulletin

United States Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

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