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OCRWM BULLETIN

A Report from the U.S. Department of Energy's Office of Civilian Radioactive Waste Management

OCRWM FISCAL YEAR 1996 BUDGET PRESENTED TO CONGRESS

On March 16, 1995, Dr. Daniel A. Dreyfus, Director of the Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM), appeared before the Energy and Water Development Appropriations Subcommittee of the U.S. House of Representatives to discuss OCRWM's fiscal year (FY) 1996 budget request and the new program approach for the Civilian Radioactive Waste Management Program, which provides the basis for the development of the budget request.

The overall FY 1996 budget request for the program is $630 million, which includes $431.6 million in mandatory funding and $198.4 million from the Defense Nuclear Waste Disposal appropriation. This budget represents an increase of $107.8 million over the FY 1995 appropriation of $522.2 million, which included $392.8 million from the Nuclear Waste Fund and $129.4 million from the Defense Nuclear Waste Disposal appropriation. In addition, $0.7 mil-

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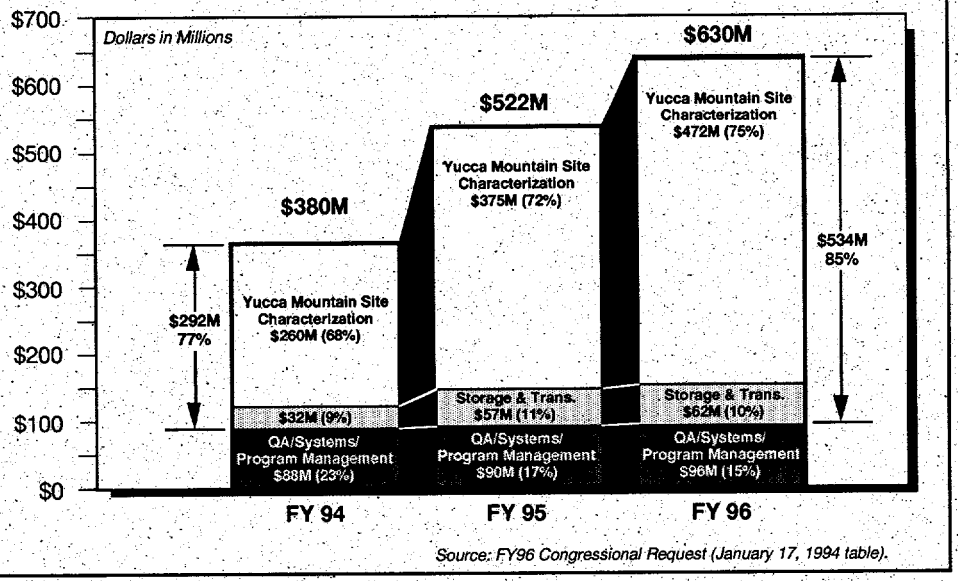
Budget Distribution Comparison



Source: FY96 Congressional Request (January 17, 1994 table).

In This Issue . . .

Published by the U.S. Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM). To be placed on the *Bulletin* mailing list, make address corrections, obtain information about the national program, or order copies of the *Bulletin* or the new publications listed in the *Bulletin*, please contact the OCRWM National Information Center, P.O. Box 44375, Washington, DC 20026, 1-800-225-6972 or 202-488-6720 in Washington, DC. You may also write to DOE, OCRWM, Office of Human Resources and Administration, RW-10, 1000 Independence Ave., SW, Washington, DC 20585.

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lion is requested for the Civilian Radioactive Waste Research and Development (R&D) program, which is funded from the Energy Supply R&D appropriation.

As Dr. Dreyfus addressed the Subcommittee, he stated, "I am pleased to report that we have made significant progress in the Civilian Radioactive Waste Management Program since I last appeared before you. Last year, we proposed a restructured program and a full funding profile that would permit us to meet the policy goals set by Congress in the Nuclear Waste Policy Act. I appreciated your support for that proposal in the FY 1995 appropriation....We are moving forward with the initiatives that we proposed with that budget.

"When we implemented the new program approach in late 1994, a rigorous cost and schedule performance measurement system was established to track progress against the metrics of the program approach. To date, the program has accomplished nearly 90 percent of its scheduled work within the budget for that work.

"In the two years that Secretary of Energy Hazel O'Leary and I have worked under this Administration, we have made progress in a number of areas, including progress on Yucca Mountain scientific investigations and multi-purpose canister development. Additionally, despite significantly increased program funding (almost all of which has been designated for Yucca Mountain site characterization activities), program management costs have remained relatively flat."

THE PROGRAM APPROACH

Dr. Dreyfus explained the program approach, saying, "We have defined two major projects, or 'business centers' within the program: the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage, and Transportation Project. We have also created a management component for the program that provides integration, planning, and support to the Director and the projects. We have defined our goals, and we have laid a course to meet them."

(Note: The new program approach is described in detail in the Civilian Radioactive Waste Management Program Plan. To obtain a copy of the Program Plan, contact the OCRWM National Information Center at 1-800-225-NWPA [6972] or in writing: P.O. Box 44375, Washington, DC, 20026.)

A major objective of the new approach is to begin to make definitive statements as early as possible about the suitability of the Yucca Mountain site to host a geologic repository. Milestones include:

- By the end of fiscal year 1998, OCRWM will complete an evaluation of whether the Yucca Mountain site is technically suitable for development as a geologic repository
- By the end of fiscal year 2000, if the site is found suitable, the Secretary of Energy will deliver a statutory Site Recommendation Report and Environmental Impact Statement to the President
- In fiscal year 2001, if the President has approved the site, the Department of Energy will submit a license application for repository construction to the Nuclear Regulatory Commission
- 2010 remains the target for beginning waste emplacement in a geologic repository.

To confront the issue of waste acceptance, the program approach enables OCRWM to:

- Provide to the marketplace, by the end of fiscal year 1998, a new generation of technology—the multi-purpose canister-based system—for at-reactor or off-site storage, transportation and, ultimately, disposal of spent nuclear fuel
- Prepare for the orderly transportation of spent nuclear fuel from reactor sites to a centralized storage facility.

THE NEW FUNDING APPROACH

To support the budget request, the Administration proposed a new funding initiative. A legislative proposal was submitted to Congress on February 27, 1995, that would authorize mandatory funding for the program from the Nuclear Waste Fund. Under this authorization, mandatory funding would be made available to the program in FY 1996-1998 for radioactive waste disposal activities, as follows:

FY 1996	$432 million
FY 1997	$540 million
FY 1998	$627 million

In addition to these mandatory amounts from the Nuclear Waste Fund, funding would also continue to be requested from the Defense Nuclear Waste Disposal appropriation.

Dr. Dreyfus noted that "the Administration's funding proposal addresses two of the principal concerns with our funding proposal submitted last year. We have identified a viable long-term offset for budgetary scorekeeping purposes – – additional Treasury receipts associated with the sale of the U.S. Enrichment Corporation. In addition, the proposal also includes a provision that allows the Appropriations Committee to provide limitations and/or direction to the funding of the program.

"This approach is consistent with the

intent of the Nuclear Waste Policy Act, which stipulated that the program was to be self-financed by the owners and generators of spent nuclear fuel and high-level waste. Implementation of this proposal would provide the necessary funding to maintain the milestones for the scientific and technical investigation of Yucca Mountain and to develop advanced technologies for near-term storage, in accordance with the new program approach."

Yucca Mountain Site Characterization Project

The FY 1996 budget request for the Yucca Mountain Site Characterization Project is $472.1 million, compared to $375.3 million in FY 1995. This represents an increase of $96.8 million, nearly all of the total program increase OCRWM is requesting. The proposed funding supports construction of the Exploratory Studies Facility, which is the primary facility for underground investigations at the site, and operation of the Tunnel Boring Machine around the clock, 5 days per week. It also supports ongoing surface-based testing activities, which include an active drilling program and scientific studies. According to Dr. Dreyfus, "These activities will result in substantial progress toward a determination of site suitability."

Waste Acceptance, Storage, and Transportation Project

The FY 1996 budget request for Waste Acceptance, Storage, and Transportation is $61.6 million, compared to $57 million in FY 1995. This represents an increase of $4.6 million.

The major activity during FY 1996 will be continuing development of the multi-purpose canister (MPC)-based system for certification through the Nuclear Regulatory Commission. This includes development of an Environmental Impact Statement to support the decision for fabrication and deployment of MPCs by calendar year 1998 for storage of spent nuclear fuel at reactor sites. Also planned are the development of high-capacity legal-weight truck casks, initiation of MPC transportation cask designs, and continuing institutional activities in support of future transportation activities. In addition, there will be a continuing resolution of waste acceptance issues through a Notice-of-Inquiry process, including preparation of a Notice of Proposed Rulemaking (NOPR) to modify the Standard Disposal Contract. The NOPR will address the potential deployment of MPCs and potential form of cost sharing for continued storage of spent nuclear fuel at reactor sites.

PROGRAM SUPPORT

The FY 1996 budget request for Program Support is $96.3 million, compared to $90 million in FY 1995. This funding includes $14.5 million for quality assurance, $13 million for systems integration and regulatory compliance, and $68.8 million for program management activities. Dr. Dreyfus testified that "the program management component is about 11 percent of the total program budget for the year. With significantly increased funding for project work, we have held the program management costs relatively flat. The total program budget has increased by 66 percent from the FY 1994 appropriation to the FY 1996 request, while the program management component over the same period has increased by only 9 percent."

"We have established a rigorous quality assurance program which is required and overseen by the Nuclear Regulatory Commission," said Dr. Dreyfus. "This program commits us to perform radiation safety-related work in accordance with various technical and administrative requirements. Establishment and execution of the quality assurance program is intended to protect the health and safety of the public and workers, and the environment. Compliance with the quality assurance program enables us to collect and maintain qualified, traceable data that can be used and considered valid by the Commission and other oversight bodies during program execution. Quality assurance program implementation is the responsibility of all personnel performing safety-related work. Independent audits and surveillances of this work ensure that the work is in compliance with appropriate nuclear standards."

Systems integration and regulatory compliance activities include National Environmental Policy Act compliance activities; interactions with the Nuclear Regulatory Commission to resolve licensing issues; providing guidance for complying with environmental, safety, and health requirements; technical integration; risk management; and configuration management.

Program management activities include strategic planning, participation in international waste management activities, external relations and public outreach, program control and administration, information management, contracts management, and Federal salaries. For FY 1996, funding for salaries of 270 Federal employees accounts for $22.5 million; this represents one third of the total program management budget.

The program support objectives of the new program approach include (1) better integration of all program activities utilizing integrated program and project management systems; (2) more timely stakeholder participation in the program decision-making process; (3) clearer lines of responsibility and authority for program participants; (4) revising management procedures, plans, and baselines to reflect the new program approach; and (5) the use of process improvement teams to identify management system problems and to recommend corrective action.

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SECRETARY HOLDS WASTE POLICY FORUM

On March 1, 1995, Secretary of Energy Hazel R. O'Leary held a Radioactive Waste Management Policy meeting in Arlington, Virginia, to solicit input from a diverse group of more than 100 program stakeholders. Participants included representatives from the environmental and citizen advocacy communities, public utility commissioners, State and local governments, Federal agencies, Native American Tribes, and the nuclear power industry. Information shared during the day-long discussion will be integrated into the Department of Energy's response to legislation currently being considered by Congress that would significantly affect the Civilian Radioactive Waste Management program. Undersecretary Charles Curtis, Office of Civilian Radioactive Waste Management (OCRWM) Director Dr. Daniel Dreyfus, and OCRWM Deputy Director Lake Barrett also represented the Department during the forum.

Secretary of Energy's Guiding Principles Regarding New Nuclear Waste Legislation

- ✔ Preserving Environmental Health and Safety Standards
- ✔ Providing Adequate Program Funding
- ✔ Continuing to Pursue Geologic Disposal
- ✔ Establishing Interim Storage
- ✔ Formulating a Contingency Plan for Yucca Mountain Disposal
- ✔ Managing all High-Level Radioactive Waste

At the end of the discussion, which was facilitated by Dr. James Thurber, Director of the Center for Presidential and Congressional Studies at the American University in Washington, D.C., four reporters chosen from among the participants summarized the views expressed during the meeting by their colleagues. The summary presentations focused on opinions held by the environmental community; public utility commissioners and State attorneys general; State, tribal, and local governments; and the nuclear power industry.

After hearing the presentations, Secretary O'Leary stated her guiding principles regarding new nuclear waste legislation. They include preserving environmental health and safety standards (including the review of and recommendations on the standards under development by the National Academy of Sciences at the direction of Congress); providing adequate funding for the program; continuing to pursue geologic disposal; establishing interim storage; formulating a contingency plan for Yucca Mountain disposal; and managing all high-level radioactive waste, including that generated through defense activities. The Secretary also expressed an interest in getting additional input on interim storage and contingency planning.

A summary report of the day's discussions will be distributed by Dr. Thurber to meeting participants. Copies of the report will be available through OCRWM's National Information Center, 1-800-225-NWPA (6972), in the near future.

PUBLIC RESPONDS TO WASTE ACCEPTANCE ISSUES

The Department of Energy published a Notice of Inquiry (Notice) on Waste Acceptance Issues in the *Federal Register* on May 25, 1994. Through this Notice, the Department sought input from affected parties on:

- Whether the Department has an obligation to begin accepting spent nuclear fuel in 1998 in the absence of an operational repository or other suitable storage facility
- The need for an interim, away-from-reactor storage facility prior to repository operations
- Options for offsetting, through the Nuclear Waste Fund, a portion of the financial burden that may be incurred by utilities in continuing to store spent nuclear fuel at reactor sites beyond 1998.

The Notice requested written comments on or before September 22, 1994. In response to a request from six organizations, the Department published another Notice in the *Federal Register* on October 18, 1994, announcing the reopening of this comment period for an additional 60 days, until December 19, 1994.

The Department received over 1,100 responses to the Notice from utilities; public utility/service commissions and utility regulators; Federal, State, and local governments, agencies, and representatives; industry and companies; public interest groups and other organizations; and members of the general public.

The comments received fall into the following broad categories:

- 1998 Waste Acceptance Obligation
- Interim Storage
- Cost Sharing/Multi-Purpose Canisters (MPC)
- Nuclear Waste Policy Act/Standard Contract
- Nuclear Waste Fund/Fee
- Repository
- Nuclear Power/Other Energy Sources
- Additional Comments

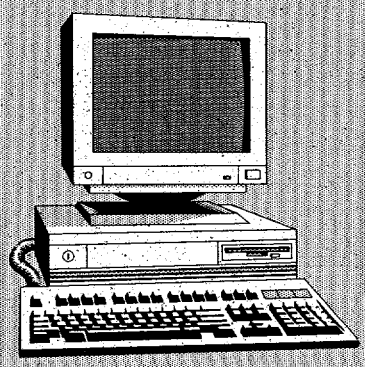
Nearly 90 percent of the responses to the Notice stated that the Department has an obligation or responsibility to accept spent nuclear fuel in 1998, while fewer than 1 percent supported the Department's preliminary view that it does not have such an obligation in the absence of an operational facility constructed under the Nuclear Waste Policy Act. With respect to interim storage, over 60 percent of the responses stated that there continues to be a need for central interim storage. Three percent stated opposition to or some level of concern regarding central interim storage. Few responses addressed the issue of cost sharing through the Nuclear Waste Fund and, of those that did, opinion was divided. Approximately 7 percent of the responses stated opposition to or some level of concern regarding cost sharing, with the same number of responses indicating support for this concept. Only 2 percent of the responses stated direct support for the Department's efforts associated with the development and deployment of MPCs, while just under 1 percent stated opposition to or some level of concern regarding MPCs. The Department will consider the comments received as it formulates its positions on these evolving issues.

The Department's *Notice of Inquiry on Waste Acceptance Issues: Response Summary Report*, presents a summary of the comments received. To receive this report, contact the OCRWM National Information Center at 1-800-225-NWPA (6972).

OCRWM Joins the Information Super Highway!

The Office of Civilian Radioactive Waste Management (OCRWM) is now accessible to the public via the Internet on the World Wide Web. OCRWM's Home Page is currently under construction and once fully loaded will offer a wealth of resource materials and information about current program plans and activities. Initial completion of the Home Page database is scheduled for summer 1995. Home Page will be updated periodically to ensure that the most up-to-date information is displayed.

You can access the OCRWM Home Page at "http://www.rw.doe.gov." You can also access it via the Department of Energy's Home Page. Once you are in the Department-wide system, simply click on the button labeled "Office of Civilian Radioactive Waste Management" under the Information Services category.



TRANSPORTATION EXTERNAL COORDINATION WORKING GROUP CONVENES IN NORTH CAROLINA

The sixth semi-annual meeting of the Transportation External Coordination Working Group (TEC/WG) took place on January 17-19, 1995, in Charlotte, North Carolina. TEC/WG, a partnership between the Department of Energy (DOE) and its stakeholder organizations, works to identify and resolve significant issues related to DOE's transportation of radioactive and other hazardous materials. TEC/WG's members—all of whom share an interest in the Department's transportation-related activities—include personnel from seven DOE Headquarters program offices; national and regional organizations representing State, tribal, and local governments; professional associations; and industry organizations.

Topics of the plenary sessions during the meeting included an update on and a strategic look at DOE's transportation programs, a panel discussion on environmental justice, and a discussion of the Price-Anderson Act. The plenary session that focused on DOE's transportation programs included presentations of the Programmatic Spent Nuclear Fuel and Idaho National Engineering Laboratory Environmental Impact Statement, the Foreign Research Reactor Spent Nuclear Fuel Program, and the Waste Isolation Pilot Plant; an update of Office of Civilian Radioactive Waste Management (OCRWM) activities; and a presentation on the proposed shipment of waste from DOE's Fernald Site in Ohio to a private site in Utah.

To provide adequate time to discuss transportation issues thoroughly, 8 hours were spent in breakout sessions. The topics for these sessions included (1) General Planning and Public Information & Education, (2) Emergency Management and Training, (3) Transportation Operations, and (4) a National Survey on Public Perception of Transportation Risks being conducted by Hank Jenkins-Smith of the University of New Mexico.

Summaries of each breakout session are provided below:

General Planning and Public Information & Education

- Several groups will formally request an extension of the April 3, 1995, deadline for comments on OCRWM's Notice of Intent (*Federal Register*, vol. 60, no. 1) to implement Section 180(c) of the Nuclear Waste Policy Act, as amended.
- The DOE Transportation Institutional Policy will be updated to reflect implications of the Office of Environmental Management and DOE-wide environmental justice strategy documents.
- DOE environmental justice strategy documents will be distributed to TEC/WG members when available.
- *The Annual List of Planned DOE Shipments* draft report format is to be developed and distributed to members.

Transportation Operations

- DOE will consider environmental justice issues and risk factors other than population density in its *Highway Route Controlled Quantity of Radioactive Materials Routing Guidance* document, which is currently in development.
- DOE's *Bad Weather and Road Conditions Guidance* document will be revised to apply Waste Isolation Pilot Plant protocol to routine shipments, and the

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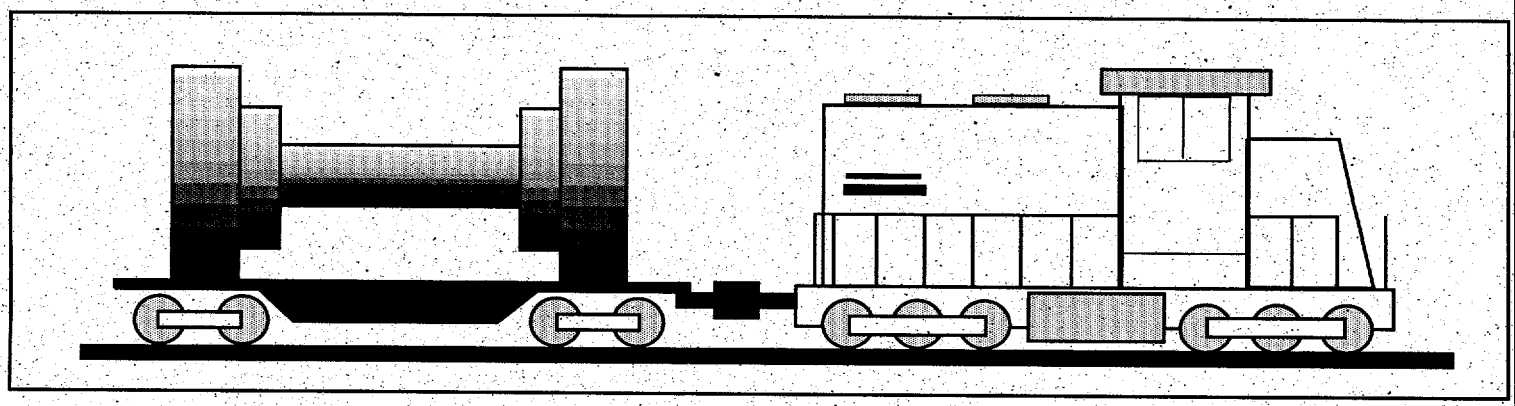

OCRWM COMPLETES DRAFT PUBLIC PARTICIPATION PLAN

The Office of Civilian Radioactive Waste Management (OCRWM) recently completed a draft Public Participation Plan (the Plan). The Plan describes how OCRWM intends to implement the Department of Energy's Public Participation Policy, which was published by Secretary of Energy Hazel R. O'Leary on August 30, 1994. The policy formally expresses the Department's fundamental philosophy, core values, and goals for public participation, and provides a general framework within which all Department of Energy programs must operate. It is the key component of the Department's efforts to operate under a new culture of openness and accountability to the public it serves.

At the core of the draft Public Participation Plan's implementation strategy is OCRWM's commitment to provide the public regularly with early, easily identified, and clearly defined points of access to the activities and events that comprise OCRWM's decision-making process. OCRWM already has implemented a variety of formal and informal mechanisms that it will continue to employ to help fulfill this commitment, including open program and general public meetings, *Federal Register* notices, the *OCRWM Bulletin*, public review and comment on draft program documents, briefings and presentations, etc. OCRWM also will continuously seek to improve the effectiveness of these mechanisms by drawing on stakeholder feedback.

The draft Plan presents a general approach to establishing and maintaining two-way communication with OCRWM's stakeholders, and to providing them with meaningful opportunities to participate in programmatic activities. OCRWM counts among its stakeholders Congress; affected State, local, and Indian Tribal governments; other Federal agencies; regulatory and oversight bodies; radioactive waste transportation corridor States; public utility commissioners; utility and industry groups; foreign governments and international organizations; universities and scientific and technical communities; minority and low-income communities (to address environmental justice considerations);

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Cesium-137 Capsule Return Program protocol to special shipments.

- DOE will develop draft criteria for determining when to use shipment escorts instead of providing training to route corridor jurisdictions.

Emergency Management & Training

- A new strategy for the Transportation Emergency Preparedness (TEP) Program will result in a more direct focus on emergency responders.
- DOE will provide TEC/WG members with copies of the draft TEP implementation documents.
- A TEC/WG Emergency Management Special Interest Group (EM-SIG) will be established to assist in the development and technical review of documents related to the new responder-focused TEP Program. Persons interested in participating should contact Jim Cruickshank at (301) 903-7272.
- The existing Work Plan Objectives for Emergency Management and Training were reviewed and revised. The objectives now reflect a new emphasis and focus on the responders.
- All current TEC/WG Task Plans for Emergency Management and Training have been placed into "pending" status with associated work suspended for the time being.

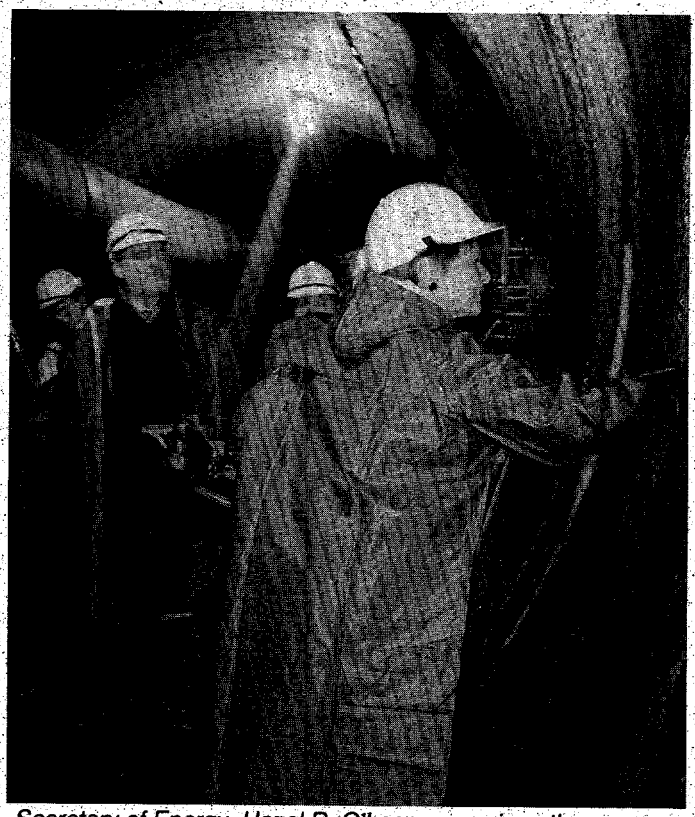
National Survey on Public Perceptions of Transportation Risks

- A transportation-incident scenario involving radioactive materials was posed to stimulate discussion on the factors that shape public perceptions and reactions.
- Participants concluded that preplanning (including working with the media and establishing and testing emergency response plans) can minimize public concerns during and after an incident; however, because of the public's fear of radioactive materials, education and planning efforts may be limited in their effectiveness.

The next TEC/WG meeting is scheduled for July 18-20, 1995, in Kansas City, Missouri. For more information on the July meeting, or to request materials that were available at the January TEC/WG meeting, contact Wendy Morgan of the Waste Policy Institute, (703) 231-9873.

OCRWM'S INTERNATIONAL PROGRAM UPDATE

Since its inception, the Office of Civilian Radioactive Waste Management (OCRWM) has been involved in cooperative international activities that provide the program with many benefits, including cost savings from shared research and development, access to unique research facilities, and additional professional expertise. Longer-term benefits may result in a consensus for resolving common technical issues. OCRWM's two most recent international activities involved meetings with waste management representatives in Japan and Sweden.



Secretary of Energy, Hazel R. O'Leary, examines the excavation and construction methods in the Swedish underground research laboratory at Aspo.

From November 11-19, 1994, a U.S. delegation that included Lake Barrett, OCRWM Deputy Director; Renee Jackson, Acting Team Leader for International Programs; Robert Levich, International Program Manager at the Yucca Mountain Site Characterization Office; and Kenzi Karasaki, International Liaison from the Lawrence Berkeley Laboratory; visited various nuclear waste management facilities and met with several officials of Japan's Power Reactor and Nuclear Fuel Development Corporation (PNC) in Tokyo. During the visit with PNC, the U.S. delegation and PNC officials discussed increased cooperation under the U.S. Department of Energy/PNC bilateral agreement in the area of radioactive waste management. Several topics were identified as being of mutual interest. After the meeting, OCRWM extended a written invitation to PNC to participate in collaborative activities related to the site characterization studies being conducted at the Yucca Mountain, Nevada, site. In February 1995, the Director of PNC's Policy Planning Division responded favorably to the invitation, and discussions are now under way to develop a project agreement between OCRWM and PNC.

During a December 17-18, 1994, trip to Sweden, Secretary of Energy Hazel R. O'Leary, accompanied by Jerome Saltzman and Renee Jackson of OCRWM's Office of Program Management and Integration, visited Sweden's Central Interim Storage Facility and the Aspo Hard Rock Laboratory in southern Sweden. The purpose of the Secretary's trip was to acquire a first-hand understanding of the Swedish nuclear waste management program, which is managed by the Swedish Nuclear Fuel and Waste Management Company (SKB). The visit also provided a context for discussions on nuclear waste storage options in the U.S. While in Sweden, the Secretary met with the Mayor of Oskarshamn and discussed local community involvement in the siting of nuclear waste management facilities.

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interest groups (governmental, environmental, civic, business, professional, unions); professional societies (technical, scientific, etc.); trade associations; the media; and members of the general public. These stakeholders have diverse perspectives, varying levels of involvement—including rights provided by statutes and executive orders—and disparate expectations of the Civilian Radioactive Waste Management Program. In many instances, the positions advocated by these entities may be contradictory and difficult to accommodate. In this context, satisfying one segment of the Program's stakeholders may displease another. This is one of the key challenges to be addressed by the Program's public participation efforts.

Five primary objectives are included in OCRWM's public participation efforts:

- Ensuring honesty and forthrightness in dealing with stakeholders by providing consistent, credible, and quality performance to build public understanding and trust

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TRANSPORTATION COORDINATION GROUP TO MEET IN JUNE

The Office of Civilian Radioactive Waste Management (OCRWM) will hold its next Transportation Coordination Group meeting in Baltimore, Maryland, June 6- 7, 1995. Current agenda items include updates and discussions on OCRWM's Transportation Program, the Transportation Project Report, Department of Energy Routing Guidance development, implementation of Section 180 (c), waste acceptance issues, and the status of OCRWM's multi-purpose canister efforts.

A panel discussion on rail issues will take place on the second day of the meeting. Representatives of the American Association of Railroads and the Federal Railroad Administration will be in attendance. For additional information on the meeting, contact Scot Mackey at (202) 488-2310.

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- Defining, clearly, Program development, planning, and decision-making processes, and providing for regular and easily identified access points for public input
- Operating as an integrated team in planning local and national public participation programs by combining resources, sharing information, and coordinating activities
- Fostering candid information exchanges and ongoing two-way communication using a variety of mediums
- Ensuring that public-involvement processes are inclusive and equitable to all stakeholders seeking involvement so that programmatic decision-making may benefit from a balanced representation of diverse viewpoints.

The Department's Public Participation Policy requires an annual assessment of OCRWM's efforts to establish, implement, and maintain an effective public participation program. These assessments will include the views and recommendations of OCRWM's stakeholders, who also will be invited to participate in developing criteria and measures for judging the effectiveness of OCRWM's efforts to provide meaningful opportunities for their involvement. OCRWM will be developing and implementing measurement criteria, and will be using surveys, focus groups, and progress milestones to provide feedback on the effectiveness of its public participation efforts. Measurement criteria will include openness and inclusiveness, responsiveness and accountability, fairness, timeliness, appropriateness, accessibility, and full commitment. The Department of Energy's Director of Public and Consumer Affairs will evaluate the annual assessments and recommend changes to improve the effectiveness of the Department's public participation efforts.

For more information on OCRWM's public participation activities, please contact MaryAnn Ferguson at (202) 586-5722. The draft Plan will be available to the public in the near future, followed by a public comment period. Contact Ms. Ferguson for a status of the Plan's availability.

Education and Information Staff Transitions

Due to the recent staff transitions within OCRWM, some education and information points of contact for the Headquarters program have changed. The new Manager of the OCRWM information and education program, including the National Information Center, is Evangeline (Vangie) Deshields (202-586-2752). Vangie, who replaces Elissa Turner in this position, reports to Susan Showard, Team Leader, (202-586-9113), who, in turn, reports to Harold H. Brandt, Director of OCRWM's Administration Division (202-586-1652). Comments on the *OCRWM Bulletin* can be directed to Harold H. Brandt (refer to the Reader Response Card on page 16).

OCRWM PARTICIPATES IN SCIENCE TEACHERS' ANNUAL CONVENTION

The Office of Civilian Radioactive Waste Management (OCRWM) presented a teacher-training workshop, "Approaching a Complex Task: Managing the Nation's Nuclear Waste," to educators at the 1995 National Science Teachers Association (NSTA) Annual Convention in Philadelphia, Pennsylvania, on March 25, 1995. The purpose of OCRWM workshops is to give teachers a general overview of OCRWM's program and to involve them in some of the activities offered in *Science, Society, and America's Nuclear Waste*, OCRWM's four-unit resource curriculum designed for secondary-school students.

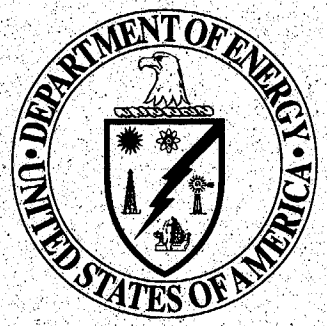
Students at Burton High School in Burton, Texas, conduct the egg-drop activity educators "practice" at OCRWM's teacher-training workshops.

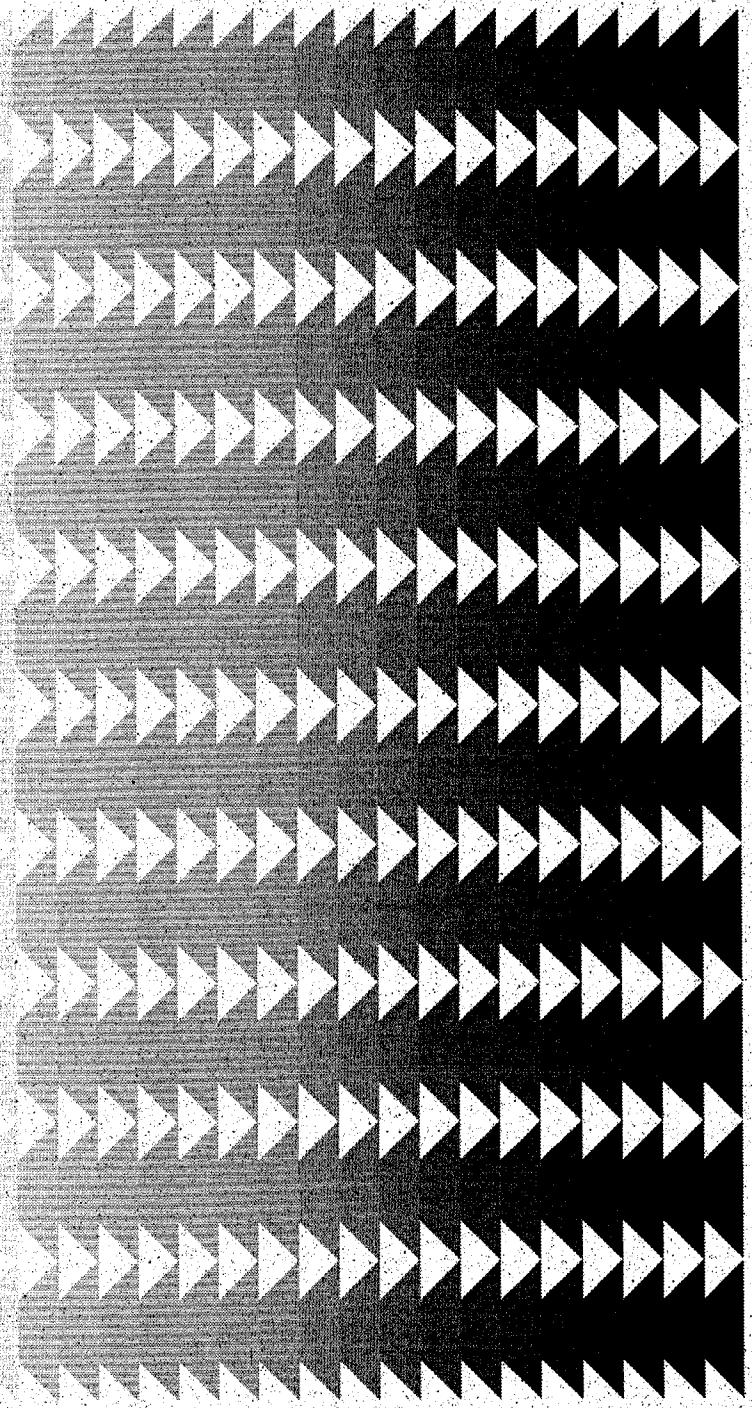
Since the distribution of the resource curriculum began in 1992, OCRWM has produced two nationwide teacher teleconferences and conducted 24 hands-on teacher-training workshops in 17 States. Annual science meetings at which OCRWM held workshops in fiscal year 1994 include NSTA's regional meetings in Oregon and Nevada, the National Indian Education Association, and State science teacher conferences in South Carolina, Tennessee, and Indiana.

During the workshops, educators discuss the characteristics of radiation, then observe tracks left by radioactive particles and rays in a cloud chamber. Following a discussion of transporting highly radioactive materials, participants conduct an experiment with a raw egg, three sheets of paper, and one meter of masking tape. With these limited supplies, teachers are asked to build a container, or cask, to protect the egg during a one-meter drop onto an unyielding surface (a hard floor or table). This experiment models one of the tests that a cask designed to contain spent nuclear fuel or high-level radioactive waste must pass before it could be transported in the United States. Workshop participants also discuss the scientific studies currently under way at Yucca Mountain, Nevada; experiment with the concepts of solubility, permeability, porosity, and ion exchange; and apply their observations to high-level radioactive waste disposal. Educators leave the training with a greater understanding of radioactivity, and concrete suggestions for ways to use lessons from *Science, Society, and America's Nuclear Waste* in their classrooms.

For more information on OCRWM's resource curriculum *Science, Society, and America's Nuclear Waste*, which is used during OCRWM's teacher-training workshops, contact the OCRWM National Information Center at 1-800-225-NWPA (6972).

OCRWM CALENDAR





OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

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1995

Information listed here is obtained from internal and external sources that are considered reliable, but accuracy is not guaranteed. This information is current as of April 10, 1995. For most current information, call 1-800-225-NWPA [6972].

MAY

WEEKEND	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
29	International High-Level Radioactive Waste Conference, Las Vegas, NV →		NRC Commissioners' Briefing Rockville, MD; **(Speaker - Dreyfus)**		
30	1	2	3	4	5
6			DOE/NRC ACNW Meeting Rockville, MD →		
Nuclear Energy Assembly Washington, DC → 7	**(Speaker - Secty. O'Leary)** 8	**(Speaker - Dreyfus)** 9	10	11	12
13	15	DOE/NRC Bi-Monthly ESF Meeting Las Vegas, NV 16	NRC Surface Based/Underground Site Characterization Activities (Site Visit); Las Vegas, NV 17	18	19
20	22	NWTRB R&PA/E&PH Joint Panel Workshop Las Vegas, NV → 23	24	25	26
27	29	30	31	1	2
28					

OCRWM-sponsored meeting codes: **(P)** Public Participation Meeting **(O)** Open to the Public [Name] OCRWM Speaker

1995 JUNE

Information listed here is obtained from internal and external sources that are considered reliable, but accuracy is not guaranteed. This information is current as of April 10, 1995. For most current information, call 1-800-225-NWPA [6972].

WEEKEND	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
27 / 28	29	30	31	1	2
3 / 4	5	6	7	8	9
10 / 11	12	13	14	15	16
17 / 18	19	20	21	22	23
24 / 25	26	27	28	29	30

NWTRB ESB Panel Meeting
Idaho Falls, ID →

Transportation Coord. Group Meeting
Baltimore, MD →

NCAI Mid-Year Meeting
Spokane, WA →

OCRWN Directors' Program Review
Dunn Loring, VA →

Canadian Nuclear Association's
Annual Conference
Saskatoon, Saskatchewan →

DOE/NRC Bi-Monthly Management
Meeting (Videoconference)
Washington, DC/Las Vegas, NV

DOE/NRC ACNW Meeting
Rockville, MD →

NRC/EBS: Release Rates & Waste
Form Testing Technical Exchange
Las Vegas, NV →

ANS Nuclear Waste Tech. Expo
(Annual Meeting)
Philadelphia, PA →

OCRWM-sponsored meeting codes: **(P)** Public Participation Meeting **(O)** Open to the Public [Name] OCRWM Speaker

1995

Information listed here is obtained from internal and external sources that are considered reliable, but accuracy is not guaranteed. This information is current as of April 10, 1995. For most current information, call 1-800-225-NWPA (6972).

JULY

WEEKEND	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
1 / 2	3	4	5	6	7
8 / 9	10	11 NWTRB Full Board Meeting, Salt Lake City, UT →	12	13	14
15 / 16	17	18 Transportation External Coordination Working Group Mtg., Kansas City, MO →	19	20	21
22 / 23 NARUC Summer Committee Mtg., San Francisco, CA →	24	25	26 DOE/NRC ACNW Meeting, Rockville, MD →	27	28
29 / 30	31	1	2	3	4

OCRWM-sponsored meeting codes: **(P)** Public Participation Meeting **(O)** Open to the Public **[Name]** OCRWM Speaker

"Budget" continued from page 3

Civilian Radioactive Waste Research and Development

The FY 1996 budget request for Civilian Radioactive Waste Research and Development is $0.7 million, which reflects no increase over the FY 1995 budget appropriation. The purpose of this program is to develop and demonstrate new technologies and conduct generic research in the use of dry spent fuel storage systems. The FY 1996 budget request includes the continued monitoring and maintenance of casks at the Idaho National Engineering Laboratory containing spent nuclear fuel from demonstration projects, and activities at Pacific Northwest Laboratory to evaluate the behavior of spent fuel in long-term dry storage.

In FY 1996, prior-year funds will be used to continue work under cooperative agreements between: (1) the Department and the Electric Power Research Institute, and (2) the Department and the Sacramento Municipal Utility District to design, develop, and demonstrate a dry spent fuel transfer system and transportable storage casks. The dry transfer system will permit the transfer of individual spent fuel assemblies from a conventional top loading transfer/transport cask to a multi-purpose canister in a shielded overpack or accommodate spent nuclear fuel transfers between two conventional casks without the need for a pool. The schedule calls for the Department/Electric Power Research Institute transfer system design to be completed in August 1995 and a Topical Safety Analysis Report to be completed by the end of the year. The Sacramento Municipal Utility District has contracted for two transportable storage casks; their design is under licensing review by the Nuclear Regulatory Commission.

CONCLUSION

Dr. Dreyfus concluded his testimony by stating, "We recognize that safe and timely disposal of the Nation's radioactive waste is one of our principal environmental challenges and we are committed to do our part to address this challenge.

"We have established a managerial and technical capability and have developed and implemented a new program approach to carry out our legislative mandate. We believe that the new program approach is scientifically sound and achievable. The approach sets forth explicit tasks and we have associated the tasks with target dates and costs. We believe it will enable us to make measurable and significant progress toward our key objectives. In fact, by 1998, we should know enough to make an informed decision on whether to move forward with the proposed repository at Yucca Mountain.

"The increased funding level provided to the program in the FY 1995 appropriation has enabled us to initiate the new program approach. The funding profile that we are proposing for FY 1996 and beyond is consistent with the funding profile that was included in the FY 1995 budget. It will enable us to continue to make meaningful progress toward the goals set out in the Nuclear Waste Policy Act. It will also maintain a capability to respond to whatever new policy directions the Administration and Congress agree upon.

"The next three years are critical for the program. I urge the Members of the Subcommittee to continue their strong support for the purposes of this program and to assist us in achieving the funding required to complete our mission by establishing a new mechanism for accessing the dedicated ratepayer monies for the program."

NEW PUBLICATIONS

To order any of the publications listed below, contact the OCRWM National Information Center (toll-free) at 1-800-225-NWPA (6972) or in writing: P.O. Box 44375, Washington, DC, 20026.

Notice of Inquiry on Waste Acceptance Issues: Response Summary, U.S. Department of Energy, DOE/RW-0462, March 1995. *The Response Summary* discusses the comments received in response to the Department of Energy's Notice of Inquiry on Waste Acceptance Issues published in the *Federal Register* on May 25, 1994.

Nuclear Waste Policy Act as Amended, with Appropriations Acts Appended, U.S. Department of Energy, DOE/RW-0438 Rev. 1, February 1995. This booklet comprises a reprint of Public Law 97-425 and the following amendments: Title V of Public Law 100-203, Public Law 100-507, and the Energy Policy Act of 1992 (Public Law 102-486). Energy and Water Development Appropriations Acts from 1984 through 1995 are appended.

Nevada and the Yucca Mountain Project, U.S. Department of Energy, June 1994. This folder of information contains seven fact sheets on topics related to the Yucca Mountain Project, such as tours, exhibits, educational programs, science centers, and speakers bureau.

SPRING/SUMMER 1995 OCRWM EXHIBIT SCHEDULE

6th Annual International High-Level Radioactive Waste Management Conference
April 30-May 4, Las Vegas, NV
Exhibits: National Program Exhibit, Multi-Purpose Canister Exhibit, Transportation Exhibit

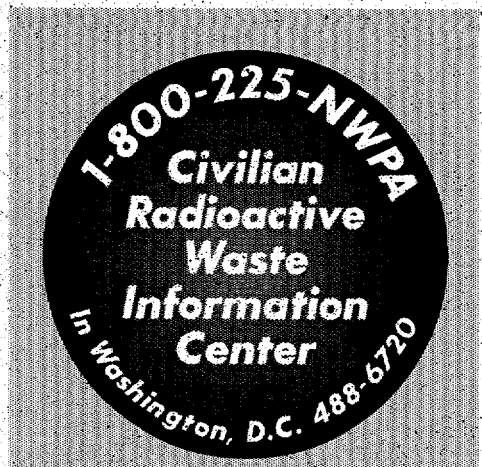
DOE Defense Programs Packaging Workshop
June 12-15, San Francisco, CA
Exhibit: Transportation Exhibit

American Nuclear Society Nuclear Technology Expo Annual Meeting
June 25-28, Philadelphia, PA
Exhibits: National Program Exhibit, Multi-Purpose Canister Exhibit, Transportation Exhibit

National Conference of State Legislators 1995 Annual Meeting and Exposition
July 16-21, Milwaukee, WI
Exhibits: National Program Exhibit, Multi-Purpose Canister Exhibit

National Association of Counties
July 21-25, Atlanta, GA
Exhibit: Transportation Exhibit

American Chemical Society Fall National Exposition
August 21-23, Chicago, IL
Exhibit: National Program Exhibit



OCRWM OUTREACH

The Civilian Radioactive Waste National Information Center was established to provide easy access to information on program plans and activities. To contact the Information Center, please call 1-800-225-NWPA (6972) or 488-6720 in Washington, D.C.

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Your views, comments, and suggestions are appreciated.

Comments: _____

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Please detach this card and mail to:
Harold H. Brandt, Director, Administration Division • Office of Civilian Radioactive Waste Management •
U.S. Department of Energy • 1000 Independence Avenue, SW • Mail Stop RW-15 • Washington, DC 20585

Of Mountains & Science

YUCCA MOUNTAIN PROJECT Studies

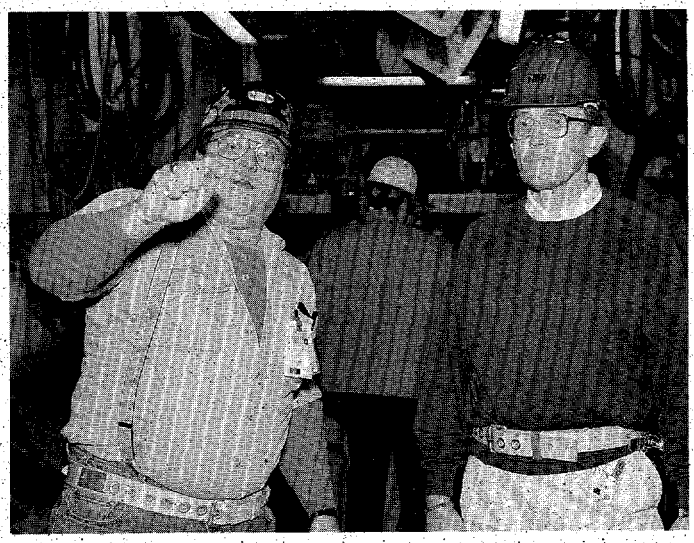
Spring 1995

Wesley E. Barnes appointed project manager of Yucca Mountain Site Characterization Office

Wesley E. Barnes has been appointed project manager of the Yucca Mountain Site Characterization Office of the U.S. Department of Energy's (DOE) Office of Civilian Radioactive Waste Management. Based in Las Vegas, Nev., this office has responsibility for studying the Yucca Mountain area to determine if it is a safe site for the nation's first high-level radioactive waste repository.

Before this appointment, Barnes served as the chief executive officer for Marketing and Business Associates, Ltd., an organization providing energy and environmental consulting services to the federal government and to the corporate sector. From 1983-90, Barnes served as chief executive officer and managing director for the Western Research Institute, an affiliate of the University of Wyoming. Western Research Institute performs contract research and technology development in energy and environment.

From 1982-83 he worked as director for the Laramie Energy Technology Center, where he successfully handled the transition of a government facility to private corporation status.



Project Manager Wesley Barnes (right) inspects starter tunnel with Deputy Technical Project Officer Ned Elkins.

In 1975, Barnes joined the Energy Research and Development Administration, which later became part of the DOE, in Washington, D.C. There, he served as assistant

Continued on page 91

At a Glance

- OCRWM's M&O contractor opens up a procurement office in Las Vegas in a move it hopes will benefit local businesses. *See page 94.*
- Teachers and parents discover new ways to interest children in science. *See page 95.*
- Child Haven, Las Vegas' only refuge for abused and abandoned children, needed an overhaul. OCRWM's M&O contractor rolled up its sleeves and took over the renovation of a recreation center. *See page 97.*

Detecting pathways for gases and fluids flowing through Yucca Mountain

When people think of a mountain, they often think of a solid body of rock. Although most mountains are solid in places, this image does not adequately describe them. Some parts of Yucca Mountain, for instance, are fractured. So, too, are parts of the surrounding rock within a five-kilometer (three-mile) radius of the mountain, where fractures and faults run through the ground at various depths. Because of this, Yucca Mountain lets water, air and other fluids and gases move through it. The mountain "breathes" in and out as the weather changes. This is not unusual, and occurs within most mountains.

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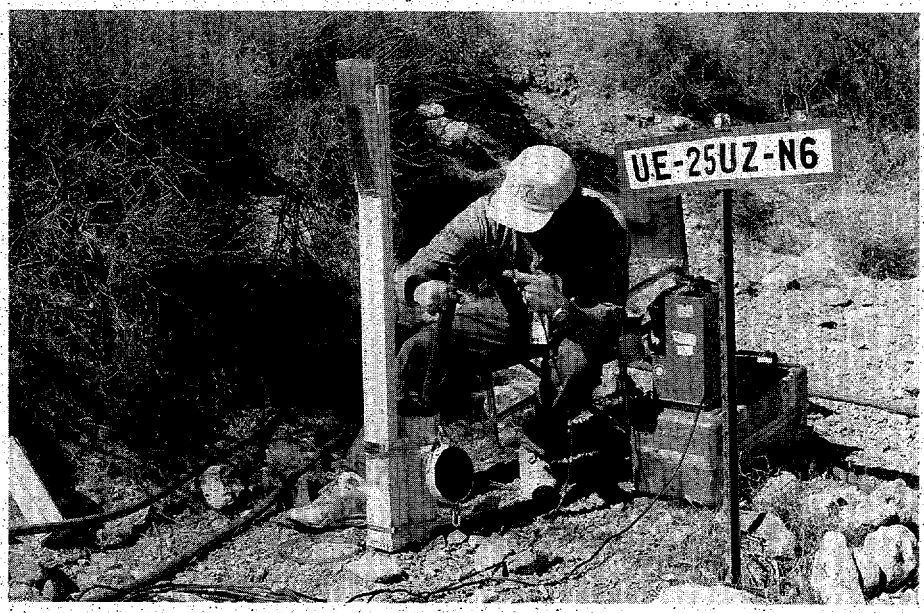
Continued from page 89

Pathways

Gases are matter whose molecules move freely. Vapor is gas containing liquid. The routes through which they flow from the atmosphere into Yucca Mountain and from Yucca Mountain back into the atmosphere are called "pneumatic pathways." These could be faults or fractures. Or they might be through porous rocks, such as pumice stones, or the nonwelded tuff found in Yucca Mountain.

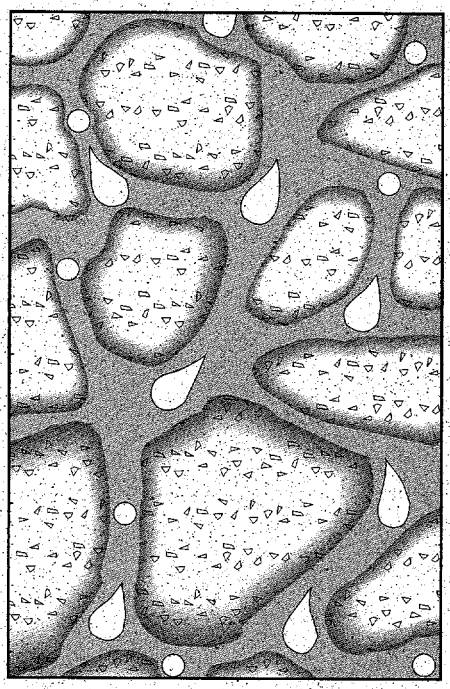
Scientists are conducting studies to assess Yucca Mountain's suitability as a site for a potential repository. Geologists and hydrologists must, among many other things, locate and describe the pneumatic pathways that may exist in the mountain.



USGS artificial infiltration testing in Pagany Wash.

A path for radionuclides?

If there are such pathways, a key question for scientists and regulators is whether these would let gaseous radionuclides (a radioactive species of atom) move from a repository into the atmosphere? And if so, how quickly could they do it? These are key questions because if water were somehow to reach the repository, the heat generated by an underground repository might be sufficient to generate steam. This steam could then move away from a repository into the surrounding rock. If radionuclides somehow dissolved in water, they might move out with the steam.



Moisture and gas bubbles

Conceptual drawing showing how moisture and gas might move in a cross-section of rock.

USGS conducted early studies

The United States Geological Survey (USGS) has been studying pneumatic pathways at Yucca Mountain since 1984. These earliest studies were limited in scope: mainly, scientists looked at topographic, barometric and wind effects inside a few boreholes drilled into the top of Yucca Mountain.

Last year, well before workers began excavating the underground Exploratory Studies Facility (ESF), USGS scientists monitored gas pressures within several boreholes drilled into the site. They also conducted such procedures as flow surveys, gas-phase testing, gas-chemistry sampling, air-permeability testing, geophysical logging, and studies of hydrochemistry and percolation (see sidebar on page 92).

These early studies fed into an initial series of mathematical computer models showing how gas might flow through the mountain. But there is only one assured way to test mathematical models on the large scale required by site characterization. You have to measure existing conditions and compare them against results projected by the models you already have. If your models predicted the conditions then found, you're in business. If the numbers don't quite agree, you tune and tweak the models to better reflect reality. If they're off completely, you rethink your models. Ultimately, for licensing of a repository to happen, these models must accurately reflect conditions at Yucca Mountain.

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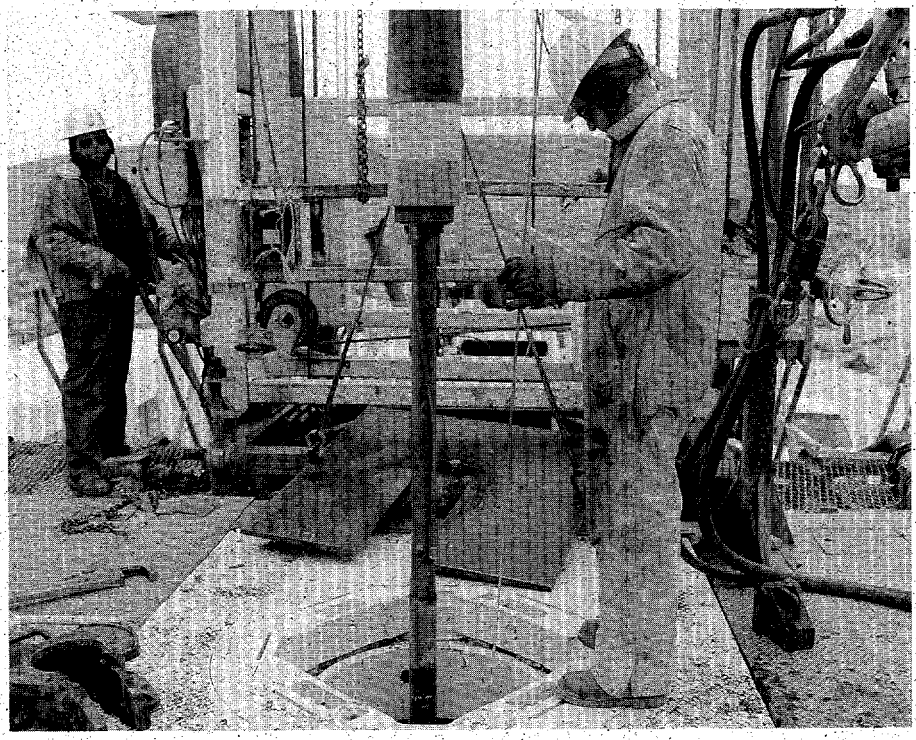
Researchers begin a new series of studies

Scientists have launched new studies in some more recently drilled boreholes. Within the next several years, more boreholes will become available for testing. Scientists hope these will help them develop a more comprehensive picture of how gas circulates through Yucca Mountain.

The tests currently under way have been designed with three goals in mind. First, scientists want to test their theories that the pneumatic pathways that exist at Yucca Mountain probably involve faults, fracture zones and fissures through otherwise solid geologic units.



Borehole drilling at C-Well complex.

Second, scientists want to develop a picture of the conditions found along the path of the Exploratory Studies Facility. And they want to do this for as long as possible before, during, and after the passage of the tunnel boring machine that will excavate the ESF. This way, they can identify any effects caused by tunnel excavation. This is important because some scientists believe that the excavation of the ESF may fundamentally change the way gases and fluids flow through Yucca Mountain.

Third, scientists want to continue collecting data from a variety of boreholes to help develop a comprehensive picture of the geologic makeup of the Yucca Mountain area. Physical and chemical data gathered from these boreholes will make for better, more accurate mathematical and geophysical models.

Ultimately, the computer model that emerges from these studies might resemble a three-dimensional "spider web." This web will show the location of existing and planned boreholes and wells. It also will show faults, offsets of

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Continued from page 89

Project manager

director, Office of Congressional Affairs, acting as congressional liaison for synthetic fuel legislation issues. From 1977-80, he served as the director of the Office of Business Relations. In this position, he worked with the secretary and deputy secretary of the DOE in an effort to involve the business community in synthetic fuel projects and plant construction. Before leaving DOE in 1982, he served as the director of its Office of Major Projects, directing synthetic fuel projects.

A native of Chicago, Barnes, 58, served in the U.S. Navy from 1955-68. During a varied military career, he served, among other capacities, as an Air Traffic Control Division officer and as a Congressional liaison officer.

Barnes holds a bachelor of science degree in business and a masters of business administration from Central Michigan University. From 1972-73, he attended the Industrial College of Armed Forces in Washington, D.C. He is married to the former Constance Arlene Simpson of Collingwood, New Jersey, and they have two children, Dawn Ellen and Wesley Edward II. ■

Continued from page 91

Pathways

faults (the relative displacement of one side of a fault against the other), and how gases and fluids may move through them. As more becomes known from these new tests, scientists expect to settle key uncertainties about pneumatic pathways.

How gases and other fluids move through Yucca Mountain

Different chemical and physical processes govern the movement of gases and vapor through Yucca Mountain. For instance, deep under the flat land at the base of the mountain, gases and vapor move by a process called gaseous diffusion: unless their path is blocked by relatively solid bodies of rock, the gases seep slowly from areas of high pressure and high concentration to areas of low pressure and low concentration.

Above the mountain, however, some gas movement is governed by convection. This refers to the transfer of heat by fluid currents. In a room, you get convection when air currents move past a radiator. If you were to toss a paper airplane over such a radiator, it is likely these currents would give your plane added lift. Around Yucca Mountain, air currents are affected by natural conditions and features, such as barometric pressure changes, temperature changes, or wind factors. If you could toss a paper plane straight over Yucca Mountain, you would probably see it both lifted up and dragged down by convection effects.

Scientists tie mountain's breathing to time of day and season

Barometric changes are seen most clearly in open boreholes. The boreholes "inhale" when the barometer rises and "exhale" when it falls (generally in the afternoon). Because this effect is cyclic (both during the day and seasonally), over time, what goes in tends to match what goes out. So the net effect of this "barometric pumping" may not be great.

Changes in air-density caused by changes in temperature occur mostly in hilly terrain. The air density changes because air moves into hilltops and out of hillsides, an effect that becomes most pro-

Continued on page 93

A more detailed breakdown of gas and fluid movement tests

Gas-phase circulation tests in the unsaturated zone

Researchers take a pressure measurement at the bottom of the borehole after sealing the top. This gives the pressure of the entire column of gas found inside the borehole. In addition, they measure the movement of gases, if any, either up or down the boreholes. Because pressures change at various depths, gas flow can change as well.

Gas behavior is not only governed by pressure. Temperature also plays a role. To determine that role, researchers take the temperature of the gas at various intervals in the borehole.

Boreholes intersect many different geologic strata, or levels. It is important to know whether gases move through these different layers in different ways. To find out, scientists use inflatable rubber bladders. They separate these different geologic segments, "packing them off" with these balloon-like devices. When this is done, they then measure the circulating gas pressure found in each section.

Scientists also inject tracer gases into boreholes and then measure how much gas they can recover back from the rock. To determine the hydrologic properties of the rock, they want to know where these gases go once injected, in what amounts, and how quickly. Scientists later remove gas samples and analyze them.

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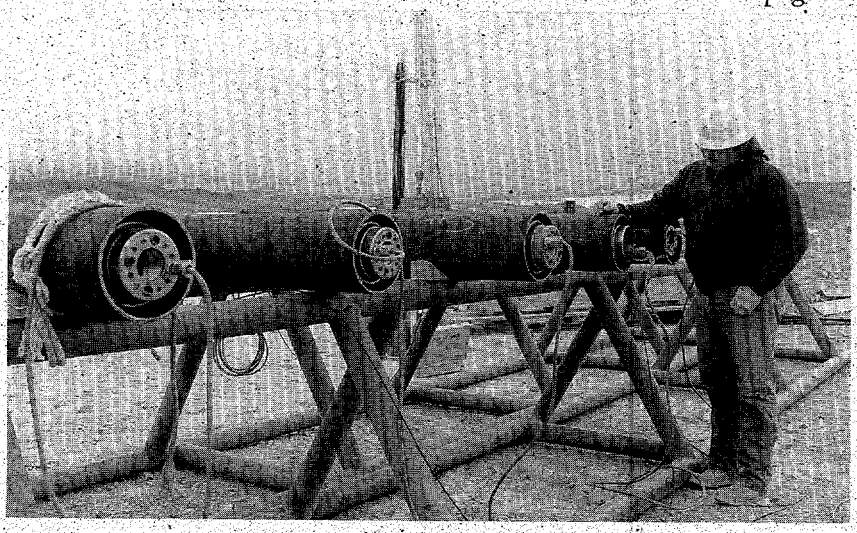


Scientists use inflatable rubber bladders like the ones pictured above to separate the many different geologic strata that boreholes intersect.

"Of Mountains and Science" p. 92

nounced in winter. A lot of gas can move in and out of the highly permeable rock near the surface. Depending upon how much gas flows in or out, you will see different densities of gas accumulate.

As an example, look at an outcrop of fractured rock on a hillside in winter. You might find that the air blowing onto the top of the rock is cold, dry and dense. But, if you're visiting Yucca Mountain, check the air in one of the boreholes drilled to provide information about the different rock layers underground. That air might be warm, moist and light. Chalk it up to basic physics. Changes in temperature lead to changes in gas density. Gas density changes produce pressure differences. Pressure differences affect the speed at which gases move in and out of the rock.

In winter, air enters the mountain through the rocks exposed to the outside. The air leaves the mountain through the boreholes. In summer, the reverse is true: air flows into the mountain through boreholes and leaves through the outcrops. This circulation affects the temperature, moisture and gas chemistry levels within the boreholes.

Wind effects aren't important in flat areas. But they may become more significant in hilly terrain. This is because heavy winds create higher pressure on hillsides, and lower pressures at hilltops. Gases can move vigorously, and in significant amounts, from hillsides to hilltops because of changes in pressure.

Water and gas movement most intense near the surface

Scientists believe that most of this kind of gas and fluid movement at Yucca Mountain occurs near the surface of the area above

Continued on page 99

Continued from page 92

Tests

Surface-based unsaturated zone percolation

Scientists collect borehole pressure, temperature and humidity readings from a network of wells drilled and instrumented to provide long-term monitoring.

Surface-based & ESF-based air permeability testing

Scientists create a model of air permeability ranges found in the rock from selected boreholes throughout Yucca Mountain and in the ESF alcoves. As in the gas-phase circulation tests, they inject gas under pressure into boreholes and through the rock. They may find that some zones are highly permeable — that these zones absorb quantities of gas quickly. This would not necessarily ensure that a pneumatic pathway exists. But it does suggest that the potential for such a pathway does, at least until ruled out by further study.

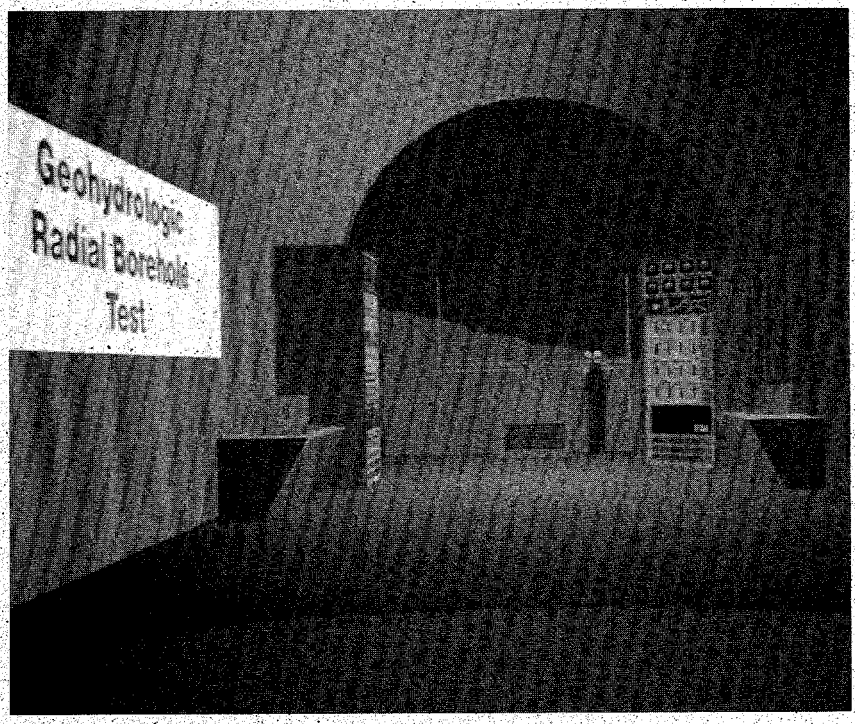


Illustration of underground alcove where scientists are conducting ESF air permeability testing.

Unsaturated Zone hydrochemistry investigations

Scientists will collect gas and water vapor chemistry data and traces of isotopes from boreholes and core samples throughout Yucca Mountain and the ESF alcoves. This will help them determine the relative ages of the gases in particular geologic units. By combining the results of chemical analyses and the flow and permeability data already described, scientists can map potential pneumatic pathways. They also can help identify those geologic units that act as barriers for the pneumatic system. ■

M&O transfers bulk of Las Vegas-based procurement to new Las Vegas office

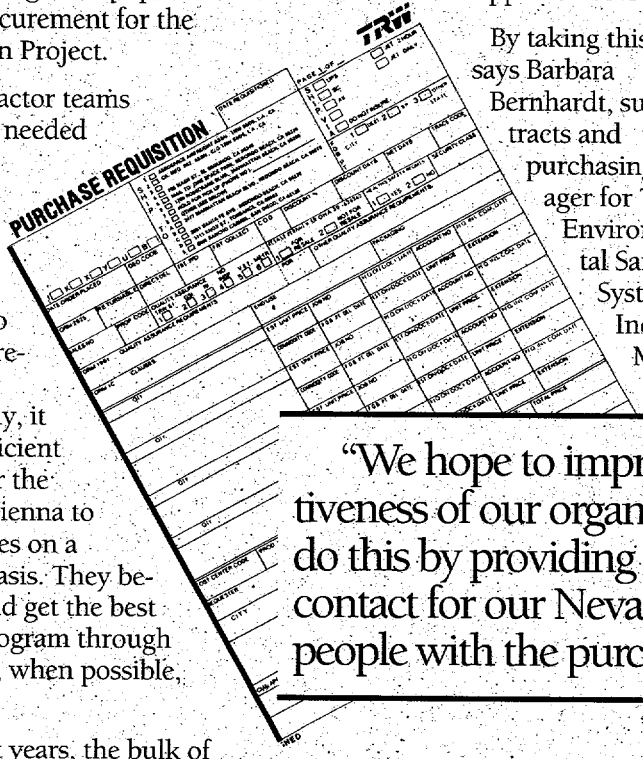
Editor's Note: The Management and Operating Contractor's (M&O) team has expanded in the last year to include a number of Yucca Mountain Project organizations who previously conducted their own procurement activities. An integral part of having one large, well-coordinated team is that, instead of there being several companies' procurement departments with different rules and points of contact, there is now one company's set of rules and contacts. This article describes that new system.

Much of the M&O work for the Office of Civilian Radioactive Waste Management (OCRWM) once was centered at headquarters' operations in Vienna, Va., near Washington, D.C. However, many of the M&O's scientific, engineering and administrative operations have been located in Nevada. Although East and West learned to work in tandem to achieve ambitious scientific goals, geography never quite worked to the complete advantage of equipment and service procurement for the Yucca Mountain Project.

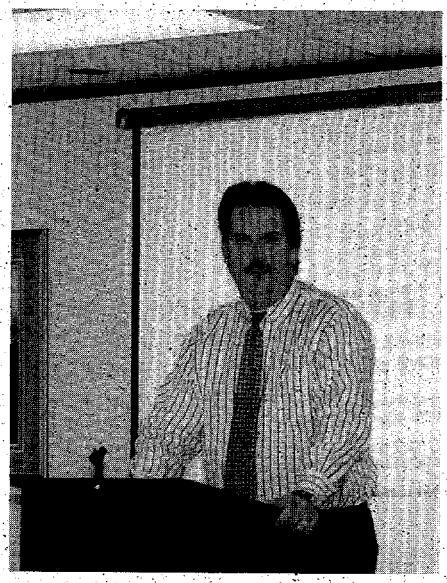
M&O contractor teams in Nevada who needed items ranging from pencils to scientific instruments had to funnel their requests to a central procurement office in Virginia. Initially, it was deemed efficient and effective for the M&O staff in Vienna to handle purchases on a country-wide basis. They believed they could get the best value for the program through centralized and, when possible, volume buying.

But in recent years, the bulk of M&O activity in support of OCRWM has shifted from the Washington area to Nevada. So it became practical to move most of the purchasing for Yucca Mountain-related activities to the M&O's offices in Las Vegas. That move is seen as simplifying — and ultimately will speed up — the procurement process for the Las Vegas-based M&O staff. Although some purchasing has always been done from Nevada firms, the M&O wants to create significant additional business opportunities for Nevadans.

These goals gained new impetus in January, when the M&O opened a procurement office in Las Vegas. The office is currently staffed by two people: a purchasing manager who will procure goods (such as computer hardware, software, technical supplies and other office and field equipment), and a subcontracts manager, who will handle business with M&O subcontractors. Both will interface with suppliers in Nevada.



By taking this step, says Barbara Bernhardt, subcontracts and purchasing manager for TRW Environmental Safety Systems Inc., the M&O prime contractor, "We hope to improve the effectiveness of our organization. We'll do this by providing a face-to-face contact for our Nevada-based people with the purchasing office. We'll also provide that contact with vendors, suppliers and requesters in the Las Vegas area.



Robert Henderson, new purchasing manager for the Las Vegas-based procurement office, seen here giving a presentation.

"Our representatives in Las Vegas," she adds, "will be able to research the local business community. They will help match local resources with the needs of our people working on the Yucca Mountain Project."

> "We hope to improve the effectiveness of our organization. We'll do this by providing a face-to-face contact for our Nevada-based people with the purchasing office..."

Lou Martel, who, like Bernhardt, is based at M&O headquarters in Virginia — and who will help her manage the Las Vegas staff — is the M&O subcontracts manager and small business liaison officer. He has traveled to Nevada frequently in recent

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Saying YES to Science

It's early morning at Fitzgerald Elementary School in Las Vegas, Nev., and a group of teachers have decided to play hooky in the school library. Gathered around stations that are set up with various math brain-teasers, their "oohs" and "aahs" and peals of laughter fill the room as they begin to find solutions.

Okay, they really aren't skipping school. Rather, they are participating in a National Urban Coalition workshop in support of the learning enhancement program called "Say YES to a Youngster's Future." The Coalition is an urban advocacy, information and program development organization with 39 affiliates in cities across the United States. Their program, Say YES, is designed to stimulate an interest in math and science in children of color and among females, groups traditionally underrepresented in these fields.

Say YES comes to Las Vegas schools through a joint effort by the Coalition, the Clark County School District and the Department of Energy (DOE). The program aims to bridge the gaps in today's educational system, whether the gaps are based on gender, cultural, or economic disparities, so every student has an equal chance to excel. These goals directly support the DOE initiative to use its resources to support the America 2000 science and math education program in the United States.

Putting the "yes" in Say YES

The goal of stimulating an interest in young people in fields related to science, math and associated technologies is achieved through a partnership between the student, the family, and the teachers. Family involvement helps guarantee the "YES" in the Say YES program. Parents are taught how to become advocates for their children's education. When families are geared toward helping them excel, children invariably respond.

Good teaching also plays a key role. Teachers participate in workshops to learn new methods of teaching that support the Say YES program.

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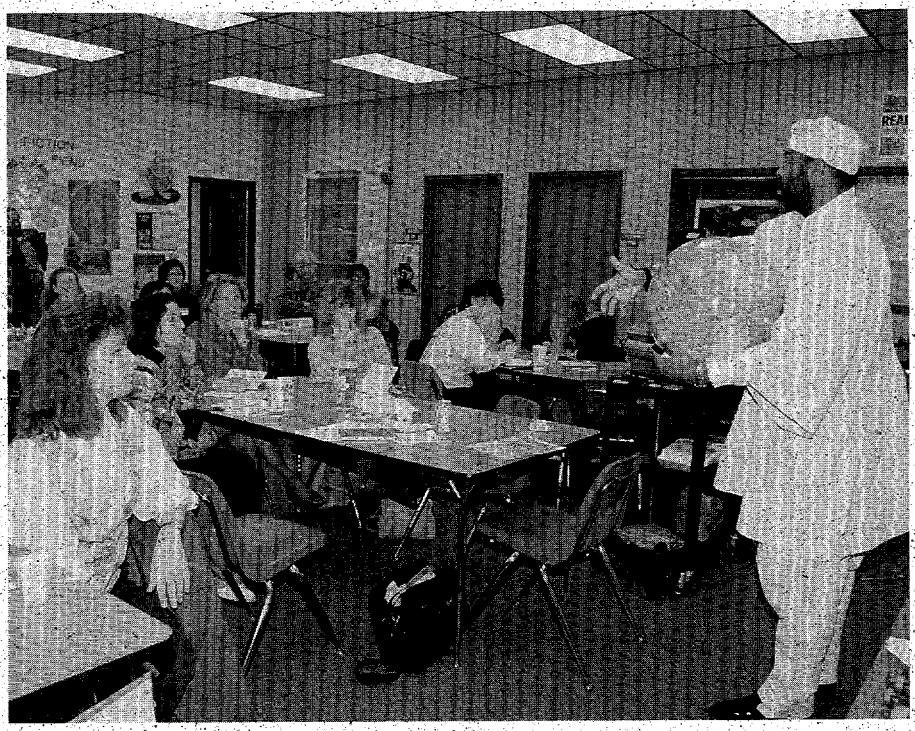
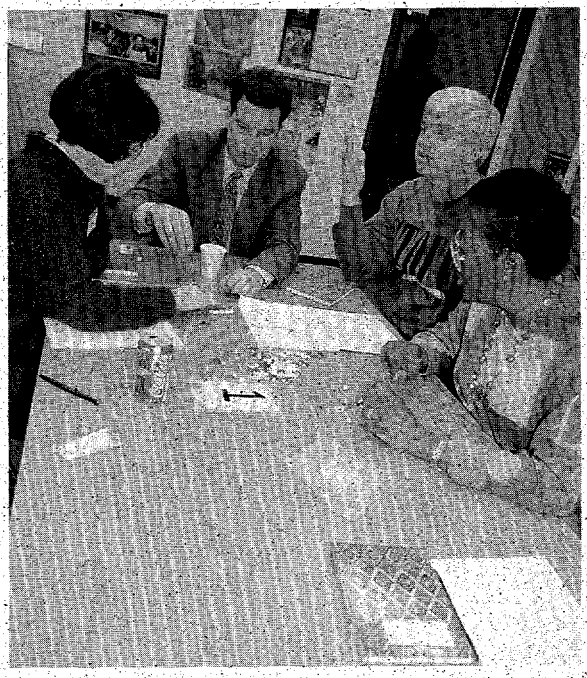


He's got the whole world... Rhett Rattley-Lewis, an instructor with the National Urban Coalition, explores how re-examining one's perceptions can lead to new kinds of problem-solving.



3-Bean Soup anyone? Workshop participants play "3-Bean Soup," a math activity in which participants use kidney, lima and black beans to make different "soup" combinations.

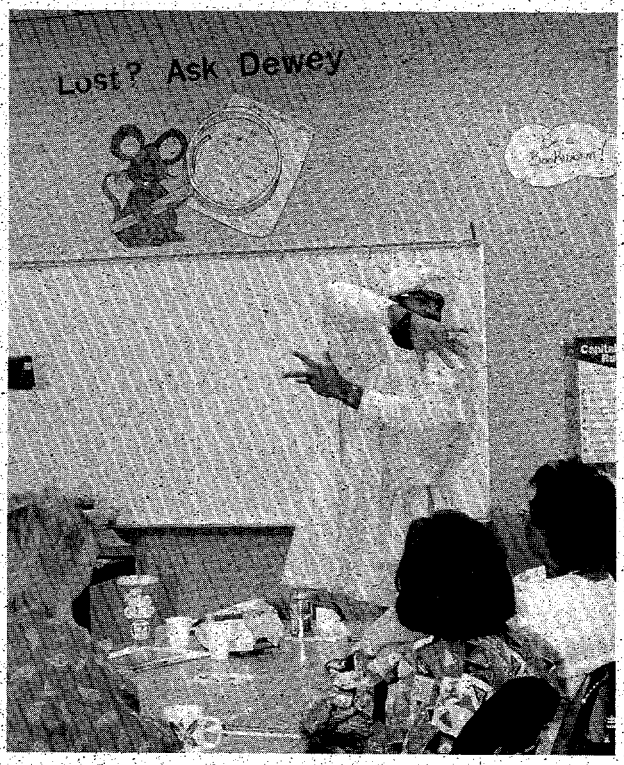
Continued from page 95

Saying YES to Science

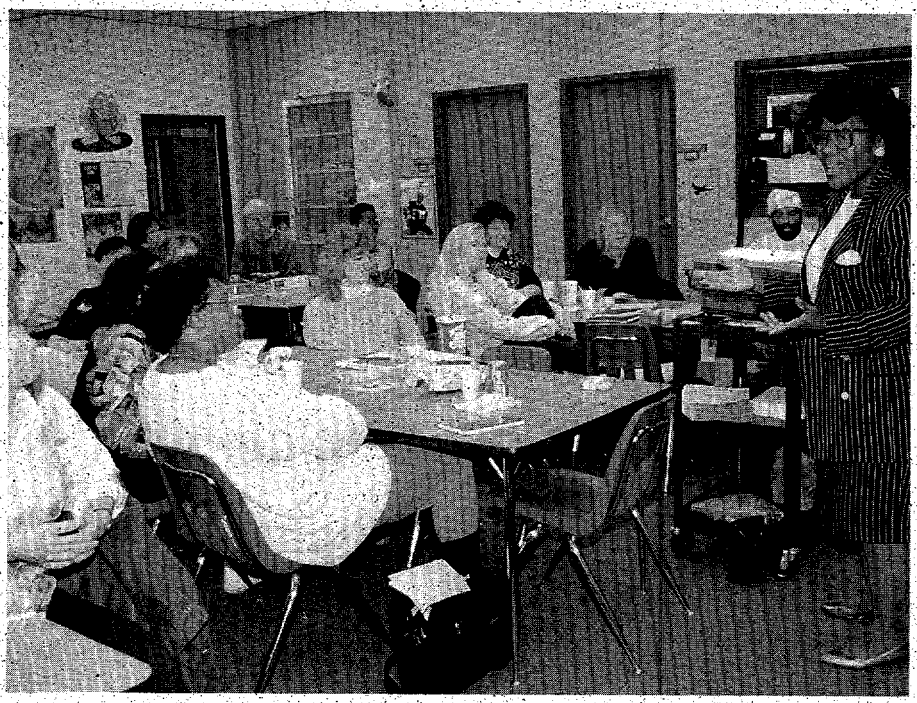
They become instrumental in promoting family involvement. They do this by making parents and guardians aware of the integral role they play in successfully educating their children. Family involvement also is promoted through Family Learning Centers. These centers serve as an extension of the school programs. In Las Vegas, evening, after school, and weekend Say YES programs will be developed for the students to participate in with family members.

At workshops, such as the one at Fitzgerald Elementary School, the brain teasers, or "openers" as they are called by Coalition instructors, demonstrate to teachers why using activity-based assignments is an effective way to teach. As they struggle over solutions to the puzzlers — one asks how you change the direction of a fish that is made of eight toothpicks by only moving three of the toothpicks — it becomes clear that each of the participants uses their own style of reasoning.

Jeffrey Skouson, a workshop participant who teaches fourth grade at Madison Elementary School in Las Vegas, explains that "One of the biggest problems we face today is that too often kids are just given the answers. They miss out on the 'ahas!' that come from finding out for themselves."



Please, no, not another puzzler... Not to worry, it's just Rhett Rattley-Lewis with another nifty teaching technique.



Not just yes...Yes indeed! National Urban Coalition instructor Lena McClain discusses the importance of family involvement in math and science education.

At the heart of the Say YES program is the assumption that anyone can excel at math and science. Teachers learn to steer students (and themselves) away from stereotypes about abilities and who excels in what areas.

Frieda Blink, a teacher at Fitzgerald Elementary school, explains what she thinks is one of the most important aspects of the program's philosophy.

"Children need to know that if they work hard they can achieve something. But they also need to know that working hard can be fun." ■

Jennifer Sizemore

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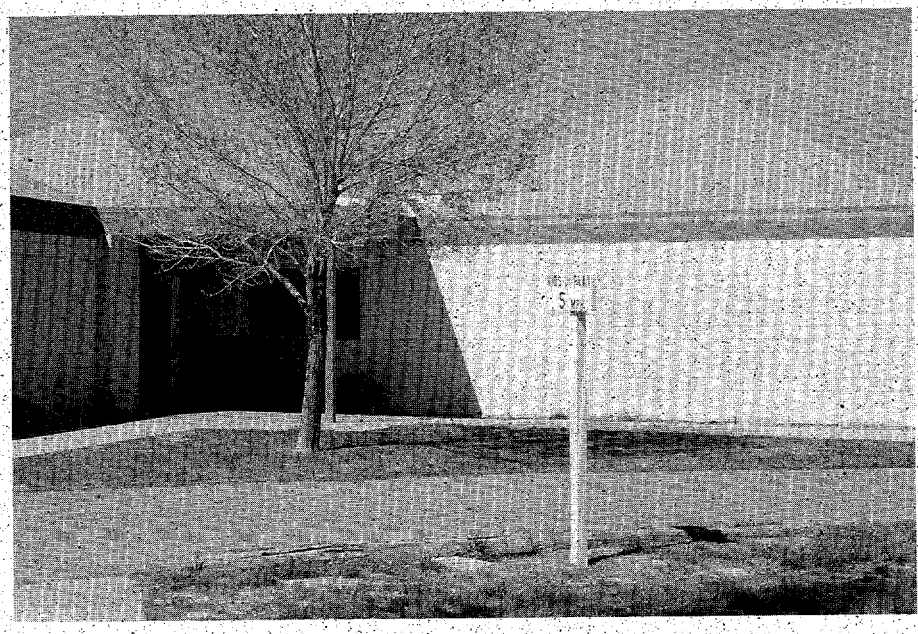
DOE volunteers turn old warehouse into a safe refuge for Las Vegas emergency shelter children

DOE contractors at Yucca Mountain are putting time, money and elbow grease into building an activities center for Child Haven, an emergency shelter that for 23 years has provided temporary care and treatment for abused, neglected and abandoned children from the Las Vegas area.

A division of the Clark County Juvenile Court Services, the shelter serves 2,200 children a year, or approximately 225 children a month. According to shelter officials, Nevada has the second-highest rate per capita nationwide of child abuse cases. As the only facility of its kind for youngsters in Clark County, Child Haven has long been a refuge for children taken into protective custody.

Children live in one of six cottages that sleep 12 or more each; 80 beds and cribs in all for a group that can number 100 or more (those children who cannot be provided beds at Child Haven are sent to local shelters to sleep). The average stay is 30 days. Staffers try to create a "homelike" atmosphere for the children; meals are prepared and served family-style in each cottage.

While at the shelter, children attend school in a three-room schoolhouse run by the Clark County School District, receive medical care, participate in arts and crafts programs run by volunteer "foster grandparents," and take part in organized recreation, social and cultural events. The Clark County general fund provides Child Haven's basic operating budget: operating expenses, employee salaries, and meals for the children. Everything else, from furniture to pizza parties, must come from the generosity of the community.



M&O volunteers hope to turn this old warehouse into a safe and secure play environment for Child Haven residents.

Fund-raiser devoted to campus overhaul

After nearly a quarter-century of sheltering children from infancy to adolescence, the entire Child Haven campus needs an overhaul. To that end, last June shelter officials announced a fund drive to raise $600,000 to renovate the six cottages that serve as temporary homes for the children. When the Las Vegas Review-Journal ran a story about the fund drive and the need for improvement of facilities at Child Haven, the article caught the eye of Hank Osterhoudt, M&O Manager for Institutional Integration.

"I thought this was a wonderful opportunity to do something more for our community," Osterhoudt said.

Though supportive of Child Haven's fund drive, the M&O

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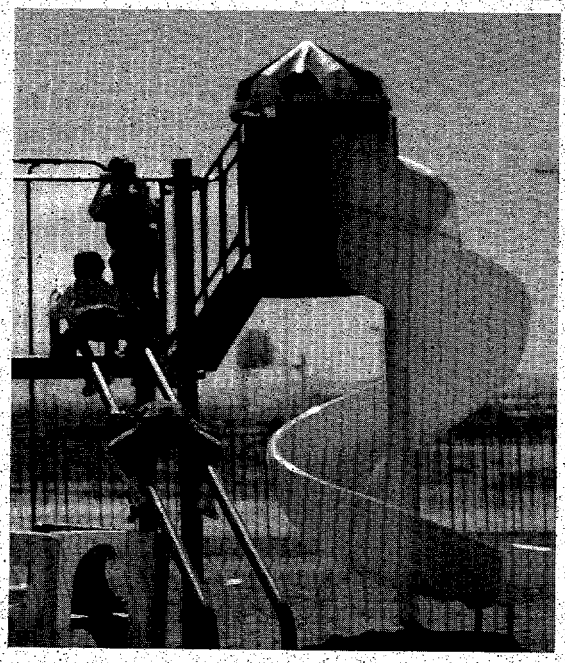
Safe haven

wanted to contribute more than money to the children living there. An old warehouse on the Child Haven campus seemed to offer the perfect opportunity for M&O employees to step in and use their individual skills, much as they had come together last May to build a new playground in North Las Vegas' Pettiti Park. Working on the now vacant building also will offer them more chances to volunteer, as the construction progresses over time.

"Cottages must be renovated very quickly to ensure that bed space isn't lost for the children," Osterhoudt said. "By renovating the activity center, we can bring people in and work over the course of a few weekends, without disrupting anything."

Once the plan was approved, the companies that make up the M&O donated funds to renovate the warehouse into an activities building replete with arts and crafts room, TV lounge, game room, and kitchen.



"...of a sense of security."

Together, the B&W Fuel Company, Duke Engineering, Fluor Daniel, Intera, IRG, Morrison-Knudsen, SAIC, TRW, and Woodward-Clyde Consultants have donated close to $14,000.

But the M&O will not simply buy materials for the new activities center. Employees also will volunteer their time and abilities to perform the renovation themselves. Plumbers, brick masons, electricians, carpenters, and general laborers are being sought, along with people experienced in accounting or purchasing.

"We can use anybody who wants to volunteer his or her time," Osterhoudt said.

"Crucial to this effort is the provision of safety...

Artists sought to warm up shelter

In addition to creating a brand-new recreation facility for Child Haven's inhabitants, Osterhoudt is looking for artistic volunteers to cover the walls of cottages and other buildings with "something warm, cartoon characters, neat kids' things. The aim is to make the buildings less stark and daunting," he said.

After being taken into protective custody, many children arrive at Child Haven battered, tearful, frightened and angry. These children have been abused or cast off precisely by the people they trusted and from whom they expected love and care.

In the short time it has available to work with these children, Child Haven tries to help them find the inner resources to heal, to learn that it may indeed be possible for them one day to trust another human being. Crucial to this effort is the provision of safety, and of a sense of security.

Although shelter staffers do what they can to achieve these goals, the physical environment can either help or hinder their efforts. The buildings these children live in should look as comfortable and hospitable as possible.

"To say they're hard on the buildings is putting it mildly," Child Haven Director Adrienne Cox said. "These kids are victims, they're abused, and they're pulled out of their homes. Any setting less than soothing and nurturing isn't appropriate in a community as affluent as ours."

Individuals or organizations interested in contributing to the Child Haven renovation project are urged to call Hank Osterhoudt at (702) 794-7515. ■

Jamie Elliott

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New Las Vegas-based procurement office

months to prepare the groundwork for the new procurement office. He says that finding businesses that can serve the Project with high quality goods and services will be a priority.

"We are like a new kid on the block," explains Martel. "The new procurement office staff will have to connect with a range of individuals and businesses. We must explain the type of things we need, and the high quality we demand."

Martel is compiling a database of local businesses that provide the goods and services the Project might need. He and the Las Vegas-based staff are also attending meetings of the local chambers of commerce and business-promotion seminars. "The word," he says, "is getting out that a new business opportunity has come to Nevada."

"We are especially interested in doing business with qualified small and disadvantaged or women-owned businesses in the area," observes Martel. "We have set aggressive goals for the levels of purchasing we want to do with these businesses. We've had some difficulty so far identifying suppliers in these categories, and would appreciate hearing from anyone who could help us locate them."

People interested in reaching the procurement office are urged to call its new purchasing manager Robert Henderson at (702) 295-9691. An employee of TRW, Henderson oversees M&O purchases of goods and materials from vendors. He will eventually be joined in Las Vegas by a new subcontracting manager, who will deal with local service vendors.

Bernhardt acknowledges that doing business with the M&O, as with any government contractor, is more complex than doing business with private sector commercial companies.

"Vendors should understand," she says, "there is a fair amount of paperwork and rules to contend with. And many people find the prospect of dealing with the government system daunting.

Not to worry, she says. "Our local people will make the time to sit with anyone who asks for help. They will explain what our forms mean, what they require businesses to do, and how to fill them out."

Both Bernhardt and Martel agree they are anxious to spend Project dollars in Las Vegas, as well as elsewhere in Nevada, when at all possible.

"It's good business for us and for the people of Nevada," she concludes.

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Pathways

near the surface of the area above the water table. They believe that at deeper levels, there may be far less movement.

This is because various geologic units can obstruct water and gases flowing down from the surface. Non-welded tuff created from ash and lava residues can obstruct flow. Welded tuff — ash and lava residues that compressed under pressure — tends not to be highly fractured. This relative solidity probably lets the tuff block gases and water vapor from moving upward.

Some of the blocks of non-welded tuff, however, probably contain many faults and fractures. Some of these could conceivably provide pathways for gases and vapors to reach the surface. But scientists believe that, in general, most of the faults and fractures found in the rock are not open, and gases and vapors cannot move uninterruptedly through these geologic barricades. A fault may run for a few tens or even hundreds of meters and then stop. A crack that runs all the way to the water table, on the other hand, may have filled up with soil and other debris over the eons.

The investigations now under way at Yucca Mountain seek to determine where these fractures exist, which of them provide pathways for gas and fluids, and which become the preferred routes to specific locations.

Accomplishing these goals is as complicated a task as geologists and hydrologists have ever undertaken, not least because conditions throughout the mountain are not uniform. Yet scientists remain confident that within the next several years, they will know much of what there is to know about pneumatic pathways at Yucca Mountain. They anticipate being able to assess whether these might pose any special challenge to a potential repository.

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1995 Yucca Mountain exhibit schedule for general and technical exhibits

May 20	**Armed Forces Day**, Hawthorne, Nev., Sat., 9 a.m.-4 p.m.
May 26-29	**Butler Days**, Tonopah, Nev., Sat. 8 a.m.-4 p.m., • Sun. 8 a.m.-4 p.m.
June 25-29	**American Nuclear Society**, Philadelphia, Pa., Sun., 1 p.m.-5p.m., • Mon., 11:30 a.m.-6 p.m., • Tues., 8 a.m.-1:30 p.m., 3 p.m.-6 p.m., • Wed., 9 a.m.- noon.
June 16-18	**Gridley Days**, Austin, Nev., Sat. 8 a.m.-4 p.m., • Sun. 8 a.m.-noon
Aug. 17-20	**Lincoln County Fair**, Panaca, Nev., times to be announced (TBA)
Aug. 12-14	**Eureka County Fair**, Eureka, Nev., TBA
Aug. 23-27	**Nevada State Fair**, Reno, Nev., TBA
Aug. 26-27	**White Pine County Fair**, Ely, Nev., TBA
Aug. 31-Sept. 4	**Tri-county Fair**, Bishop, Calif., TBA

Tours of Yucca Mountain

The U.S. Department of Energy's Yucca Mountain Project invites you to tour the Yucca Mountain area and talk to scientists and staff members about ongoing studies.

Reservations should be made at least 14 days in advance by calling (702) 794-7104 during business hours. Tours will be filled on a first-come, first-serve basis.

Yucca Mountain is about 100 miles northwest of Las Vegas. To visit the site, information such as full names, addresses, social security numbers, dates and places of birth and telephone numbers must be provided when making a reservation. The tour is open to any U.S. citizen over the age of 14. Non-U.S. citizens must allow for about a month between applying and receiving authorization to take the tour.

Box lunches will be provided for $4 per person.

"Great things are done when men and mountains meet."

– William Blake

All photos used in "Of Mountains & Science" are provided courtesy of the U.S. DOE/EG&G/EM photographic staff.

Who do you call in Nevada?

For Group Tours?
Carleen Hill 794-7375

For Exhibits?
Joanna Magruder 794-7056

For Speakers?
Jackie Brandt 794-7759

For Educational Programs?
Effie Harle 295-0886

For Publications
Jamie Elliott 794-7769

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

YUCCA MOUNTAIN
SITE CHARACTERIZATION
PROJECT

P.O. Box 98608
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