

DOE/NV/11037-3

STATE OF NEVADA  
AGENCY FOR NUCLEAR PROJECTS/  
NUCLEAR WASTE PROJECT OFFICE

NARRATIVE REPORT

October 1, 1991 - December 31, 1991

The Agency for Nuclear Projects/Nuclear Waste Project Office (NWPO) is the State of Nevada agency designated by State law to monitor and oversee U.S. Department of Energy (DOE) activities relative to the possible siting, construction, operation and closure of a high-level nuclear waste repository at Yucca Mountain and to carry out the State of Nevada's responsibilities under the Nuclear Waste Policy Act of 1982.

Initially created by Executive Order of the Governor in 1983, the NWPO, together with a seven-member Commission on Nuclear Projects, was formally established in statute by the 1985 Nevada State Legislature. The Office is supported by Nuclear Waste Fund money channeled through DOE, Office of Civilian Radioactive Waste Management.

During the reporting period the NWPO continued to work toward the five objectives designed to implement the Agency's oversight responsibilities.

1. Assure that the health and safety of Nevada's citizens are adequately protected with regard to any federal high-level radioactive waste program within the State.
2. Take the responsibilities and perform the duties of the State of Nevada as described in the Nuclear Waste Policy Act of 1982 (Public Law 97-425) and the Nuclear Waste Policy Amendments Act of 1987.
3. Advise the Governor, the State Commission on Nuclear Projects and the Nevada State Legislature on matters concerning the potential disposal of high-level radioactive waste in the State.
4. Work closely and consult with affected local governments and State agencies.
5. Monitor and evaluate federal planning and activities regarding high-level radioactive waste disposal. Plan and conduct independent State studies regarding the proposed repository.

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**A.    PROGRESS IN MEETING OBJECTIVES**

**OBJECTIVE 1**

Assure that the health and safety of Nevada's citizens are adequately protected with regard to any federal high-level radioactive waste program within the State.

**Status**

To meet this objective, the NWPO works with the Governor's office, the Nevada State Legislature, the Nevada Commission on Nuclear Projects and statewide and local government coordinating and advisory committees to assure open and direct communication and an integrated State approach to the repository program.

Because the proposed Yucca Mountain repository project has the potential to affect the health and safety of Nevada's citizens in a variety of ways and over an extended period of time, all of the NWPO's efforts during the reporting period were designed to assure adequate protection of Nevada's citizens with regard to any federal HLW program in the State. This is an overriding objective that is encompassed by every other objective and by every activity engaged in by the NWPO.

**OBJECTIVE 2**

Take the responsibilities and perform the duties of the State of Nevada as described in the Nuclear Waste Policy Act of 1982 (Public Law 97-425) and the Nuclear Waste Policy Amendments Act of 1987.

**Status**

State responsibilities and duties under the Nuclear Waste Policy Act of 1982 and the Nuclear Waste Policy Amendments Act of 1987 include the monitoring, review and involvement in the policies and activities of the Department of Energy and the Office of Civilian Radioactive Waste Management (DOE/OCRWM) in the siting process for a high-level radioactive waste repository. Further, the State of Nevada is conducting independent studies and reviews dealing with the technical, environmental, socioeconomic and transportation aspects of the repository siting and planning process. The NWPO continues its cooperation with local governments and Indian tribes within the State and has made provisions for public information and involvement in its activities.

Funding reductions for State activities resulting from congressional FY 1989, FY 1990, and FY 1991 budget actions continue to affect the ability of the NWPO to carry out roles

and responsibilities as prescribed in the NWPA and NWPAA. Technical, environmental, socioeconomic and transportation efforts - all related to assuring public health and safety - have had to be reduced or, in some cases, eliminated, postponed or rescheduled over extended periods of time.

During the reporting period, NWPO technical and planning staff participated in and/or made presentations at the following meetings:

PLANNING DIVISION MEETINGS

- State Water Hearings on DOE's Application for Water Appropriations  
(September 24 - October 4, 1991 in Las Vegas)
- Presentation to Nevadans for Public Awareness  
(October 8, 1991 in Las Vegas)
- Clark County Steering Committee  
(October 15, 1991 in Las Vegas)
- Ely Town Meeting  
(October 15, 1991)
- REMI Conference  
(October 16 - 18, 1991 in Las Vegas)
- Pahrump Town Meeting  
(October 16, 1991)
- Commission on Nuclear Projects  
(October 18, 1991 in Las Vegas)
- DOE Strategic Principles/Draft Mission Plan Workshop  
(October 22-23, 1991 in Denver)
- Elko Town Meeting  
(October 22, 1991)
- Western Interstate Energy Board High-Level Waste Committee  
(October 23-24, 1991 in Denver)
- Fallon Town Meeting  
(October 23, 1991)
- Reno Town Meeting  
(October 24, 1991)

- REMI Planning Meeting  
(November 4, 1991 in Carson City)
- Tonopah Town Meeting  
(November 5, 1991)
- DOE Task Force on Trust & Confidence  
(November 6, 1991 in Oakland)
- DOE Project Update Meeting  
(November 18, 1991 in Las Vegas)
- DOE Project Update Meeting  
(November 19, 1991 in Beatty)
- DOE Project Update Meeting  
(November 21, 1991 in Reno)
- State/Local Government Planning Group Meeting  
(November 22, 1991 in Reno)
- Socioeconomic Contractors Meeting on Phase IV-C Report  
(November 26, 1991 in Carson City)
- Clark County Steering Committee  
(December 10, 1991 in Las Vegas)
- Budget Planning Meeting  
(December 17, 1991 in Carson City)

#### TECHNICAL DIVISION MEETINGS

- NWTRB Meeting on Thermal Loading and its Impact on Repository Design  
(October 8-10, 1991 in Las Vegas)
- Nevada State Water Engineer Hearing on DOE Water Appropriation Application  
(October 1-4, 1991 in Las Vegas)
- NWTRB Meeting on Borehole Sealing  
(November 12-13, 1991 in Seattle, WA)
- NRC-ACNW Working Group Meeting on Age Dating of Volcanic Features  
(November 19, 1991 in Washington, DC)
- NRC/DOE Meeting on Regulatory Strategy  
(November 20, 1991 in Washington, DC)
- NRC/DOE Meeting on Future Interactions  
(November 20, 1991 in Washington, DC)

- o NRC-ACNW Working Group Meeting on Faulting and Seismic Hazards  
(December 17, 1991 in Washington, DC)
- o NRC-ACNW Committee Meeting on NRC's Seismic Hazards Technical Position  
(December 18, 1991 in Washington, DC)

During the reporting period, the Office participated in Quality Assurance Audits/Surveillances of DOE-OCRWM Headquarters, and the DOE Yucca Mountain Project Office. The Office also attended NRC/DOE Quality Assurance Meetings and DOE Technical Project Officer Meetings.

### OBJECTIVE 3

Advise the Governor, the State Commission on Nuclear Projects and the Nevada State Legislature on matters concerning the potential disposal of high-level radioactive waste materials in the State.

#### Status

During the reporting period, NWPO staff continued to work with the Governor's Office, the State Commission on Nuclear Projects and the State Legislature's Study Committee on High-Level Radioactive Waste to keep each apprised of developments relative to DOE's high-level waste (HLW) disposal program.

The NWPO Director worked closely with the Governor's Office to assure that the Governor and his staff were adequately informed on the HLW issues.

NWPO staff kept the Commission on Nuclear Projects advised as to the status of the program and the technical, socioeconomic and transportation findings of ongoing State studies. During the period, the NWPO continued to provide financial assistance and informational materials to the Legislature's Committee on High-Level Radioactive Waste. The NWPO funded a legislative analyst to keep committee members informed on key issues and also provided resources for nuclear waste-related committee activities.

### OBJECTIVE 4

Work closely and consult with affected local governments and State agencies.

#### Status

During the period, the NWPO continued to work closely and cooperatively with affected local governments and Indian

tribes in Nevada, those that have been formally awarded affected unit of local government status as well as others in the State that stand to be affected by the repository or related activities. The State/Local Government Planning Group (SLPG) expanded to include the seven newly designated affected counties and plans were made for coordinating activities among various entities. A joint State/Counties coordination and planning meeting was held in Reno on November 22, 1991.

The NWPO continued to provide funds to the City of Las Vegas, the City of North Las Vegas, the City of Henderson, Esmeralda County, the Western Shoshone National Council and the Moapa Band of Paiutes to assist these entities in participating in State and federal HLW programs and to enable them to evaluate potential repository-related socioeconomic and transportation impacts. In addition, other local governments which have expressed interest in the repository program - particularly those which could be impacted by highway or rail transportation of waste to a repository at Yucca Mountain were kept advised of developments and other information. These entities include the City of Reno, the City of Sparks, Washoe County, Elko County, Humboldt County, and Boulder City. Due to funding constraints, involvement of these local jurisdictions to date has been limited to the provision of information and informal consultation.

As a result of DOE's preliminary rail spur analyses and the Nevada Department of Transportation's highway routing efforts, local governments located along potential HLW shipping corridors will become increasingly affected by and involved in the federal HLW disposal program in the future.

The NWPO continued to work cooperatively with the University of Nevada Las Vegas, the University of Nevada, Reno, the State Department of Transportation and other agencies in implementing State/local transportation analyses. In addition, the NWPO continued its cooperative efforts with the State Department of Conservation and Natural Resources, the Department of Employment Security, the State Division of Health, the Division of Emergency Management and other State agencies with regard to environmental, health and safety, and other activities being undertaken as part of the State's oversight responsibilities.

#### OBJECTIVE 5

Monitor and evaluate federal planning and activities regarding high-level radioactive waste disposal. Plan and conduct independent State studies regarding the proposed repository.

## Status

Work was carried out in four major areas during the reporting period. These were technical planning and evaluation, socioeconomic impact assessment, transportation planning and assessment and public information.

### 1. Technical Programs

The Office submitted comments on its review of DOE Study Plans for "Meteorological Data Collection" (Study Plan 8.3.1.12.2.1) and "Characterization of Meteorology for Regional Hydrology" (Study Plan 8.3.1.2.1.1). Reviews continued on Study Plans for "Historical and Current Seismicity", "Characterization of the Saturated-Zone Ground-Water Flow System", "Characterization of the Unsaturated Zone Infiltration", "Quaternary Faulting Within the Site Area", and "Geodetic Leveling". During the reporting period, reviews were initiated on Study Plans for "Soil and Rock Properties of Surface Facilities", "Water Resource Assessment of Yucca Mountain", and "Effects of Local Site Geology on Surface and Subsurface Motions".

Researchers on the University of Nevada-Las Vegas volcanism studies participated in the NRC-ACNW working group meeting on Geological Dating of Quaternary Volcanic Features and Materials in November. They made a presentation on the Importance of Geologic Mapping to Sampling Quaternary Volcanic Features for Age Determination. Dr. Mark Reagan, University of Iowa, accompanied the researchers to the Lathrop Wells volcanic center to collect samples for U-Th disequilibrium dating. Samples were collected from the various flows identified on the geologic map prepared by B. Crowe (1988). Drs. Smith, Ho, and Naumann were invited to present papers at the Second International Meeting on Volcanology, University of Colima in Colima, Mexico January 20-24, 1992. Smith and Naumann's paper is entitled, "Volcanic Risk Assessment Studies for the proposed High-Level Radioactive Waste Repository at Yucca Mountain, Nevada, USA". Dr. Ho's paper is entitled "Statistical Studies of Risk Assessment of Volcanism about a Proposed Nuclear Waste Repository".

Activities during this reporting period of Mifflin and Associates focused on Study Plan reviews and a literature review of environmental effects on glass hydration rates. Of significance was the completion of the manuscript by R. Morrison for the Geological Society of America, which reviews the stratigraphic, hydrologic, and climatic history of the Great Basin, with extensive treatment



focused on pluvial lakes Lahontan, Bonneville, and Tecopa. The paper summarizes current interpretations of hydrologic histories of three lake basins within the Great Basin, and compares the similarities and differences in the records. These records are important for regional climate change studies for Yucca Mountain. Of importance, the records document that during the last 30,000 years the Great Basin Paleohydrologic records are dominated by more pluvial conditions than the modern climate. Over the longer Quaternary record, there is less agreement in both timing and intensity, but as much as 30% of the Quaternary period was characterized by a pluvial paleohydrologic record. This Office participated in sponsoring this research.

Activities of the Center for Neotectonic Studies, University of Nevada-Reno focused on faulting, tectonics, seismology, and natural resources evaluations. A majority of the efforts centered on Study Plan reviews.

Major research activities focused on the tectonics of the Yucca Mountain region. Emphasis is placed on understanding the seismological and tectonic framework of the entire lithosphere. Because Yucca Mountain lies near the boundary between two very different extensional regimes, general tectonic study of both regions is necessary. Studies during this fiscal year will focus on using earthquakes to construct three-dimensional velocity structures in the NTS/Yucca Mountain area, and improving understanding of the overall distribution of structural deformation by conducting detailed field investigations of range-bounding faults along the Bare Mountain structure.

Researchers with the mineral resources project reached agreement with DOE's Sample Oversight Committee relative to the request for selected core samples from the Sample Management Facility. Samples are being processed for transmittal to the University.

The University of Nevada-Reno, Seismological Laboratory, began a detailed analysis of the December 17 earthquake centered beneath Yucca Mountain. Priority was placed on the study of this event since the U.S. Geological Survey Seismic Monitoring Array was not recording at the time of this event.

Some of the State's hydrologic and environmental experts continued their participation in providing evidentiary testimony at the hearing before the State Water Engineer on the DOE application for a water appropriation from well J-13. The hearing was concluded in early October.

## 2. Socioeconomic Impact Assessment

State socioeconomic studies continued to be implemented during the period. Studies were actively coordinated with affected local government programs through the State/Local Government Planning Group. All ten formally-designated "affected" counties are members of the Planning Group as are Esmeralda County, the City of Las Vegas, the City of North Las Vegas, the City of Henderson, the Western Shoshone National Council and the Moapa Band of Paiutes. In addition, NWPO representatives participated in meetings of the Clark County Nuclear Waste Steering Committee, which oversees the Clark County socioeconomic effort.

Principal socioeconomic work during the period centered around planning the work program for the next 9 - 12 months of effort and implementing recommendation made by the Technical Review Committee at its meeting in September, 1991.

At its annual review meeting, the Technical Review Committee reviewed draft reports prepared by the study team and considered the development of new summary reports for the coming year. The TRC made a number of specific recommendations concerning draft reports on the various study activities undertaken during the past year.

The TRC recommended that the focus of the coming year's work be on the development of two reports aimed at identifying and presenting findings and insights about what has been learned as a result of the Yucca Mountain socioeconomic and transportation studies over the past five years. One report would be prepared by the State and the study team and would focus on the key findings and learnings of studies carried out over the years. The second report would be prepared by the Technical Review Committee and would attempt to present what Committee members consider to be the most important learnings of the past five years, drawing upon each member's unique perspective and experience.

Given the current state of uncertainty about whether or not full-scale site characterization will go forward, and the limited funding for socioeconomic and transportation studies for the coming year, the TRC felt it appropriate to summarize the state of knowledge and to lay the groundwork for future monitoring and research activities. The documents would be unique because they draw upon a body of experience that could be useful to planners, policy makers and others.

The concurrent exercises in pulling together key findings, learnings and experience constitute a timely effort to take stock of the Yucca Mountain socioeconomic project to date and to bring this phase of the study to closure.

In addition to planning for the summary reports, work continued on updating and evaluating the REMI economic forecasting model and on carrying out studies related to risk and risk effects and their contributions to socioeconomic impacts of a repository and related activities.

Continued work on understanding the role of trust in explaining risk perception and risk perception effects was also ongoing during the period.

Plans were also made for a collaborative effort with Nye County to finalize and maintain the Project Description Scenario Development System for use in modeling project characteristics and providing inputs for impact assessment activities.

### 3. Transportation Planning and Assessment

State transportation work during continued to focus on expanding the route characterization and risk analysis database development and evaluation being implemented by the UNLV Transportation Research Center under contract to the NWPO. In addition, NWPO staff and researchers continued to evaluate DOE's rail access activities (i.e., the Caliente Rail Spur Study), cask design activities and analyze the effects of HMTUSA and related changes in federal regulations on State and local governments with respect to nuclear waste transportation.

In addition to specific work/research activities, meetings were held between NWPO staff, transportation advisors, contractors, State agencies and local governments to review and oversee work plans.

Consultation continued with the University of Nevada, Reno, College of Engineering regarding for the Center for Infrastructure Studies' transportation-related activities funded through the NWPO, as specified in the FY 1991 congressional appropriations measure.

### 4. Public Information

Public Information activities during the period continued to involve all phases of a program to develop and provide information on the Department of Energy's Yucca Mountain